

Review Paper

Practical Actions and Viable Strategies to Improve Food Security and Alleviate Poverty in Ethiopian Highlands

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The Ethiopian highlands, which constitute less than 50% of the total area of the country, are hosting about 90% of the country's total human population and two-thirds of the livestock population. Population pressure is so high and increasing at an alarming rate resulting in reduced size of land holding and hence putting too much pressure on the natural resources that in turn reduced agricultural productivity and income. The consequences have been severe land degradation, deterioration of productivity, food insecurity and poverty leading to lack of resilience to environmental shocks such as the recurrent droughts and climate change. This requires the integration and application of range of strategies and best practices having complementarity and synergy to optimize productivity and income, intensify agricultural productivity and diversify livelihoods to alleviate poverty and hunger among the farming communities and ensure long-term food security while sustainably managing the natural resources.

Key words: The Ethiopian highlands, population pressure, severe land degradation, food insecurity and poverty, optimize productivity and income, intensify agricultural productivity, and diversify livelihoods.

INTRODUCTION

The Ethiopian highlands, which constitute less than 50% of the total area of the country, are hosting about 90% of the country's total human population and two-thirds of the livestock population (Gete, 2003). Population pressure in the highlands is so high and increasing at an alarming rate resulting in reduced the size of land holding, which is ranging from 0.5 to 1.5ha per household. The increasing population dynamics and reduced size of land holding are the major factors putting too much pressure on the natural resources causing severe land degradation problem, undermining productivity and food security. The degradation of land and loss of soil fertility resulting from soil erosion and depletion of organic matter and nutrients are taking place at much faster rate than they can be replaced. Studies (FDRE, 2008) indicate that about 85% of the country's land surface is considered prone to moderate to very severe land degradation and the rates of soil erosion for the highlands have been estimated at 42 tons ha⁻¹ yr⁻¹ in average. The consequences have been increased rates of declining agricultural productivity, food insecurity, lack of resilience to environmental

shocks such as the recurrent droughts and climate change. In spite of the various efforts made to contain the alarming rate of land degradation, its severity and threats to agricultural development and food security still remains a major concern.

Currently, there is huge gap between the rapidly growing human and livestock population and demand for food, feed and the other requirements in Ethiopian highlands. The trend of their growth is conversely co-related; while the human and livestock population is growing at faster rate, the growth of the supplies is either at much slower rate or growing in the opposite direction. Therefore, without appropriate actions to protect the natural resources, restore and increase the productivity of degraded lands, it will not be possible to alleviate poverty and hunger among the farming communities, ensure long-term food security or build resilience to environmental shocks including climate change.

To achieve this aspiration and ensure food security, it is crucial to restore the balance between human and livestock population growth and the supply of food, feed

and other requirements. This requires the use of a range of strategies and best practices having complementarity and synergy to optimize the overall productivity and income while sustainably managing the natural resources.

Therefore, this review paper briefly describes the root causes of land degradation, deterioration of productivity, food insecurity and lack of resilience to environmental shocks including climate change and attempts to highlight some of the practical solutions to address the problem with special emphasis on the Ethiopian highlands.

The root causes of poverty and food insecurity in Ethiopian highlands

The underlying and major causes of poverty and food insecurity in Ethiopian highlands include the loss of agricultural productivity due to the severity of land degradation, limited size of land holding, limited alternative livelihoods to compensate for the lost productivity/production and limited approach to integrated and holistic development approach to intensify agricultural productivity and diversify sources of income. The rapidly growing human and livestock population that increased the demand for food, feed and construction materials caused the exploitation of the natural resources through deforestation, cultivation of marginal lands (lands not suitable for agriculture), overgrazing and indiscriminate removal of vegetation cover including crop residues for various purposes (WYDA, 2020). These in combination with poor farming and land management practices led to further loss of vegetation cover, biomass, biodiversity, and fertility/productivity, eventually aggravating poverty and food insecurity problem. The limited use of sustainable land management (SLM) practices, particularly soil organic matter management practices and the sub-optimal use of chemical fertilizers have deteriorated the level of productivity and food security.

The other most neglected factor aggravating the problem of poverty and food insecurity in Ethiopian highlands is the abundant loss of rain water as a result of accelerated runoff and flood in the absence of proper water harvesting and soil conservation measures (Betru, 2003). The practice of water harvesting and soil conservation in the highlands may be absent or not sufficient enough to effectively control the loss of rain water. Thus, the accelerated runoff and flood are not causing only excessive loss of top fertile soil, but also plenty of rain water that otherwise could be used for maintaining adequate soil moisture regime, recharging ground and surface water resources for various purposes including small scale irrigation and hence agricultural intensification and diversification of livelihoods.

The source of all water resources including rivers, lakes, springs, soil moisture and ground water is rain. Thus, the failure to protect the loss of this valuable resource led to the depletion of surface and ground water sources causing soil moisture stress, loss of

productivity and food insecurity. The unabated loss of rain water is not only exasperating loss of surface and ground water sources, the degree of moisture stress and the speed of degradation and impacts of drought, but also endangers the future opportunities for expanding small scale irrigation, which is thought to be a key strategy for poverty alleviation and promoting adaptation capacity of the farming communities to climate change.

Free grazing and/or uncontrolled livestock management is another major factor causing land degradation, poor agricultural productivity and food insecurity in the mixed farming system of the Ethiopian highlands. Free grazing is causing destruction of soil structure as a result of trampling and removal of crop residues and hence preventing the recycling of soil organic matter on farmlands (MoA, 2016). This affects sustainable soil fertility management that is undermining productivity and food security with clear implication of environmental degradation. The loss of vegetation cover and loss of soil organic matter increase the level of CO₂ emission contributing to the adverse effects of climate change.

The other factor undermining sustainable land management and improvement of agricultural productivity and food security in the country including in the highlands is the lenience in **enforcing** sustainable natural resources management and land use **policies** endorsed by the government and recognized to be effective in reducing the rate of land degradation, improvement of agricultural productivity and food security (author's personal experience). Unfortunately the policies thought to be effective in this regard remain on shelf for most of the time and not translated into practical actions. In addition, the limited **awareness** among the farming communities about the consequences and long term effects of natural resources degradation and the **overlooking** of the **prevention** of natural resources degradation in potential areas are seriously affecting the efforts of sustainable natural resources management, agricultural productivity improvement and food security attainment.

In most cases, there is bias to the rehabilitation of degraded lands in highly degraded environments, neglecting the prevention of natural resources degradation in the potential areas. Thus, the potential natural resources are deteriorating at fastest rate undermining the efforts of alleviating poverty and improvement of food security (MoA, 2016). The need of rehabilitation and restoration of productivity of degraded lands is not debatable as the magnitude of degraded lands, especially in the Ethiopian highlands, is so huge and unless the rehabilitation of degraded lands takes place on massive scale, it would be difficult to restore a balance between demand and supply of food, feed and other requirements. But, it is very important to strike a balance between the efforts of prevention and rehabilitation of natural resources while mounting the efforts of rehabilitating degraded lands.

The little visible, but major factor undermining agricultural productivity and food security is the weakness of agricultural extension system often failed to effectively implement and expand the best agricultural practices to achieve the desired objective of improving food security and poverty alleviation. Most of the agricultural extension staffs lack the required technical capacity and commitment to effectively transform the smallholders farming systems. They are neither committed nor have the required technical capacity to effectively support, advice and work in partnership with the rural farming communities on regular basis to bring the desired poverty alleviation and attain food security in the country as well as in the highlands.

How to alleviate poverty and food insecurity in Ethiopian Highlands

Some of the practical solutions to attain the desired level of poverty alleviation and improvement of food security include the wider implementation of effective and practical **policies, strategies and the best practices**. To realize and relish the benefits of these aspects, the government, development partners, NGOs and the farming communities should join hands and work together to effectively implement the policies, strategies and best practices known to be effective in addressing the problem of land degradation, poverty and food insecurity. It is also critically important to move aggressively towards **creating awareness** among the farming communities at national and local levels about the consequences and ultimate impacts of natural resources degradation. There could be a variety of effective awareness creation methods, but the government and social media should play active and leading role in creating the required awareness among the rural farming communities.

Agricultural intensification and diversification of livelihoods:

This is a system of promoting different agricultural packages and income generation technologies having complementarity and synergy effects on small size of land holdings. This can be used as a viable strategy to alleviate poverty in highly populated and mixed farming systems of Ethiopian highlands where the size of land holding by the majority of farm households is very small. A growing population pressure and limited size of land holding means, there is a need to shift the farming system to accommodate the current and future need of food and survival of the smallholder farmers (Warren, 2002). Given the limited size of landholdings, various studies have emphasized that farming system in developing countries should pay greater attention to diversification of livelihoods and agricultural intensification in order to tackle the problem of food insecurity and to properly feed the rapidly growing

human population (World Bank, 2005). The intensification and diversification principles, particularly for resource poor farmers in developing countries (where poverty, low productivity and resource degradation are closely interrelated) are said crucial to reduce the negative effects of population pressure on the natural resource base and to improve the livelihoods of smallholder farmers.

It has been clearly demonstrated for years in different parts of the country that a farmer combining various income generation technologies such as high value/cash crops, small scale animal fattening and/or dairy farms with improved forage production, beekeeping, poultry, pond fish culture, etc. on small land holding, as small as a half ha, can be better off than those farmers cultivating 2-3 ha for cereal production (MoA, 2016). In deed, this system has benefited very much from the integration of small scale irrigation and soil organic matter management techniques and skill of manipulating the diverse activities to sustain the expected outputs and benefits. This clearly indicates the importance of intensive water harvesting and soil and water conservation and the use of small scale irrigation for intensification of agricultural production and diversification of livelihoods.

Ensuring the commitment of supporting farming communities:

farming communities stick to their traditional practices whether they are harmful or not in the absence of appropriate advices, technical supports and alternative livelihoods (WYDA, 2020). Therefore, the required technical supports, alternative livelihoods and effective methods of controlling land degradation should be readily available to the farming communities. To this effect:- qualified, skilled, competent and committed technical staffs should be working with the farming communities as intimate partners and provide the required technical advices and supports for designing and implementing appropriate technologies. Also there should be more commitment on the part of the responsible government offices to build the capacity and capability of farmers to enable them effectively plan, implement and manage the appropriate technologies.

Controlling land degradation caused by livestock pressure:

this can be achieved through various mechanisms such as increasing the productivity of grazing lands and reducing the number of livestock, while also improving their productivity. Increasing the supply of livestock feed and decreasing the number of livestock open door for controlled livestock management system and keeping better quality animals to optimize production and income from limited number of animals (MoA, 2005). The various mechanisms for increasing livestock feed

include: the integration of improved forage production in farming system. The system of integration includes the growing of improved forage species on farm boundaries, on soil conservation structures, in and around gullies, intercropping in row and/or mixed crops and growing them at homesteads. The supply of feed can also be increased from private or communal grazing lands/plots by applying different techniques that increase the production and productivity of grazing lands. These techniques include water harvesting and spreading water on the grazing lands/plots, moisture conservation, over sowing with improved forage legume species, removing and eliminating unproductive and weedy vegetation and allowing the grazing lands to rest during critical growth stage of plants through the introduction of systematic rotational grazing systems. This requires improving the productivity of the animals using appropriate animal genetic improvement techniques along with market oriented and environment friendly animal production systems.

CONCLUSION AND RECOMMENDATION

Land degradation, loss of productivity and food insecurity are the major factors undermining the wellbeing and very survival of farming communities in Ethiopian highlands that cannot be addressed in isolation. Therefore, all responsible bodies including the government, development partners and NGOs operating in the area and the farming communities suffering from the problem should join hands and work together to realize the objectives of sustainable natural resources, improving food security and alleviation of poverty in this part of the country. As agricultural intensification and diversification of sources of income enables farmers to get higher production and income from small land holding, wider application of its principles and best practices is viable strategy to reduce pressure on the natural resources and building wealthier farming communities while greatly contributing to achieve the objective of improving food security and poverty alleviation.

Thus, the government policies, strategies and practical actions should focus on promoting these principles in combination with integrated watershed management and holistic development approach, particularly in the mixed farming system of highly populated Ethiopian highlands. The practice of water harvesting and small scale irrigation should be intensified and multiplied by many folds among small holder farmers to realize the objectives of poverty alleviation and improvement of livelihoods. To this effect, the loss of any drop of water from the catchments should not be tolerated, but all rain water falling on the catchments should be systematically

collected, stored in various reservoirs and used for small scale irrigation.

It is critically important to design and implement effective strategies for documentation, sharing knowledge, dissemination and scaling up of the best practices. There are many strategies and best practices that can improve food security and alleviate poverty (in the country) that can lay ground for resilience building to environmental shocks including climate change and the recurrent droughts. But these strategies and best practices should be collected, formulated and taken down to grassroots level and implemented. Partnership among the stakeholders at national and local levels should be strengthened and fostered towards improving food security and alleviation of poverty. Partnership with the farming communities and commitment to work with them should be intensified by many folds. The knowledge, skills and experiences spoken about at higher level should be moved to the grassroots level to solve the problem of food security and poverty. We should be able to transform the knowledge and capacity of the farming communities to enable them effectively plan, implement and manage the best practices for improving food security and poverty alleviation.

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