Population Growth Nexus Land Degradation in Ethiopia

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Abstract
Land degradation is one of the challenging environmental problems of Ethiopia. In addition, land degradation, low and declining agricultural productivity and poverty are severe and interrelated problems in the country. Land degradation is caused by many factors such as rapid population increase, deforestation, step topographic features, intensive rain fall, unbalanced crop and livestock production to mention few of them. The relation of population growth and land degradation is quite different in many parts of the world. In some parts of the world, population is considered as a problem. While, in other parts of the world it is considered as a resource. In Ethiopia, population growth is the repeatedly mentioned cause of land degradation in general and soil erosion in particular. Thus, this paper aims to give an overview on population growth and land degradation in Ethiopia by taking typical evidence from different parts of the country.

Key words: Population growth, soil erosion, soil fertility loss

1. Introduction
In Ethiopia, land degradation, low and declining agricultural productivity, and poverty are severe and interrelated problems. In the light of the increasing population, land degradation in Ethiopia is bound to proceed at high and other land conservation activities. Thus, land degradation is not necessarily related to high population density.

Land degradation is a temporary or permanent decline in the productive capacity of the land, or its potential for environmental management (Paulos 2001). It includes soil degradation, vegetation degradation and degraded lands. Because of the broad nature of land degradation, this paper gives particular emphasis to soil erosion and nutrient depletion. As indicated above, there are only few studies indicating the positive role of population growth for land conservation. As a result of this, the purpose of this paper is to look into in what way the growing population of the country accelerated soil degradation with special reference to soil erosion and nutrient depletion by taking typical evidence from different parts of the country.
2. Population growth nexus soil erosion and soil fertility loss in Ethiopia

2.1 Population growth and soil erosion

The growth of population beyond the carrying capacity has led to sever degradation and impoverishment of the land resources and rapid disintegration of the ecological and social conditions in many parts of the under developed countries (Belay 1995). In Ethiopia, the heavy reliance of growing population on an intensive kind of subsistence agriculture with simple traditional methods of production and prevailed for thousands of years with little or no modification has greater contribution for soil erosion (Gete et al. 2006) and the expansion of agriculture as a result of the ever growing population especially towards the steeper slopes accelerated soil erosion (Belay 1995). In the Ethiopian highlands, the population has grown very fast on the limited land area and every possible piece of land is put into cultivation to produce food without appropriate conservation and hence which results soil erosion (Hawando 1997). Soil erosion is taking place all over the country but because of the effect of overpopulation on land that is already fragile (steep and mountainous), and mismanagement of the land in the northern and central highlands are the worst affected (Paulos 2001). Overgrazing, cultivating steep hillsides, and cultivating marginal lands resulted from population pressure accelerate soil erosion (Fitsum et al. 1999; Desta et al. 2000; Bezuayehu et al. 2002).

Addition studies shown that the annual soil loss from Ethiopia due to land degradation, as a results of population pressure, is 1.5 billion tons (Hurni 1993 cited in Muluneh 2003). Continuous cultivation in Ethiopian Highland aggravated soil erosion because the land where most of agricultural activities take place in steep slopes and the soil is carried away by heavy rains. Having this situation, the method of land preparation has favored erosion where together with the soil lost essential nutrients have been washed off (Kefeni 1992). A study by Fantaw (2007) in the South-eastern highlands of Ethiopia depicts that clearing of forests and their subsequent conversion into cropland reduces the soil C content and increase erosion rates. Amare (2007) also reported that as a consequence of crop cultivation on steep slopes and continuous grazing, the soil depth in Maybar area is significantly reduced.

In the highland parts of Ethiopia, the area of most intense population density, the area of greatest livestock density and the area of greatest land degradation, recorded measurements of soil loss by water erosion range from 3.4 to 84.5 tons per he per year with a mean of 32.0 tons/ha/year (Berry 2003). Soil degradation in Ethiopia can be seen as a direct result of past agricultural practices (Badge 2001). Similarly, Temesgen et al. (2014b) also reported that the identified causes of soil erosion in Dera District, northern Ethiopia were cultivation of steeper slope, intensive cultivation without fallow, lack of soil conservation measures, lack of sense of ownership, deforestation, over grazing, use of crop residues for animal feed and fuel, and heavy rain fall in which most of them are enhanced by the growing population of the area. Thus, rapid population growth is a major cause of soil erosion in the country particularly in the highlands.

2.2 Population growth and decline of soil fertility

Intensification of agriculture in Sub-Saharan Africa without addition of plant nutrients has resulted in extensive nutrient depletions and consequent land degradation (Breman and Swift 1997). Erosion is certainly a major nutrient depleting process in the East African highlands than other regions of Sub-Saharan Africa. One reason is that the highlands show regionally higher soil nutrient levels than soils in other regions of Africa and hence have more nutrients to lose. However, the major reasons are the general high population pressure and land-use intensity resulting in higher nutrient exports through crop removal with significantly lower percentage of arable land under fallow (Drechsel et al. 2001). The impact of population change on landholdings size in Tigray has led to a decline in practices such as fallowing which results depletions of soil nutrients (Corbeels et al. 2002). Additional study by Tilahun et al. (2001) has indicated that pressure from the growing population forces the farmers to cultivate marginal lands, and discontinue fallow and the use of crop residues to maintain soil fertility. In Ethiopian highland, farmers with relatively small farmlands do not adopt soil conservation practices easily since they think in diminution of farm land size. This has an impact on soil fertility management and soil conservation, which will then result in land degradation due to unsustainable intensification of the land (Paulos 2001). Similarly, the loss of soil fertility (nutrient depletions) in Amhara region is mainly due to population pressure and it is manifested through using dung and crop residues as household fuels and animal feeds, low use of chemical fertilizers, declining fallow periods, soil and organic matter burning, and soil erosion (Desta et al. 2000). All the above discussion indicates that high population growth is a factor to the decline of soil fertility in Ethiopia.

3. Conclusion

Rapid population growth by itself need not be a problem if it is supported and guided with appropriate land use policy. Otherwise it is a huge threat to the environment as observed in many parts of the Ethiopian highlands. In Ethiopia, land degradation is enhancing due to the country’s rapid population growth. This is because of the poor implementation of population and land use policy of the country. Thus, increasing family planning activities, creating off-farm job opportunities, appropriate soil conservation measures, appropriate use of soil fertility
improving mechanisms, using energy saving stoves and also proper management of the land will reduce the problem. In addition, afforestation and re'afforestation of trees should be encouraged. Furthermore, population policy and land use policy of the country should be effectively implemented to create positive relationship between population growth and environment and at the same time to enhance the livelihood of farming households of the country. More specifically, the Ethiopian government should strengthen a land policy to ensure land tenure security for farmers to protect their rights, in which farmers’ landholdings should be registered and user certificates should be given to them to start land management and soil conservation activities in combating soil erosion.

References


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