

## **Annex II: Environmental Analysis**

This environmental analysis presents an overview of the environment sector in Ethiopia and is largely excerpted from a broader and recent threats and opportunities assessment. It should be noted that Ethiopia is designated by the Africa Bureau as a low priority country for biodiversity and conservation funding. Analysis is required by Sections 118(e) and 119(d) of the Foreign Assistance Act, regarding Tropical Forestry and Biodiversity conservation, respectively. This analysis is designed to support the USAID/Ethiopia strategy statement and further support the priority-setting process of USAID/Ethiopia as it develops its future programming.

Ethiopia has the second largest population in Sub-Saharan Africa after Nigeria. Over eighty-five percent of Ethiopia's population live in rural areas and depend on natural resources for their livelihoods, economic development and food security. As nearly half of the current population is classified as undernourished, a continuation of resource depletion will have major implications on Ethiopia's ability to become food secure.

The greatest threat to biodiversity is the loss of habitat as humans develop land for agriculture, grazing livestock, draining wetlands and unwise use of pesticides. The most drastic damage has occurred in the natural high altitude forests and their biological resources that once covered more than thirty-five percent of the total land area of the country. The resulting deforestation and soil erosion will have major implications on Ethiopia's ability to become food secure.

In addition to unsustainable land management practices, there are also a number of institutional constraints which are reducing the effectiveness of biodiversity and tropical forestry in Ethiopia. For example, there is poor coordination among various organizations (government, NGOs, and international organizations) involved in natural resources management.

There are a number of actions that are necessary to conserve biodiversity and tropical forests in Ethiopia. These actions include:

- Improving protected area management;
- Providing assistance to communities living adjacent to protected areas;
- Improving resource management at the community level throughout Ethiopia; and
- Implementing institutional and policy reforms.

The Mission plans to take an integrated approach to economic growth that will likely have specific positive impacts on the conservation of biodiversity and tropical forests. In fact, the proposed integrated approach is much more likely to have measurable positive impacts on tropical forests and biodiversity than the more traditional approach which focuses primarily on specific protected areas. For example, farmers in the Gondar area or Northwestern Ethiopia are in desperate need of secure land tenure and access to agro-forestry technologies (technologies available within Ethiopia and other East African countries). The integrated and market-based approach to rural development proposed by the Mission is sound and positive impacts on tropical forests and biodiversity can be expected.

Specific planned actions under each of the Mission's Strategic Objectives (SO) are identified in the Environmental Threats and Opportunities Assessment (ETOA). For more discussion on how these actions will contribute to the conservation of tropical forests and biodiversity, please refer to Section IV of the Environmental Threats and Opportunities Assessment. In particular, there are a number of actions proposed by the Mission which will likely address many of the key threats to biodiversity and tropical forests. Some of these proposed actions are indicated below.

- Providing communities with access to improved agricultural technologies under SO 16 and Title II programs could have a positive direct impact on biodiversity and tropical forests by intensifying agriculture and reducing agricultural expansion into protected areas.
- Improving education and community access to contraceptives under SO 14 will likely reduce population growth in areas surrounding protected areas.

- Improving soil fertility and agricultural production under its SO 16 and Title II programs will likely prevent further encroachment on forested and uncultivated areas. Non-farm economic opportunities will also be created under SO 16 which will provide resource users with economic alternatives to unsustainable land use practices.
- Reforming Ethiopia's institutions and policies affecting tropical forests and biodiversity. For example, SO 16 is planning to provide assistance in the area of land tenure. Providing resource users with legal ownership of their land and trees is an important step towards the creation of enabling conditions necessary for resource users to adopt sustainable land practices.
- Improving the ability of community organizations to advocate policy reform and service delivery under SO 15.

As indicated above, the Mission plans to take an integrated approach to economic growth that will likely have specific positive impacts on the conservation of biodiversity and tropical forests. The Mission does not have a comparative advantage to address all of the threats and necessary actions to conserve biodiversity and tropical forests by itself. There is ample opportunity for the Mission to address many or all actions necessary to conserve biodiversity and tropical forests if it works collaboratively with other international donors and GFDRE institutions during the design and implementation of its programs.

### **Social, Economic and Political Context for Sustainable Natural Resources Management and the Conservation of Biodiversity and Forests**

The present methods of resource use and management are causing serious depletion of Ethiopia's natural resources. As nearly half of the current population is classified as undernourished, a continuation of resource depletion will have major implications on Ethiopia's ability to become food secure.

The greatest threat to biodiversity is the loss of habitat as humans develop land for agriculture, grazing livestock, draining wetlands and unwise use of pesticides. As human populations increase their encroachment on natural habitats, they are having a detrimental effect on the very ecosystems on which they depend. In Ethiopia, the most drastic damage has occurred in the natural high altitude forests and their biological resources that once covered more than forty-two million hectares--thirty-five percent of the total land area of the country.

The changes in agricultural production in Ethiopia over the past few decades pose the greatest threat to Ethiopia's genetic diversity. These agricultural changes include:

- Advances in agriculture and changes in land use;
- The preference of farmers for crops with give greater economic returns;
- The exploitation of the natural forests through agricultural expansion instead of agricultural intensification; and
- Natural calamities such as drought. (Institute of Biodiversity Conservation and Research, 1990).

### **Deforestation**

Deforestation has occurred in Ethiopia for 2,500 years and has reduced the original forest cover area from an estimated forty-percent to 2.2 percent of the country today. The total forest area of Ethiopia in 2000 was 4,593,000 hectares. Since 1990, there was a 0.8 percent reduction in total forest cover (World Resources Institute, 2004). The effect on montane areas has been particularly severe with a decline in the forested area from eighty-seven percent to nine percent in forests located over 1,500 meters (Ethiopian Wildlife Conservation Organization, 1999).

Deforestation and the associated land degradation threaten ecosystems for flora and fauna and thus the conservation of genetic resources. Ethiopia is an important regional center for biological diversity. A loss in biodiversity ultimately implies economic losses to Ethiopia and the world. In addition, the removal of

vegetative cover reduces the amount of carbon that can be sequestered from the atmosphere. As the growth stock of Ethiopia's forestry resource base is depleted, its value as a 'carbon sink' is reduced.

Although there are several reasons for the depletion of forest resources, the following are considered major:

- Increases in population and consequent increases in the demand for agricultural land, fuel wood as well as construction and industrial use;
- Settlements around forest areas;
- Forest fires;
- The expansion of large commercial farms in forest areas;
- The absence of a forest protection and conservation policy;
- The absence of a strong forest administration system capable of arresting the rapidly increasing rate of deforestation as well as controlling and preventing the disruption of the various ecosystems;
- Lack of effort to ensure the participation of communities in forest protection and conservation and the sharing of benefits; and
- Failure to clearly demarcate and enforce the boundaries of natural forest reserves (Environmental Protection Authority, 2003).

The impact of deforestation on agricultural production appears to be substantial. This is despite the fact that not all losses in agricultural production due to land degradation and soil erosion can be attributed to the diminishing forest cover. Earlier studies, such as the Ethiopian Highlands Reclamation Study of 1985, probably overestimated the production losses due to land degradation, but more recent studies confirm the seriousness of the situation.

According to a 1991 report of the National Conservation Strategy Secretariat the combined impact from soil erosion and the burning of dung and crop residues on agricultural yields resulted in foregone cereal production of about 100,000 tons in 1990. This is equivalent to one fifth of an average year's grain harvest and would have been sufficient to feed over four million people. To the average farmer the grain lost represented about twelve percent of his/her annual income. Production losses will increase as more cropland reaches the critical minimum soil depth at which productivity drops dramatically and production is no longer viable.

### **Soil Erosion**

In Ethiopia, up to 400 tons of fertile soil per hectare is lost annually from land with insufficient vegetation cover as well as from land where no effective soil conservation has been carried out. It is estimated that the amount of soil lost annually from wind and soil erosion is 1.5 to 1.9 billion tons. Forty-five percent of this soil loss occurs on crop farmlands and 21 percent occurs on overgrazed rangelands. The value of soil that was eroded in 1989 and 1990 only was estimated to have a monetary value of Birr 59 million (Environmental Protection Authority, 2003).

Soil erosion has several direct and indirect negative impacts. It has a direct impact on food security as degraded land reduces soil fertility and associated agricultural productivity. The accumulation of soil particles in water (siltation) also leads to water resources degradation. This can reduce the quality of potable water and reduce the life of water dams.

To combat soil erosion, traditional as well as modern soil conservation measures have been carried out in different parts of the country. For centuries communities in Ethiopia have been carrying out traditional soil conservation measures. Soil conservation measures that have been used to date include the construction of terraces, soil bunds, micro-basins, the protection of regenerating natural vegetation, and tree planting.

USAID/Ethiopia does not plan to establish an explicitly environmental strategic objective to target protected area management, biodiversity conservation, or tropical forest management. This decision was

made given the high priority for addressing critical issues relating to famine alleviation, food security, agricultural production, economic growth, health, HIV/AIDS and democracy and governance. However, SO16 does have a strong focus on natural resources through its Intermediate Result 3 entitled “Natural Resource Management and Agricultural Productivity Improved.”

Other factors contributing to the decision not to pursue an environmental strategic objective include the ongoing activities to enhance management of protected areas, tropical forests and biodiversity being undertaken by other bilateral and multilateral donors and NGOs, including European Union funding for national park rehabilitation, World Wildlife Fund activities in the Bale Mountains National Park, and support from Germany for the Adaba-Dodola Integrated Forest Management Activity.

However, USAID/Ethiopia recognizes the critical importance of preserving and preventing further damage to Ethiopia’s unique biodiversity treasures and dwindling tropical forests. Protection of these valuable resources is essential for the future prosperity and food self sufficiency of the country. Ethiopia’s position as the home of numerous land races for coffee, teff and a variety of other food crops only increases the importance of their preservation. It is also clear that addressing Ethiopia’s recurrent crises in agricultural production and promoting increased economic growth and improved health cannot be achieved without making investments to improve the natural resource base—including forests, biodiversity, watersheds and soil fertility.

### **Government, NGO and Donor Programs and Activities that Address Conservation and Sustainable Natural Resources Management**

There are a number of institutional constraints which are reducing the effectiveness of biodiversity and tropical forestry in Ethiopia. For example, there is poor coordination among various organization (government, NGOs, and international organizations) involved in natural resources management. Even the most basic information regarding the different natural resources management activities in Ethiopia is not available in one place. This lack of coordination and information sharing among implementation partners is not conducive to a collaborative effort in any sector.

The GoE has decentralized all management responsibilities from the central offices in Addis Ababa to the regional offices. While this is commendable at first glance, the new roles and responsibilities of the regional offices have not been made clear. In addition, the regional offices staffs have limited capacity to carry out their new management responsibilities.

A new forest policy is needed in order to clarify issues regarding the legal status of National Forest Priority Areas, community participatory management and benefit sharing. In addition, an effective institutional framework has not been established for the management of forest resources. Presently, the Ministry of Agriculture is the institution responsible for the management of Ethiopia’s forest resources. However, forestry is under represented and appears to a minor element within the Ministry’s broader agricultural mandate.

There appears to be a conflict between the GoE’s protected area management program and its interest in industrial development. There may be some cases where the GoE’s industrial processing activities are degrading its protected areas. Certainly there must be opportunities for industry and protected area managers to work together.

### **Actions Necessary to Conserve Biodiversity and Tropical Forests in Ethiopia**

The following are categories of priority action needed on the part of the development community as a whole.

#### **Improve Protected Area Management**

- Build the capacity of institutions now responsible for the management of protected areas. The capacity of the Ethiopian Wildlife and Conservation Organization’s (EWCO) management skills and capacity are weak at both the central and regional levels. The EWCO staff needs training in planning, protected area management and tourism development.

#### Provide Assistance to Communities Living Adjacent to Protected Areas

- Increase access to family planning services to limit expansion into protected and forested areas.
- Intensify agricultural production for communities living adjacent to protected areas.
- Increase off-farm income generating activities for communities living adjacent to protected areas.

#### Improve Resource Management at the Community Level throughout Ethiopia

- Use of wood for cooking and heating fuel and for timber is happening at an unsustainable rate throughout much of Ethiopia. Efforts must be made to improve local management of forests and to increase the planting of woodlots.
- Increased investments in improving soil fertility and agricultural production on existing farms is needed to prevent further encroachment on forested and uncultivated areas.
- Non-farm economic opportunities should be created to draw people into urban areas and away from a complete reliance on the natural environment for their livelihoods.

#### Implement Institutional and Policy Reforms

- Land Tenure. The land tenure system needs to be reformed to provide incentives for resource users to invest in their land over the long term.
- Forest Policy. There is not a clear forest policy. A new forest policy is needed in order to clarify issues regarding:
  1. Legal status of National Forest Priority Areas.
  2. Community participatory management and benefit sharing; and
  3. Identification and establishment of production and protection forests.
- Ineffective Institutional Framework. An effective institution has not been established for the management of forest resources.
- Institutional Coordination. There is poor coordination among various organizations (government, NGOs, and international organizations) involved in forest resource conservation and development programs. There is also a need for better inter-sectoral cooperation.
- Monitoring and Evaluation. Monitoring and evaluation systems need to be improved and coordinated.

### **SO Level Analyses and Comment**

#### **Strategic Objective 13: Capacity to Anticipate and Manage Through Shocks Increased**

SO 13 focuses on enhancing government and local crisis management capacity, strengthening integrated early warning and response systems, improving crisis management policies, and strengthening coordination mechanisms.

SO 13 will have a positive effect in addressing environmental degradation through the planned strengthening and integration of early warning and response systems to include monitoring of change in biophysical indicators such as on-farm and off-farm forest cover (suggested priority indicator), soil fertility, and plant and animal biodiversity. Accurate and timely information on the status of such natural resource indicators at the local level will help to inform policies and interventions for agricultural and economic growth assistance as well as for food aid.

#### **Strategic Objective 14: Human Capacity and Social Resiliency Increased**

High Impact Family Planning Interventions will have a positive effect on the environment by providing access to contraceptives which, in turn, should have a positive impact on population growth in target areas

of Ethiopia. In turn, a reduced population means a reduction in the need for basic resources such as timber, fuel wood, water and agricultural land. Decreasing family sizes will also reduce the need for increasing subdivision of land rights. When family plots are too small to sustain basic livelihood needs, pressures are increased to expand into previously uncultivated and marginal areas (where possible) and also to increase extraction of natural resources such as fuel wood for supplementing incomes.

Several comparative studies have demonstrated the positive and direct impact of improved primary education on increased use of family planning and improved prospects for economic growth. In particular, a focus on girls education under these activities will likely contribute to a reduction in population growth and hence reduced pressures on forests and other natural resources. Provision of secondary education and targeting girls in particular also leads to the acquisition of skills that can be used for obtaining off-farm livelihoods, contributing to economic growth, and increasing the adoption of improved agricultural production and resource conservation practices. Finally, efforts to improve the quality of teaching, enhance curriculum, and provide adult education opportunities are being planned with a specific focus on environmental education as a key curriculum for target areas. This should help to educate present and future natural resource users about impending threats to forests, biodiversity and livelihoods, as well as actions that can be undertaken to halt or reverse these trends.

#### **Strategic Objective 15: Capacity for Good Governance Increased**

Good governance is essential for the responsible management of natural resources. Historically weak governance structures in Ethiopia have contributed to the country's continuing vulnerability to famine, disease, and environmental degradation. Planned activities under the governance strategic objective will target increased government accountability, civil society capacity building, conflict prevention and resolution, and more effective female participation in governance. Many of these planned actions will have positive implications for the conservation of Ethiopia's forests and other natural resources.

#### **Strategic Objective 16: Private Sector-led Economic Growth and Resiliency Increased**

SO 16 will take an integrated approach to economic growth that will have specific positive environmental implications. The proposed integrated approach is much more likely to have measurable positive impacts on tropical forests and biodiversity than the more traditional approach which focuses primarily on specific protected areas. For example, farmers in the Gonder area or Northwestern Ethiopia are in desperate need of secure land tenure and access to agro forestry technologies (technologies available within Ethiopia and other East African countries). The integrated and market-based approach to rural development proposed under SO 16 is sound and positive impacts on tropical forests and biodiversity can be expected.

The Mission is supporting a number of activities under its Title II program that are contributing to the conservation of biodiversity and tropical forests. For example, World Vision is implementing an activity entitled Boku Catchments Area in the Amaadama Woreda (District). The objective of the activity is to conserve natural resources in the catchment area. This is being accomplished through the provision of training and the establishment of soil conservation measures (e.g., terracing, check dams, soil bunds, and tree planting). The activity has also developed a management plan for the catchment area. The plan includes the identification of land use zones.

Some of the specific initiatives likely to have a positive effect on the environment include: support for land tenure policy, use of productive agricultural inputs, support for community based micro water-shed management, the creation of off-farm economic growth opportunities, and sustainable land management policies for pastoral areas.

#### **Program Support Objective 17: Knowledge Management Coordinated and Institutionalized**

Knowledge management involves organizing information and experience to facilitate good decision-making. Through these efforts, positive effects on the environment can be expected. Environmental decision-making cannot happen if good knowledge management systems are not coordinated, institutionalized, and in place. PSO 17 will continue to develop its capacity to use GIS mapping as part of

its knowledge management strategy. This approach is likely to have positive effects on environmental decision making capacity.