

Land, Forest, Wild Life, Biodiversity, Water and Soil Resources of Ethiopia and Their Problems

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ABSTRACT

Natural resources are basis of all living beings on our planet, while after the introduction of agricultural revolution the interaction of human and nature have adversely changed; on the whole the emergence of industrial revolution that accompanied with rapidly growing of consumption of these resources is causing for severe destruction to the nature, such as decrease fresh water reserves, fish stocks and forests; fertile land is being destroyed and species are becoming extinct. Resource consumption and material welfare are inseparably linked to global justice. For instance, resource rich countries like the United Arab Emirates, Kuwait, and Qatar are using revenues from their natural resource wealth to construct mega-cities and large-scale foreign investments. But contrary natural resources are becoming cause for conflicts and civil war for most African countries, because of the inverse association between development and natural resource. This means that abundance natural resources of Africa are becoming factor of economic stagnation and political instability rather than generating large revenues for government. The Ethiopian case is more or less similar to most African countries because of the poor management for natural resources. The aim of this paper is to review the land, forest, wild life, biodiversity, water and soil resource problems and the factors of poor management. According to the different researches which have reviewed in this paper the factor for poor management of natural resources in Ethiopia is related with how governments administer resource wealth and how the people use their natural resource revenues, with the right policies, institutions and knowledge.

INTRODUCTION

The obsessive link between human and nature have dramatically changed since the industrial revolution period of late eighteenth and early nineteenth century in some Western countries has increased the use of natural resources led to the depletion and degradation of natural resources^[1]. The degradation of natural resources is discussed in view of global trends concerning the achievement of the millennium development goals^[2]. Now a day's natural resource degradation is critically affecting the social, economic and environmental needs of the current generation and is feared to risk the future life all over the globe, moreover its impact is stronger in the developing countries^[3].

Africa is well capable of land and natural resources, including farmland, rangelands, forests, wildlife, minerals and others, yet its people remain among the poorest in the world because of most African natural resource related policies failed to integrate environmental and social concerns, thereby exacerbating inequalities, poverty and environmental degradation^[4]. Though, Africa has been a ground for experimentation on land reforms since the colonial period, but the changes in land use patterns have, in turn, resulted increased soil erosion, land degradation, overgrazing and deteriorating rangelands, deforestation, as well as land and resource-related conflicts^[4].

To have meaningful and sustainable development policies not only take into account economic concerns, but social and

environmental concerns as well, furthermore, policies should embody holistic, broad based and participatory approaches, to promote ownership and engender action by all, and for all ^[4].

In Ethiopia's natural resources, such as land, water, forests and trees are the foundation of any economic development, food security and other basic necessities of its people but unwise uses of natural resources and policy neglect over long period have created an increasing stress on our natural and environmental resources and decline in human welfare ^[5,6].

Understanding the dynamics associated with different types of land rights is crucial to any land reform efforts, particularly in identifying the most suitable types of reform processes to the undertaken natural resource conservation activities ^[4]. In many developing countries including in Ethiopia, land has been measured as an important economic and social asset where the status and regard of people is determined and also land is one form of property that is a subject of ownership or other form of use rights determine by policy ^[7].

The history of Land-Use Policy of Ethiopia has played a great role in the overall natural resource management and utilization of the country from 1434-1468 the first recorded indigenous conservation activity has carried. Definitely, this could be argued as the oldest conservation area in Africa, or at least the oldest formalized conservation effort on the continent.

Also, Minilik II of Ethiopia from 1889 up to 1913 has made effort to conserve natural resources with the introduction of conservation measure or plantation activities. Particularly since the 1970 various natural resource conservation effort has carried with formulation of policies and programs for land and natural resource management but almost all natural resources are under poor management and it has immense pressure ^[8]. The efficient, equitable and sustainable management of Africa's natural resources depends on land tenure, institutions and regulation of land and land resources; therefore, this work has emphasized on reviewing of natural resource of Ethiopia from the policy perspective.

MATERIALS AND METHODS

The methodology used for this work involves review of relevant reputable journals, research papers, research books and book chapters on problems of natural resources and factors of the problem in Ethiopia.

DISCUSSION

Land resource and the related problems

Land is an essential natural resource, both for the survival and prosperity of humanity, and for the maintenance of all terrestrial ecosystems. Land resource sometimes referred to as dry land, which is the solid surface of the Earth that is not permanently covered by water ^[9]. The vast majority of human activity throughout history has occurred in land areas that support agriculture, habitat, and various natural resources. In classical economics, land is considered as one of the three factors of production, such as capital and labor ^[10].

This resource is facing pressure that caused either directly and/or indirectly by the land tenure and property rights system, population growth, climate change, increasing income, urbanization, infrastructure development, food price and price elasticity of demand, bio-energy and land degradation, which generally classify as natural, socio-economic and institutional factors ^[11].

According to Mamuye ^[11], specifically the factors which affect land resources are high intensity of rainfall, steep slope, policy of land use, the nature of local markets, local institutions and organizations, population pressure, poverty, farmers' perceptions and attitudes to land management. Among the major factors of land resource problems that related with land policy is very crucial. There is no clear and universally applicable blueprint as to what an appropriate land policy should be it depends on socio-cultural and geographical variables that significantly differ from country to country even within one country ^[12].

Ethiopia is one of the largest countries in Africa with 1.106 million km². The Ethiopian geographical, ethnic and cultural diversity, radical transformation of power and historical background were a major part in hindering to form meaning full land reform and overall development, rather it resulted for different approaches in the land tenure system at the imperial, military and FDRE regime ^[7].

Land policy during the imperial regime / before 1975

The land tenure system in Ethiopia is varied from regime to regime or province to province due to diverse socio-political events that occurred in different parts of the country ^[7]. Land tenure system of Ethiopia before 1974 (feudal state) was one of the most complexes in the world and had not been thoroughly studied which had affected the economic development of the country ^[13,14].

The most commonly recognized tenure types are rist/kinship, private, church and state holding systems, where most of the land was controlled by the state and feudal lords, and in which citizens were using land under different tenure arrangements, which has brought several negative impacts on the natural resource ^[7,15]. Also, the size of land under Ethiopian Orthodox Church has never known with a reasonable degree of precision ^[14]. The system has led the local population of the areas to become landless and entered in to tenancy relationships with land lords.

Land policy during the derg regime

In 1975 the Derg formally abolished the monarchy and embraced communism as an ideology and announced its land reform proclamation No 31/1975 with formulation of all-Ethiopia peasants' association, prohibit the right to land transfer through sale, mortgage, lease and inheritance ^[7,16]. During the reform the peasants have got opportunity to participate in local matters by permitting them to form associations under the slogan "Land to The Tiller", in contradiction the policy dissatisfied and ended up in owning the land itself (state ownership) ^[6].

Also, the policy and development programs have several problems, such as threat of fragility of local resources particularly water and grazing land, drought and famine and the spread of communicable diseases and pests caused by resettlement and villagization ^[6,16].

Though, the military regime was relatively better in the effort of planting more trees than the imperial regime the problem of resource destruction has continued, particularly forest loss has continued unabated initiated by the government itself through the expansion of coffee and tea plantation, resettlement and villagization activity ^[15].

Land policy during FDRE Regime

The natural resource policy article 40 of the 1995 constitution of FDRE provided the right to ownership exclusively vested in the state and only usufruct/use rights to the people of Ethiopia ^[17]. Also articles 3, 51 and 52 states that land shall not be subject to sale, the federal government shall enact laws for the utilization and conservation of land and other natural resources and regional governments have the duty to administer land and other natural resources according to the federal laws ^[6,17,18].

Thought, the objective of state ownership of the land is reduce or avoid concentration of land in the hands of few people, the eviction of poor peasants, landlessness and rural-urban migration of people, the programme has faced challenge from experts and scholars, Western economic advisors, international organizations such as the World Bank and opposition political parties favor private ownership, because land tenure insecurity in Ethiopia was indirectly continued and causing for environmental degradation ^[19,17].

Forest resources and its problems

Forests are environmental goods that provide many other goods and services to human being and natural systems, such as wood, food, feed, fiber, aesthetic value, regulate hydrologic and carbon dioxide cycle ^[20]. Ethiopia is ranked as the fifth largest floral country in tropical Africa which has diverse floral resources i.e., more than 6500 species of vascular plants with 625 endemic species and 669 near-endemic species, and one endemic plant genus ^[20]. In the early 1990s, the share of forest resources to GDP was 2.5 percent, while its share from the agricultural sub-sector was 5.5 percent ^[21].

According to Ministry of Natural Resources and Environmental Protection of 1993 around 28 percent of the labor force employed in agriculture was employed by the forestry while the precious natural gift of resource are facing problem of forest loss ^[22]. Estimation of the Ethiopian Forestry Action Programme of 1993 has showed loss of forest has been from 150,000 to 200,000 ha annually, this is calculated to be 6% of the total existing natural forest if the trend continues all the natural forests in the country will be fully depleted within 15 to 20 years ^[23].

Particularly in the coffee forest area deforestation highly linking to historical events in certain time periods of governmental and institutional changes, insecurity of land tenure, resettlement programs, population pressure, agricultural expansion, lack of alternative energy source, economic factors and poverty ^[21,22]. Mostly the socio-political factors that related with policies and laws of forest and land tenure security that lasted for a century in various regimes has significance result on the current forest resources ^[23].

Forest policy at different regimes of Ethiopia

Though, the first and oldest forest conservation efforts has started during the reign of Emperor Zerea Yacob from 1434-1468, comprehensive and modern forest legislative is enacted during Emperor Haile Selassie I in 1965 with the idea of conservation and identification of location of forest resource in the country with different proclamation ^[21] such as

1. State Forest Proclamation No.225/1965, to conserve, protects, develop and utilize forests under State ownership.
2. Private Forest Conservation Proclamation No 226/1965 where forests, not owned by the State, as "Private forest"
3. Protective Forest Proclamation No. 227/1965 ^[24].

But the legislation and proclamations have caused for extensive deforestation, because large forests were under state ownership, and put severe restrictions on the use and management of private forests to most people, denying individuals rights of access to forests and little attempt to plantation ^[21]. In general, the centralized policies that do not involve the people affected the limited attempt of the imperial government to promote forestry ^[21,25].

During the Durg (military) regime from 1974-1991 forest and wildlife conservation and development proclamation was proclaimed and forest ownership were recognized by state, peasant associations and urban dwellers associations ^[21]. The

proclamation has brought some significant contribution to the forestry sectors via allocating more finance, trained human resources and creation of a relatively sizeable organization with the state or the community forest reform, the reform was never really accepted by the people as result as much as 60% of the conservation assets created during the military dictatorship may have been destroyed during the transition period that caused for power vacuum and turned the natural resources to open access ^[24-27].

The latest forest law was issued by the FDRE regime under the proclamation number 542/2007, which provided the development of forest conservation and utilization with recognizing state and private forests ^[28]. But the regulations and guidelines for implementing the policy are still lacking and the problem of forest destruction is continuing ^[21,29].

Wild life resources and its problems

Ethiopia has one of the most diverse mammalian faunas in Africa and the great attractions of its wildlife heritage; comparative to the neighboring countries, the sector has low contribution to the economic development ^[30].

In 1960 modern wildlife conservation movement has started following the Ethiopian participation in the 1962 Paris International Conference prepared by UNESCO on the issue of conservation of nature and natural resources, the Ethiopian delegates were requested assistance from UNESCO in the field of natural resources conservation ^[31]. After the request UNESCO has supported Ethiopian for the establishment of the first Awash National Park in 1966, after that period about 55 wildlife protected areas were designated with respect to the criteria of the IUCN management categories ^[31].

Parallels with the effort so far have done the loss of biodiversity is the common problem of the country due to ever increasing of population, land degradation, land use changes through agriculture, rural and urban development activities, increasing demand for fertile space and resource utilization, deforestation, poaching and illegal wildlife trade ^[30-32].

Biodiversity of Ethiopia and its problem

The topography and diverse climatic conditions of Ethiopia become suitable for the evolution and survival of various plant and animal species. As a result, the country is included in the list of biodiversity rich countries of the world, i.e. Ethiopia is one of the 12 centers of crop genetic diversity and the top 25 biodiversity-rich countries in the world ^[30].

But loss and decline of biodiversity are the major problem of Ethiopia that caused by a range of drivers, such as either natural or human-induced factor that directly or indirectly causes a change in an ecosystem. Direct drivers affecting biodiversity are land use and habitat change, climate change, invasive species, overexploitation and pollution and the indirect factors are global economic activity, global population, socio-political drivers, and culture conditions ^[33].

Moreover, the drivers such as policy and legislation implementation constraints, frequent restructuring of government institutions, socio-economic and bio-physical constraints, lack of full public participation in resource management, weak linkages among various disciplines, top-down planning approach and lack of professionalism take the first stage in the biodiversity loss ^[33].

For instance, the imperial regime has targeted its natural resource management like forest and wildlife was to increase government revenue through taxes from timber exports, payment for timber permits ^[25]. Similarly, the Derg regime has policy problems which caused for the loss of biodiversity; while the FDRE has strived to conserve the biodiversity resources of the country under the proclamation No.120/1998 which provide the establishment of the Institute of Biodiversity Conservation and Research, but still now the country rich source of biodiversity are underutilized and poorly managed due to the problem stated above in the form of direct and indirect.

Water resources of Ethiopia and its problem

The Ethiopian highlands are the source of many of the international rivers which is believed with a total volume of 109 billion cubic meters of surface water and about 2.6 billion cubic meters of ground water ^[27,34]. The water resource management policy of the country was issued in 1999 to enhance and promote all national effort towards the efficient, equitable and optimum utilization of the available water resource for significant socio economic development on sustainable basis. But the shortage of pure water and related problem is the common phenomenon of the country which is caused by siltation, salinity, water pollution and climate change ^[35].

According to Dubale ^[36] and Tenalem ^[37] the visible factors for water resource problems are, climate change, deforestation, lack of a sustainable and reliable management strategy, lack of reliable, standardized and continuously available water resources data, lack of institutional sustainability, weakness in the maintenance and operation of water resources infrastructure, poor implementation of environmental protection policy and the low level of research and development in the water sector.

The invisible factors are corruption, poor economic development, expansion of agricultural land, land insecurity, low level of harmonization of activities in the water sector with other development sectors, trans-boundary nature of many of the rivers in the country, weakness of project assessment & evaluation within the sector ^[36,37].

Soil resource and its problem

Various scientists have depicted that, soil is the skin of the earth, which is foundation of all the plant family, animal kingdom and human society directly or indirectly and it is regulator of the energy budget. Human beings need to obtain the natural ecosystem services like food, fibbers, construction material, clean air, water and regulated climate, but all of them are reliant of soil^[38]. According to Luuk et al.,^[39] soil are basis of food and other biomass (agriculture) production, habitat and genetic collection of various organisms, source of raw materials, filter for groundwater, transformation function and releases CO₂, methane and other gases in the atmosphere. It has an aesthetic, physical and cultural environment for humankind, scientific communication and carrier function and others^[39].

But this essential natural gift is in a great threat in Ethiopia, the major soil related problem of the country are soil erosion, salination, soils acidity and soil contamination or soil pollution^[40]. According to Kebede^[41], the source of all this soil related problems is limited involvement of farmers on soil conservation. Also, the high dependency on agriculture, lack of skilled experts in areas of natural resource management at all levels and unplanned development activities i.e. construction of road, mining and extensive commercial farming are other factors which lead to soil problems via severe loss of vegetation cover, cultivation on steep slopes and overgrazing^[42,43].

RECOMMENDATIONS

Prepare more flexible landholding system centered on providing security of tenure that takes into account a mixture of private, state and communal.

The resource conservation and property right policy must be governed by a socio-economic and environmental rationale that includes efficiency and equity considerations.

The land tenure policy, programmes and measures must give due attention to the land user point of view.

Ensure or including accountability to and accessibility of the local population to the natural resource.

Create conducive environment to encourage rural and urban land in view of their role in improving resource allocation, efficiency, productivity and mobility.

The government power transformation in the country need to be based on continuing from the strong side of the earlier government rather than starting from zero.

Control population growth and secure good administration.

Create a strong interaction of formal and informal institution in the effort of natural resource conservation.

Conflicting policies should be taken in to account especially commercial farming and resettlement programmes.

Establish strong and well-structured resource and environmental conservation institutions that can last long with different regime.

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