

Full Length Research Paper

Rapid population growth and Environmental degradation in Ethiopia: Challenges and Concerns

Teklu W. Gebretsadik

South Agricultural Research Institute (SARI), Hawassa Agricultural Research center, P.O.Box. 2126, Hawassa, Ethiopia.

Email: gebretsadiktekl@yahoo.com

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Abstract

Having established link between human population and a degraded environment as well highlighting the effect a degraded environment on the human health, it becomes necessary to suggest a way out so as to achieve a sustainable environment. Underlying every environmental problem is the issue of human population growth. Therefore, any attempt to solve this problem must start by addressing issue of rapid population growth in Ethiopia. This study hereby recommends that the simplest and one of the most effective means of controlling population growth in the country is to delay the age of first childbearing. Women should be encouraged to be educated; this will make the delay to occur naturally. As per solving the problem of environmental degradation, it is suggested that alternative source of energy should be developed to reduce the risk posed by use of hydrocarbon as fuel environmental education should be encouraged in school curricula. People need to be thought how to use the resources of the environment without causing damage to the environment. Environmental law which have been enacted should be thoroughly enforced through task forces. Also the multinational companies and other industries with tendencies to generate pollution should be forced to carry out environmental impact assessment and put in place mitigation measures before carrying out production.

Keywords: Conservation, climate change, Environmental degradation, pollution, population growth, Ethiopia.

INTRODUCTION

The rapid population growth and economic development in country are degrading the environment through the uncontrolled growth of urbanization and industrialization, expansion and intensification of agriculture, and the destruction of natural habitats. One of the major causes of environmental degradation in Ethiopia could be attributed to rapid growth of population, which is adversely affecting the natural resources and environment.

The growing population and the environmental deterioration face the challenge of sustained development without environmental damage. The existence or the absence of favourable natural resources can facilitate or retard the process of economic development.

The three fundamental demographic factors of births, deaths and migration produce changes in population size; composition, distribution and these changes raise a number of important questions of cause and effect. As the 21st century begins, growing number of people and rising levels of consumption per capita are depleting natural resources and degrading the environment. The poverty-environmental damage nexus in Ethiopia must be seen in the context of population growth as well. The pressures on the environment intensify every day as the population grows.

The rapid increase of human numbers combines with desperate poverty and rising levels of consumption are depleting natural resources on which the livelihood of present and future generations depends. Poverty is

amongst the consequences of population growth and its life style play major role in depleting the environment either its fuel demands for cooking or for earning livelihood for their survival. The unequal distribution of resources and limited opportunities cause push and pull factor for people living below poverty line that in turn overburdened the population density in urban areas and environment get manipulated by manifolds, consequently, urban slums are developed in urban areas.

The growing trends of population and consequent demand for food, energy, and housing have considerably altered land-use practices and severely degraded the countries forest vis-à-vis environment also. The growing population put immense pressure on land intensification at cost of forests and grazing lands because the demand of food could not increase substantially to population. Thus, horizontal extension of land has fewer scopes and relies mostly on vertical improvement that is supported by technical development in the field of agriculture i.e. seeds, Fertilizers, Pesticides, Herbicides, and agricultural implements, all these practices causing degradation and depletion of environment with multiplying ratio.

The relationship between population growth, resource depletion and environmental degradation has been a matter of debate for decades. The argument has been between those who view population numbers per se as the main culprit in increasing pressure on the environment and those who place more blame on economic development, non-sustainable agricultural and industrial practices, and excessive and wasteful consumption. In fact, both population growth and non-sustainable development are cause for concern in Ethiopia. Though the relationship is complex, population size and growth tend to expand and accelerate these human impacts on the environment. What is more concern, the number of population rise will increase to such an extent in future that it will cause overall scarcity for resources. Decades of economic expansion and population growth have degraded its land, air and water.

OBJECTIVE

The objective of this paper is to assess the effect, relationship and situation analysis scenario on population growth and environmental degradation in Ethiopia.

Global concerns

The impact of human activity on the natural resources surrounding human kind was initially insignificant or zero. Such impact became more and more conspicuous as the population expanded and also as new capacity and skill to manipulate natural processes increased. Throughout the millennia, human knowledge and technology have grown in leaps and bounds. Such growth, although slow initially (e.g. Change from Stone Age to the [iron Age),

had quickened as time passed, the gaps in technological change (revolution) becoming shorter and shorter, and the rate of knowledge and skills acquisition growing faster and faster, respectively.

Despite this vast accumulation of knowledge and skills, it is only recently that a simple truth has become obvious, and that is: unless natural resources of planet Earth are used sustainably, the continued survival of human kind on earth will be at stake. There is no point in arguing about the reasons why it has taken so long for this truth to see the light of day. Whatever the reason for delays in response, there is now an urgent need to address environmental management.

What we have today is a world divided, roughly, into developed and developing. The developed part, comprising about 20% of the world's population is sustaining its life style by using 80% of the total resources utilised whereas the developing world, consisting of 80% of the world's population, consumes roughly only 20% of the same. Excessive consumption in the developed world is leading to very fast depletions in both renewable and non-renewable resources. Industrial and related pollution is a disease in the developed countries, causing air, water, and land pollution, poisoning these resources so much that their life support capacity is drastically diminishing.

These facts are not reflected in the indicators we use to measure human well-being such as education, health, shelter, among others. If they had been, the results would not have looked so good. When we look at the developing countries, however, what we find is that there is a lack of wellbeing both for humans and in the eco-system, and the situation is continuously getting worse.

Regional (Africa) level concerns

In dealing with the environment there is a need to focus activities at the local, national and regional levels, so that a global perspective could emerge in a more realistic manner, the world over, conservation now falls within proper environmental management. It is rare nowadays for people to raise issues of conservation independently of environmental management, and it is in line with this trend that Africans are discussing environmental management in lieu of conservation in their document.

Ethiopia level concerns to environmental degradation

While developing countries were making an effort to bring about development following the unsustainable model of the North, the North was, at the same time, realising the un sustainability of its model of development and that catastrophe would certainly occur if the developing countries, in which 80% of the world's population reside, "successfully" reached the standard of "development" that exists in the North. There is no better expression for this concern than the statement "Imagine one billion

Chinese driving automobiles!" As a result, the concern for the proper management of natural resources became clearly visible in the 60's and gained momentum in the 70's. The concern at first was seen as a purely conservationist movement and later it was seen as an issue of development and sustained development at that. It reached global dimensions by 1972 when the Stockholm Conference on the Human Environment was held. By 1972 the purely conservationist movement, which was much more concerned with scenic resources and threatened wild animals, was on its way out. There is no more proof to that than Art, 21 of the Stockholm Declaration, which reaffirms the sovereign rights of states to develop and use their natural resources.

As the problems of developing countries, particularly the least developed countries, of which the majority are in Africa on which Ethiopia is included, became a subject of deliberation and study, the vicious circle of 'poverty-environmental degradation-poverty' became recognised. In other words, in developing countries people are more dependent on natural resources, particularly renewable natural resources, than people in developed countries, and this dependence leads to resource depletion and degradation.

The depletion and degradation further intensifies poverty, leading to even more intensive depletion and degradation. Environmental degradation and depletion occur mainly due to anthropogenic impacts. Pristine nature existed before human interference. Obviously, when human numbers were few their impact did not exceed the carrying capacity of the natural resource base. As human numbers increased, however, there were less and less natural resources to be utilised on a sustainable basis, and an overexploitation and mining of resources had to occur in order to satisfy more and more people with less and less resources. The causes for this state of affairs are many and complex. Initially, there was a general feeling that the problems would go away with the popularisation and application of technical solutions, concentrating on physical conservation activities only. It took some time before it was realised that the problem could not be solved with technical solutions alone. Deep-rooted social, cultural, historical economic and political factors had to be examined to discover their impact as exacerbating factors of the degradation-depletion syndrome.

1). It is Environmental Forum **Series** No. 15 such deep-rooted factors that have led to the insupportable situation that exists today in sub Saharan Africa. The most important once among such deep-rooted factors are the following.

- 2). The impact of colonisation;
- 3). Unfair international trade practices;
- 4). Centralised systems of government which have also frequently been dictatorial and undemocratic;
- 5). Ideological competition;

6). Inadequate technological development and disruption of existing indigenous systems, knowledge, and technology;

7). Disruption of indigenous institutions; and

8). Problems in the system of resource tenure and lack of access to land and other natural resources.

Obviously all these factors are contrary to the current development paradigm of "people's empowerment". The concept of people's empowerment has a number of interrelated aspects and components which must be present for real empowerment to exist.

Major Environmental Concerns and challenges in Ethiopia

In Ethiopia the ecological crisis is deepening. It is deemed to be the result of misguided and unregulated modification of the Ethiopian environment, in particular the vegetation, soils and natural ecological processes. Increased human and animal population, whose livelihood is based on the use of natural resources, in particular renewable natural resources, has led to their fast depletion and serious degradation. Their exploitation has been and still is beyond their "self-replicating capacity". The use of unsustainable agricultural practices is also considered as one of the causes of this crisis. Since the livelihood of 85% of the population is dependent on natural resources (particularly renewable natural resources), depletion and deterioration of these resources has resulted in reduced agricultural productivity and subsequently in reduced quality of life of the people. In addition, drought has become more frequent. Since 95 % of the cultivated land is under small-holder peasant agriculture (average 1.5 ha), it is the cumulative impact of the actions of these land users that has eventually led to the degradation and depletion of these resources. As a result forest and wood land and, generally, biomass cover is shrinking rapidly, so much so that out of the now remaining 2.4 % of high forest 45 % is facing pressure from ever-expanding agriculture.

It is not only the need for agricultural land leading to land clearing which contributes to land degradation, but also the reliance on biomass for fulfilling household energy requirements. A 1984 estimate indicates that 94.8 % of total energy consumption in Ethiopia was made up of biomass fuels consisting of fuel wood, animal dung and crop residue. Fuel wood use makes up 81.8 % of these traditional sources, while animal dung and crop residue make up 9.4 and 8.4 %, respectively.

Mismanagement of Resources

Ethiopia's forests are being destroyed at an alarming rate and the area covered by forests at present is only 2.4% compared to the estimated 40% initial coverage. The primary causes of natural forest destruction are

agricultural expansion, both through shilling cultivation and the spread of sedentary agriculture, and the demand for increasing amounts of construction material, firewood and charcoal. Deforestation and poor land husbandry practices have resulted in accelerated run-off, reduction in the recharge of groundwater reserves, increased sediment load of rivers, siltation of reservoirs and increased incidence in the degree of flooding.

Drought, which has claimed the lives of millions of people and caused loss of millions of livestock, is another important environmental problem affecting 53% of the land area. Most of the highlands are highly degraded and, even in times of good rains, have not been food self-sufficient. Malnutrition, lack of safe drinking water and poor environmental sanitation are major health concerns in Ethiopia. Health services are also limited and reach only 46% of the population. As a result infant mortality and overall death rate are high, while average life expectancy at birth is 47 years.

Efforts at expanding the infrastructural and industrial base of the country have had negative consequences on the environment. The expansion of irrigation schemes have led to the spread of vector-borne diseases and the displacement of small farming and pastoralist communities. The recent growth of urban areas and industrial establishments has caused the deterioration of the environment). Lack of urban planning, absence of legally enforceable effluent standards and weak city waste disposal systems has worsened the situation. The extensive road construction activities in rural Ethiopia have also contributed to soil erosion and loss of forest cover.

Biodiversity Conservation and Management

Like the resources in domesticated plants, the genetic resource of their wild relatives comprising genetic resources of medicinal plants, forest resources, microbial resources, naturally occurring plants and also wild animals have not been given sufficient attention and as a result there is continuous loss of biodiversity.

There are a number of protected areas (parks and sanctuaries) covering about 2.7% of the country, mainly focusing on larger fauna. However, these protected areas suffered severe damage during the war. The increasing demand for land is in conflict with biodiversity conservation. Land Resource Use Policy and Land Use Planning the absence of land use planning has often resulted in uncoordinated land development with conflicts among various government agencies. Living examples are the extraction of soda from Lake Abijata (protected area) and the development of a state coffee fall in in Sebeka (a priority state forest area).

The absence of land use planning has become the root cause of conflict between government and peasants or pastoral people who traditionally depended on the land prior to such developments.

Lack of Participation in Resource Management

Absence of popular participation in resource management has resulted in the rejection of government policies implemented from the centre, policies such as collectivization, villagization, and resettlement, campaigns for reforestation and soil conservation, and prohibition of tree cutting. In addition, the state sector land development efforts have been made with little, if any, consideration for the traditional users of the land. Examples include delineation of national parks in areas traditionally used by pastoralists and/or agro-pastoralists; development of large fuel wood plantations in areas of mixed small-holder agriculture; large irrigation schemes in dry season grazing areas of pastoral people's livestock and development of state falls in areas of smallholder agriculture.

Absence of Environmental Economics

The normally quoted measure as a country's output, the Gross Domestic Product (GDP), does not account for the depletion of national assets, the country's natural capital such as soil, forests, water, minerals, etc. In the economic appraisal of development projects, the costs of environmental and natural resource benefits forgone as a result of the projects' activities are rarely included in the calculations. For example, the opportunities lost with the loss of biodiversity at Abijata, where soda extraction takes place, and the livestock production forgone as a result of irrigation in the Awash Valley are not considered in Ethiopia's developmental activities

Environmental challenges

Population growth and economic development are contributing to many serious Land/soil degradation environmental problems in Ethiopia. These include pressure on land, land/soil degradation, forests, habitat destruction and loss of biodiversity, changing consumption pattern, rising demand for energy, air pollution, global warming and climate change and water scarcity and water pollution.

Direct impacts of agricultural development on the environment arise from farming activities, which contribute to soil erosion, land salination and loss of nutrients. The spread of green revolution has been accompanied by over exploitation of land and water resources and use of fertilizers and pesticides have increased many folds. Shifting cultivation has also been an important cause of land degradation. Leaching from extensive use of pesticides and fertilizers is an important source of contamination of water bodies. Intensive agriculture and irrigation contribute to land degradation particularly salination, alkalization and water logging. It is evident that most of the land in the country is degrading, thus affecting the productive resource base of the economy.

Declining per capita forest land and agricultural land

The population growth has resulted in a downward trend in per capita availability of forest and agricultural land since the 1950s. Per capita availability of forests is much lower than the world average. It is estimated that in the worldwide perspective slightly over 1000 animal species and sub-species are threatened with the extinction rate of one per year, while 20,000 flowering plants are thought to be at risk (Compendium of Environment Statistics, 2000).

Water scarcity and water pollution

The use of fresh water increased rapidly. The amount of water available per person has declined in recent decades - primarily because of population growth and water scarcity is projected to worsen in the future. The water pollution in India comes from three main sources: domestic sewage, industrial effluents and run off from activities such as agriculture. Major industrial sources of pollution in India include the fertilizer plants, refineries, pulp and paper mills, leather tanneries, metal plating and other chemical industries. Levels of solid wastes increased in rivers and lakes and other water systems are also heavily polluted due to the intrusion of solid wastes.

Largely because of widespread pollution, access to safe drinking water remains an urgent need as only 70.1 percent of the households in urban areas and 18.7 percent in rural areas received organized pipe water supply and others have to depend on surface and ground water which is untreated.

POPULATION AND DEVELOPMENT

Among the most noticeable demographic features of Ethiopia are high rates of population growth, high fertility, and high mortality rates. According to the medium variant projections of the Central Statistical Authority (CSA), the population of Ethiopia is estimated at about 65.3 million in 2001. At the current estimated annual rate of population growth (about 2.7%), it is projected that the country's population will reach 73 million by the year 2005. Infant mortality rate was 97 deaths per thousand live births in 2000. It is estimated that Ethiopia had a life expectancy at birth of 52 years for both sexes in 2000/01.

Recognizing that population plays a decisive role in national and individual development, especially in terms of sustainable development, the Government of Ethiopia launched a National Population Policy in April 1993.

The objective of the Population Policy is to maintain balance between the size of the population and the country's resource base. To this end, the strategy will focus on high fertility rates, which in turn are strongly influenced the low education status of women and high infant and child mortality rates. On this account, the main

contributor to a reduction in the population growth rate will be an increase in girls education, as envisaged in the education sector program, as well as an increase in the level of mother and child health care provision, including family planning services.

The human population as a source of environmental degradation

According to Botkin and Keller (1998), the human population issue is the underlying issue of the environment because most current environmental damages result from the very large number of people on the earth, ultimately researchers cannot expect to solve the problem of environmental degradation without first limiting the total number of people on the earth to the amount the earth can sustain.

Changes in biogeochemical cycles

The complete pathway through which chemical element flow in the earth system is called the biogeochemical cycle. Taking the carbon cycle as a case study, carbon occurs as carbon dioxide in the atmosphere as organic compounds in plants and animal bodies, in coal and petroleum deposits and as inorganic carbonate in water rocks, shells and testes, etc. Human activity has led to an enhanced rate of input of carbon into the atmosphere which has caused a measurable rise in the concentration of atmospheric carbon dioxide. This is due to increased use of organic matter, coal, petroleum and natural gas as fuel and the combustion of carbonate rocks for the manufacture of cement and lime (Asthana, 2006).

While a small rise in the concentration of carbon dioxide in the atmosphere may have no effect on plants and animal, a high concentration of carbon dioxide in the atmosphere acts like a big blanket around the globe which obstructs loss of heat from earth surface, it will cause an effect like that of a green house in which the glass enclosed space gets heated up due to its insulation from outside environment. This effect is referred to as glass house effect or simply as global warming. Changes in the concentration of other elements such oxygen, nitrogen and phosphorus, etc., in difference to the naturally required concentration has lead to one harm or the other in the environment which either directly or indirectly affect the human health.

Environmental Sustainability: Population, Poverty and the Environment

Environmental sustainability is essential to achieving the Millennium Development Goals, especially poverty reduction. Changes in population size, rate of growth and distribution have a far-reaching impact on the environment and on development prospects. The largest population increases and the most fragile environmental

conditions are usually found in poor countries, which typically have limited financial means and least adequate political and managerial resources to address the challenges. This threatens sustainable development and produces further deterioration in living standards and quality of life. Environmental crises, including those brought on by changing weather patterns, have the greatest impact on the poor in developing countries.

Poverty and environmental stress

The majority of the rural poor have increasingly become clustered on low-potential land. This has resulted from a combination of factors that vary in importance from one country to another – land expropriation, demographic pressures, and intergenerational land fragmentation, privatization of common lands, and consolidation and expansion of commercial agriculture with reduced need for labour.

Demographic pressures, among others, continue to play an underlying role in the geographical, economic and social marginalization of the poor in most countries where there is a high incidence of poverty. Because they have been pushed or squeezed out of high-potential land, the rural poor often have no choice but to overexploit the marginal resources available to them through low-input, low-productivity agricultural practices, such as overgrazing, soil-mining and deforestation, with consequent land degradation.

Human-induced climate change is expected to negatively impact agricultural productivity throughout the tropics and sub-tropics, decrease water quantity and quality in most arid and semi-arid regions, increase the incidence of malaria, dengue and other vector borne diseases in the tropics and sub-tropics, and harm ecological systems and their biodiversity, according to the World Bank. In addition, the sea level rise associated with expected increases in temperature could displace tens of millions of people living in low-lying areas, such as the Ganges and the Nile deltas, and threatens the very existence of small island states.

Food and water security

Food and water security are becoming increasingly critical issues in many developing countries, especially where poverty and environmental degradation are endemic. People remain undernourished due to poverty, political instability, economic inefficiency and social inequity. Population growth is creating a demand for stepped-up food sufficiency.

While world food production is projected to meet consumption demands for the next two decades, long-term forecasts indicate persistent and possibly worsening food insecurity in many countries, especially in sub-Saharan Africa. The Food and Agriculture Organization of the United Nations estimates that to meet the needs of

the world's population in 2020, food production will have to double.

SUMMARY AND CONCLUSIONS

The outcomes of high population growth rates are increasing number of people below poverty line, an increasing population density, and pressure on natural resources. This review paper reveals that the country's population growth and poverty is imposing an increasing burden on the country's limited and continually degrading natural resource base.

The natural resources are under increasing strain, even though the majority of people survive at subsistence level. It will increasingly difficult to satisfy the basic needs of a growing population even at present levels of consumption, and the situation will deteriorate progressively as the per capita consumption of resources increases. Population pressure on arable land contributes to the land degradation, thus affecting the productive resource base of the economy.

The increasing population numbers and growing affluence have already resulted in rapid growth of energy production and consumption in Ethiopia and this trend can only be expected to accelerate in the future. The environmental effects like air pollution and global warming are of growing concern owing to increasing consumption levels. However, environmental pollution not only leads to deteriorating environmental conditions but also have adverse effects on the sustainable development and health of people.

The considerable amount of both ground water and surface water contamination due to chemical fertilizers and insecticides in the country leads to various water borne diseases. The growth of population is a fundamental factor in its relationship to natural resources, environment and technology. To sum up, there is an urgent need to control population and poverty, conserve and protect natural resources and the environment for healthy human beings.

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