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FORUM FOR SOCIAL
STUDIES (Addis Ababa)

(Environment and
development in Ethiopia)

ENVIRONMENT AND DEVELOPMENT
IN ETHIOPIA

*Proceedings of the Symposium of the
Forum for Social Studies
Addis Ababa, 15 - 16 September 2000*

*Edited by
Zenebework Tadesse*

Forum for Social Studies
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The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of FSS or its Board of Advisors.

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Addis Ababa 2001



Table of Contents

Preface -----	i
Welcoming Address -----	1
<i>Dessalegn Rahmato</i> <i>Forum for Social Studies</i>	
Opening Statement -----	3
<i>H. E. Ato Girma Birru</i> <i>Minister of Economic Development and Cooperation</i>	
Agro-Biodiversity and Food Security in Ethiopia -----	7
<i>Melaku Worede</i> <i>Genetist, Biodiversity Specialist</i> <i>Winner of Alternative Nobel Prize</i>	
Assessment of the Environmental Policy of Ethiopia -----	17
<i>Gedion Asfaw</i> <i>Head of Conservation Strategy of Ethiopia</i> <i>Environment Protection Authority</i>	
Sustainable Development Indicators and Environmental Policy -----	40
<i>Getachew Adem and Demele Yismaw</i> <i>Ministry of Economic Development and Cooperation</i>	
Indigenous Conservation Practices in North Shewa Administrative Zone, Amhara Regional State -----	87
<i>Million Alemayehu, Conservation Specialist</i> <i>Ministry of Agriculture, North Shewa Zone</i>	
Gender and Natural Resources Management -----	100
<i>Bogalech Alemu, Gender Specialist</i> <i>Women's Affairs Dept.</i> <i>Ministry of Agriculture</i>	

Common Property Resource Management: A Real Solution for Environmental Management in Ethiopia -----	107
<i>Eyasu Elias and Pippa Trench</i>	
<i>Soil Scientists, SOS-Sahel</i>	
Managing Forests As Common Property: Collaborative Forest Management in Ethiopia -----	119
<i>Ben Irwin</i>	
<i>Field Manager, SOS-Sahel</i>	
Problems of the Urban Environment -----	133
<i>Amanuel Malifu, Urban Environment Specialist</i>	
<i>Environmental Protection Authority</i>	
Experiences of Selected NGOs in Natural Resources Management in Ethiopia -----	157
<i>Ginjo Giya</i>	
<i>Graduate Student, Addis Ababa University</i>	
Environmental Protection and Mass Communication in Ethiopia -----	179
<i>Laeke Mariam Demessie</i>	
<i>Environmental Journalist</i>	
Lem, the Environment and Development Society of Ethiopia: the Society's Contribution to Environment and Development -----	203
<i>Mogues Worku, Lem Ethiopia</i>	
Environmental Advocacy: The Experience of Forum for Environment -----	207
<i>Asferachew Abate</i>	
<i>Forum for Environment</i>	
SYMPOSIUM SCHEDULE -----	215
LIST OF PARTICIPANTS -----	218

Preface

The Forum for Social Studies (FSS), an independent, non-profit research institution, hosted a public symposium on *Environment and Development in Ethiopia* on Friday and Saturday 15-16 September 2000 at the Ghion Hotel. Participants at the symposium included government officials and policy planners, civil society organizations, environmental advocacy groups, the business community, professionals and academics, donors and international organizations, and the state and private media.

In this country, environment change directly affects the livelihoods of millions of land users as well as the health and well-being of all citizens. The issue, which started being addressed by the Derg, is now being pursued by the present government, whose environmental policy is largely based on the following assumptions (a) the massive removal of the vegetation cover of the land has been going on for centuries, and land degradation has now reached catastrophic proportions; (b) land degradation and the reduced carrying capacity of the land is due to population pressure; (c) the most effective way of arresting environmental degradation is employing imported conservation technology on a large scale.

We now believe it is important to *reconsider* these assumptions in the light of our own experience which spans more than three decades and the evidence from other countries in similar circumstances. Accordingly, the symposium focused on the following areas: (a) indigenous environmental protection and the hitherto neglected area of women's contribution in this respect; (b) the link between population growth and environmental change (does population pressure necessarily lead to environmental degradation?); (c) issues of common property resource management; (d) assessment of current environmental policy, its strengths and weaknesses; (e) public awareness about environmental conservation and the role of the mass media in promoting such an awareness; (f) civil society and environmental advocacy; and (g) issues of urban environment.

FSS hopes that the studies included in this volume will help stimulate greater public concern about the environment and sensitize decision-makers about the complex nature of environmental change and the need for sound and sustainable conservation programs.

Zenebework Tadesse

Welcoming Address

Delivered by Ato Dessalegn Rahmato

**Your Excellency
Distinguished Guests
Ladies and Gentlemen**

On behalf of the Forum for Social Studies I would like to welcome you to this symposium. We are honored to have with us this morning H. E. Ato Girma Birru, Minister of Economic Development and Cooperation, who has graciously consented to deliver the opening address. This is the sixth public debate our organization has hosted so far. The subject of the symposium, *Environment and Development*, is of deep concern to us all. In this country, environment change directly affects the livelihoods of millions of land users and the health and well-being of all citizens.

Environmental degradation has long been a major problem in Ethiopia but it was not seriously addressed until the latter half of the 1970s. Considerable loss of the country's forest cover, topsoil, water resources and bio-diversity has been taking place in the last six to seven decades due to a variety of factors and policy problems. Furthermore, ill-advised state programs, especially in the 1970s and '80s, having to do with agriculture and rural development have contributed to the acceleration of the degradation problem. At that time and before then, the government's environmental advisors were foreigners who had little knowledge of local land-use and farming practices and who thus blamed the land-user for the recurrent environmental crises that brought suffering to a large portion of the rural population.

The debate on environmental change in Ethiopia has been going on in earnest since the 1980s when the previous government, the *Derg*, embarked on a massive program of conservation, based mainly on food-for-work schemes. The total food and non-food resources invested in the program from the mid-1970s to the end of the 1980s may well reach one billion US dollars, all of which was provided by Western donors. At the beginning of the 1990s, when the *Derg* regime collapsed, a good deal of the environmental assets created in those years were demolished.

It is hoped that the symposium will help stimulate greater public concern about the environment. The symposium will also enable FSS to identify key areas of research for further public debate on environmental change and policy. The outcome of debate in these two days will, we hope, help further sensitize decision-makers about the complex nature of environmental change and the need for sound and sustainable conservation programs.

Your Excellency, Ladies and Gentlemen:

This symposium has been a collaborative venture among a number of organizations. FSS and SOS-Sahel are the co-hosts. PANOS Ethiopia has provided valuable support. I would like to thank them all for their cooperation. I would also like to take this opportunity to thank the Ethiopian Environment Protection Authority, which has kindly agreed to participate fully and to present two papers for the symposium. I would also like to cite the cooperation of a number of environmental advocacy groups who agreed to participate in such short notice. Our thanks also go to the **JAPAN FUND FOR GLOBAL ENVIRONMENT (JFGE)** for providing generous funding for the symposium and the research project.

I will now call upon H. E. Ato Girma to deliver the opening address.

Thank you.

Opening Statement

*By H. E. Ato Girma Birru
Minister of the Ministry of Economic Development
and Cooperation*

**Distinguished Guests
Symposium Participants
Ladies and Gentlemen**

Let me express how pleased I am to have been invited to make an opening statement at this Forum addressing one of the country's most critical issues of development; namely, Sustainable Development and the Environment. It has long been recognized that there can't be sustainable development without giving adequate attention to environmental conservation and the judicious use of natural resources.

I do not wish to dwell much on the country's macroeconomic and sectoral policies. But I wish to start off by saying that the incumbent Government and its predecessor, the Transitional Government of Ethiopia, have, in the past few years, taken a number of measures aimed at rehabilitating the country's economic and social infrastructure and laying the foundation for sustainable development.

Let me now briefly point out some of the measures taken in the area of environmental conservation

Conservation and sustainable development of the environment is one of our major development strategies, which is elaborated in a number of our policy documents. The first five-year Peace, Democracy and Development Program, adopted by the Government in power for the last five years, has devoted considerable attention to the conservation and development of the Environment.

During the last five years both the Federal and Regional Governments have directed their attention to mobilizing the rural population on a wide scale to undertake soil and water management projects covering over a million hectares of land in vulnerable areas of

the country. Similarly, nearly half a million hectares of land has benefited from the afforestation program underway in the various Regional States.

The overall goal of our environmental policy issued in 1997 is: "to improve the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of natural, human-made and cultural resources and the environment as a whole so as to meet the needs of the present generation without compromising the ability of future generations to meet their own needs."

With the generous assistance of international donors, a project entitled Development of Conservation Strategy of Ethiopia has also been undertaken in the past five years. The achievements of the project include:

- the development of the Federal Environmental Policy;
- the development of Regional conservation strategies; it is worthwhile to note here that two Regional States have already approved strategies, whereas the other States are in the final stage of preparation of their strategy documents;
- carrying out awareness enhancement programs for professionals and decision makers of the Federal and Regional State Governments.

With the policy and strategies in place, the next step is to fully and effectively integrate environmental concerns into the development process. To contribute towards this goal, the Ministry of Economic Development and Cooperation is currently preparing a document which, it is hoped, will serve as an environmental guideline in the planning and design of development projects.

Distinguished Participants:

I would like to emphasize here that environmental protection is not an activity of one or two institutions. It calls for the concerted action of all government and non-government organizations as well as the general public, both in their organized and individual capacities. The starting point for action is the creation of adequate awareness among all the urban and rural population. I should also hasten to add that

awareness creation and practical action to protect the environment are not activities that should be undertaken in two separate stages. We have no time to engage in such leisurely pace. We need to tackle both simultaneously. While we disseminate knowledge of best practices to as many citizens as we can, we should also at the same time mobilize millions of our people to protect and develop their soil, forest and water resources.

Formal education, important as it is in its role of equipping people with the basic scientific facts of life and the techniques to think systematically, has not been expanded in pace with our needs. However, we should not be limited to formal education as a means to disseminate an already existing global knowledge and best practices of arresting the degradation our environment and work towards its regeneration.

Thousands of our rural households recognize the importance of good soil and water resources in enhancing productivity of agriculture. It is not within the capacity of individual households alone, however, to mitigate the negative impacts of soil erosion, deforestation and poor water resource management. It requires the concerted action of hundreds of thousands of our population.

Distinguished Participants:

It is my fervent hope that this Forum would serve as a vehicle for all of you to engage in constructive exchange of ideas and views and share experiences that would, in turn, serve as an input towards shaping future development strategies and programs.

Having said this, I would like to take this opportunity to express our Government's continued commitment and support to such initiatives and to all those who devote their valuable time and energy in addressing our cherished vision of creating a firm foundation for sustainable development for Ethiopia.

**Distinguished Guests,
Distinguished Participants,
Ladies and Gentlemen:**

As I come to the end of my statement, I would like to thank the Forum for Social Studies for creating this Forum to make it possible for

policy makers, development practitioners, academics and donors to share their experiences and, in the process, raise public awareness of environmental concerns.

Finally, wishing you all success in subsequent deliberations, I now declare the Symposium on Environment and Development in Ethiopia officially open

Thank you!

Agro-Biodiversity and Food Security in Ethiopia

Melaku Worede

ABSTRACT

In Ethiopia, a region representing a major world gene center, the various traditional agro-ecosystems constitute major in situ repositories of crop and animal diversity. Effective use of this invaluable resource promotes diversity of diet, source of income, stability of production, reduced pest and disease incidence and a safe and sustainable environment. This is especially true for resource-poor farmers practicing agriculture under low input conditions in marginal environments.

There is also a serious threat of losses of diversity which requires major inputs to protect and sustainably utilize it. Farmers' varieties, largely represented by indigenous landraces, are among those suffering such losses. Developing ecologically and culturally based agricultural practices that raise land productivity while conserving and restoring the resource base is critical to ensure long term food and livelihood security of Ethiopia's rapidly growing population. This need becomes more significant as land holdings are becoming smaller and environments are degrading in the small scale farming sector. There is a unique opportunity for intervention in this regard through a farmers' seed promotion strategy which may draw on the experiences in Ethiopia, and other places in Africa.

Introduction

Agricultural biodiversity refers to the broad variation of genetic resources, plant and animal species (including domesticated and 'wild' crop plants and animals, insects, soil organisms, etc.) and agro-ecosystems. Ethiopia is globally recognized as a major center of such diversity, and a primary center of domestication and diversification for some 38 crops (Thrupp *et al.*, 1998). It possesses a rich diversity of genetic resources of pulses, linseed, chickpea, cow pea, niger seed, mustards, sorghum, rape, *ensete*, *tef*, coffee and other cereals such as millet, barely, and wheat (Worede and Mekbib, 1993). Farmers' landraces and their wild relatives are valuable for crop improvement.

Most of this crop diversity is found in small fields of peasants who, aided by nature, have played a central role in the creation, maintenance and use of this invaluable resource.

Agricultural development in Ethiopia, as in most other developing regions, has concentrated on the transfer of high-input technology from the North. The traditional agriculture systems, which are the product of centuries of accumulated experience of peasant farmers, are considered incapable of boosting productivity to feed the country's rapidly growing population. But the merits of modern farming methods are being challenged from the viewpoints of environmental and social considerations, and in meeting the challenge of sustaining food and livelihood security in Ethiopia. It is also now being increasingly realized that traditional varieties of crops which represent the basis for sustained productivity in traditional agriculture have the potential for increasing their productivity without losing the diversity inherent in such materials (Worede *et al.*, 1999).

In this brief review, an attempt is made to discuss the importance of diversity for sustainable agriculture in Ethiopia, threats of genetic erosion and the potential as well as the need for improving national food security while safeguarding the existing resource base in the midst of technological innovation now in progress in the Country.

Diversity – Key to Sustainable Agriculture

Ethiopia's fields, seed stores, household patios and common grazing areas are the cradle of tremendous biological wealth which exists in the form of diverse crop varieties, uncultivated food plants, domesticated birds, and livestock breeds and other resources. The Ethiopian Region is the place of origin for several important crops which have been shaped by farmers over millennia to fit the requirements of often harsh environments. The existing diverse production niches provide tremendous opportunities for growing a wide range of crops and peoples preferences for different crop characteristics and products.

Cultural and biological diversity are inextricably linked in the country. Local farmers translate their deep understanding of different plants and animals, or the general biology of their surroundings and use of these resources, into farming systems that are closely adapted to their own circumstances. Ethiopian farmers maintain a broad range of crop

types and their cultivars to adjust to new, changing conditions, including market demands.

Wide use of these materials promotes diversity of diet, source of income, stability of production, reduced pest and disease incidence and efficient use of labor. The existence of such diversity, with its highly varied and diverse growing conditions, has a special significance to the maintenance/enhancement of productivity of agricultural crops in Ethiopia. It also allows farmers to exploit the full range of highly differentiated microenvironments that are typical of most farms, due to differences in soil, water, temperature, altitude, slope and fertility.

Threat of Losses to Diversity

The existing diversity, particularly the primitive and wild gene pool, is presently subject to serious genetic erosion and irreversible losses. The threat, which involves the interaction of several factors, is progressing at an alarming rate. The most crucial ones include displacement of indigenous landraces by new, genetically uniform crop cultivars, changes and development in agriculture or land use, destruction of habitats and ecosystems, and drought. Food insecurity in rural communities in Ethiopia can, therefore, be traced in part to the breakdown of this biodiversity based production system.

The drought that prevailed in the various regions of Ethiopia has directly or indirectly caused considerable genetic erosion and, at times, has even resulted in massive destruction of both animals and plants. The famine that persisted in some parts of the country has forced farmers to eat their own seed in order to survive or to sell seed as a food commodity. This often resulted in massive displacement of native seed stock (mostly sorghum, wheat and maize) by exotic seeds provided by relief agencies in the form of food grains (Worede, 1991).

The extent to which the displacement of native seeds by exotic/improved materials occurs has not yet been fully documented. This would also vary between regions and crops. In many cases, farmers still plant their landraces, interchangeably with introduced seeds or alongside each other, at times in mixtures, depending on their particular need, market demand, or other prevailing situations.

Genetic resource activity already represents a major national effort that the Ethiopian Plant Genetic Resources Center (PGRC/E), now

the Ethiopian Biodiversity Conservation and Research Institute (EBDCRI), has undertaken systematically over the past 22 years to protect, develop and effectively utilize the country's existing biological resources. The existing options pose a serious challenge to the country requiring major inputs in terms of technical know-how and material. There is also a unique opportunity to salvage and sustainably utilize farmers' varieties (landraces) through a complementary approach involving farmer-based activities and ex-situ (off-farm) conservation in genebanks.

The challenge

Ethiopia is indeed confronted with the dilemma of producing enough food for its rapidly growing population on the one hand, and protecting the resource base upon which this is dependent on the other. Maintaining a sustainable balance between these two has been a major challenge for the country which at present is also adapting the Western model as one way to increase its food production

In other developing regions, particularly in Asia, food production has increased dramatically over the last 25 years, mainly due to advances in high external input and monoculture-based farming practices known as the 'Green Revolution'. The major factors that contributed to the dramatic rise in yield and cropping intensity were increase in irrigation, the availability of adapted, high-yielding varieties of seed and the use of chemical fertilizers which, according to Islam (1989), account for a seventy-six percent increase in rice production alone in Asia.

The Green Revolution has been heralded as a major political and technological breakthrough of our time, and has consequently been a highly tempting proposition for other developing regions, including Ethiopia, where food deficits have been a critical issue (Biot 1990):

- ◆ demand for food is increasing rapidly;
- ◆ present food production per capita is decreasing rather than increasing;
- ◆ the amount of under-unutilized land available for expansion of agricultural production is limited;
- ◆ the land presently utilized is intrinsically not very fertile and is losing its fertility rapidly to a wide range of degradation processes such as soil erosion.

But despite the highly acclaimed role played by such technology, Green Revolution technology, like any other monoculture-based agricultural system, has serious limitations. Standardized agricultural technologies of the Green Revolution have displaced or undermined complex and diverse cropping practices in many parts of South Asia (Shiva, 1991; Biot 1990; Voss, 1995). While playing a role in meeting urban food demands, the agro-industrial model is exacting a toll on the land, people and economies of rural areas through increased fertilizer and pesticide use, rapid depletion and contamination of ground water, salinization and abrupt decline in soil organic matter. The improved varieties of food crops have in most cases failed to yield significantly more per unit area than traditional varieties when managed under the common conditions of marginal farms. Meanwhile, farmers have lost access to locally adapted varieties that are more effective at resisting pests, disease and drought and yielding something of value on poor soils. The other diverse foods associated with traditional mixed cropping, intercropping and crop rotation practices have also been lost. As a result, an increasing number of rural communities are food insecure and dependent upon uncertain income from a narrow range of commercial crops.

In a global context, scientific advances in enhancing the productivity of crops like maize, wheat, rice and the other dominant food crops of today resulted in the replacement of numerous minor cereals and millets, grain legumes, tubers, oilseeds and vegetables, which were grown and consumed in the past. Crop species diversity as well as varietal diversity started shrinking following the spread of irrigated and intensive farming systems. The fate of global food security today is linked to the performance of less than ten crops. The food security risk arising from this situation will increase if, during the coming decades, adverse changes occur in temperature, precipitation, sea level and ultraviolet B radiation as a result of changes in climate arising from the growing imbalance between carbon emissions and absorption.

With the advent of modern biotechnologies, or the use of transgenic crop plants, monocultures will spread more widely. This may aggravate the above mentioned problems. The major threats in this regard include the possible negative impacts on peasants' agro-ecology and the wider spread of vulnerable high-yielding varieties (HYVs) developed on a monopolistic basis.

Conclusions and Recommendations

The lessons drawn from Asia and other regions of the developing world suggest that major efforts to avert the development of the above mentioned situations in Ethiopia are crucial, and they should be designed with a main objective of helping peasant farmers to retain their diversity while improving productivity and to maintain freedom of choice over their planting material. There is indeed an outstanding need for some intervention to alleviate poverty arising from losses of resources which the communal or small-scale farmers in Ethiopia have been managing to secure their food and livelihood. A strategy is needed that enables the small-scale peasant agriculture to become more sustainable and a productive one. Developing ecologically and culturally based agricultural practices that raise land productivity while conserving and restoring the resource base is critical to improving the quality of life of farmers of potential target areas in the region. This need becomes more significant as populations are rising, land holdings are becoming smaller and environments are degrading in the small-scale farming sector. There is a unique opportunity for intervention in this regard through a farmers' seed promotion strategy which may draw on the experience in Ethiopia and other places in Africa (Worede *et al.*, 1999; Tessema, 1987).

There are also many gaps in knowledge of the genetic and social dynamics of traditional agro-ecosystems which call for extensive research on this subject, requiring the gathering of first hand community experience across the country. Linking the available indigenous knowledge-base with scientific know-how and technology is, however, critical to enhanced use and management of these resources.

Biodiversity-based production systems, when compared to conventional monocultures, have many obvious advantages: people's health is not affected by the use of pesticides; livestock benefit from the availability of more abundant crop residues associated with traditional crop varieties; soils are not depleted through nutrient mining; and some food is always available even in time of stress such as drought or untimely rains. Moreover, conventional measures of productivity that emphasize the yield of a single commercial crop may be misleading. They ignore the greater productivity per unit area obtained in mixed cropping systems involving many plant varieties (including 'weeds' used as food) together with animals and trees (Altieri, 1987).

Long-term stability of food crop production may be ensured by maintaining a wide array of landrace materials and cultivars which farmers traditionally maintain to adjust to new, changing conditions, including market demand. It is, however, essential that such materials are further developed with a view to enhancing their productivity as well as improving their competitiveness and, thus, provide Ethiopia's resource-poor farmers with a wider choice of planting material to meet their changing needs and requirements (Worede *et al.*, 1993; Feyissa, 1999).

This would call for measures to assist farmers with a comprehensive program of on-farm activities to develop a community based, sustainable seed supply system that includes multiplication, storage and promotion of locally adapted seeds in their competitive (enhanced) forms and improving/enhancing the traditional cultural practices of cropping systems with a view to promoting sustained production of food crops beyond the subsistence level. It is also crucial to encourage activities that would ensure the sovereign rights of farmers to the materials developed and produced on their farms, or to the benefits that might accrue as a result of improved market potential (national/international), thereby generating the financial resources needed to sustain crop productivity and improved livelihoods.

Identification of incentives and disincentives for growing various indigenous crop types and their farm-developed seeds (landraces) by farmers is also crucial. It would help promote the sustained use of a wide array of landraces by farmers to meet their diverse needs and farming requirements. Concurrently, it would also address the issue of a broader food base for Ethiopia's off-farm populations. Enlarging the food basket in this way will not only help improve the stability of food availability but also contributes to overcoming micro-nutrient deficiencies in Ethiopia.

Empowering farmers in this way has several important implications to peasant farmers whose livelihood is threatened, very often by interventions such as those imposed by programs that promote modern seeds and transfer of technologies that these farmers have to adopt, to the exclusion of any other options, or who receive no recognition as progressive farmers. Women farmers in particular may suffer, as such an intervention will in fact undermine their role as selectors and the wide use of materials that provide sustained income,

proper nutrition, socio-cultural and other aspects of farm life on which they play key roles.

Promoting the development, distribution and use of indigenous crop cultivars along these lines will provide a mechanism that will enable farmers to benefit from stable, more secured crop harvests and increased productivity that they eventually can sustain with minimal external inputs like commercial fertilizers and other chemicals. Support for the following farmer-based areas of activities may be crucial:

- ◆ research on and extension of agricultural methods that build on, rather than replace, indigenous agricultural practices;
- ◆ developing of varieties of important crops that have a wide genetic base combined to provide a robust crop suited to the specific situation where it is to be used, especially under the sub-optimal conditions found on small farms;
- ◆ activities to protect farmers' rights to own, conserve and use traditional seeds;
- ◆ the formation of community and farmers organizations which help strengthen rural livelihoods—the effective participation of local women in such organizations is essential to ensure a strong household food security impact.

Success in implementing such a program will depend largely on willingness to learn from farmers, the living repositories of indigenous knowledge and, in no small measure, on close partnership and collaboration between scientists and framers. A synthesis between modern and indigenous knowledge will create a new knowledge base that is crucial to achieving enhanced management and use of existing resources (Worede, 1992).

Ethiopia is a signatory of the Bio-diversity Convention (CBD) and is, in fact, taking a leading role in the on-going discussions concerning the promotion and equitable use of Africa's rapidly dwindling, but still abundant biological resources. Assisted by the International Union for Conservation (IUCN), the country has been developing a comprehensive national bio-diversity conservation and use strategy and has just established a national policy guideline which,

among other important measures, supports community-based biodiversity conservation and use. This has important implications for any initiative to promote sustainable management and use of farmers varieties in the country.

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Assessment of the Environmental Policy of Ethiopia

Gedion Asfaw

ABSTRACT

The Environmental Policy of Ethiopia was approved on April 2, 1997 by the Council of Ministers. It took almost seven years to reach that stage. A little over three years after the approval of the policy, this paper attempts to assess the origins of the policy, the appropriateness of the issues identified, the policies recommended and their relationship with other policies. In this paper policy analysis and policy assessment are used interchangeably. The paper assesses the environmental policy by considering events leading to the policy, assessing the determined issues and policies, examining the assumptions upon which the policy is based, the intended and unintended outcomes and the dilemmas existing around the policy and ways of resolving them. Since the assessment is done for selected policy elements only, it is not a complete policy analysis. However, explanation of some of the important guiding principles and relationships of some of the policy elements with selected macro policies are briefly provided.

1. Introduction

The Environmental Policy of Ethiopia (EPE) was approved on April 2, 1997 by the Council of Ministers. It took almost seven years to reach that stage. The Conservation Strategy of Ethiopia (CSE), which treats 11 sectoral and 11 cross-sectoral issues, was the basis for the policy. The EPE consists of 10 sectoral and 10 cross-sectoral policies. This resulted from treating the issue of rangelands with land husbandry and the issue of science and technology with environmental research in the environmental policy document.

The purpose of the CSE documents was to assess the status and trends in the use and management of the resource base of Ethiopia, the formulation of policy and strategy framework which addresses the key issues which have been identified, and the development of a federal action plan and investment programme including legislative measures and management and operational arrangements for implementation. The

formulation process has been countrywide, multisectoral and participatory (CSE, Vol I, 1997).

2. Approach

Policymaking involves the strategic function of leadership and guidance and it shapes and identifies goals and objectives. Policies and the problems they are intended to address are, by their nature, not well defined. The prescribed solutions cannot generally be proven to be correct before application, and one cannot guarantee that the intended results can be achieved. It thus follows that their analysis is difficult and one can never claim to have conducted a correct, rational and complete analysis.

Policy analysis methods are as numerous as policy analysts. There are a number of approaches to policy analysis; they include policy analysis, policy assessment (PA), policy impact assessment (PIA), policy evaluation (PE) and policy vetting (PV). (see Box 1)

Each of the above has its own procedures for conducting the analysis and as to who should preferably do such an assessment. In this paper policy analysis and policy assessment are used interchangeably.

The author was involved in the formulation of the environmental policy, and it may be thus difficult to expect an independent assessment. On the other hand, the continuous presence of the author over the last ten years in the policy formulation process offers opportunities to make a realistic assessment of the policy in terms of procedures followed, roles of policy actors, and the impact of the policy on different populations. Since the approval of the policy, the author had the opportunity of travelling to all the regions and has held discussions with employees of government and non-government organizations and has participated in a number of workshops on the environmental policy. This and the basic reference materials used for the policy formulation, including various correspondences which relate to the policy formulation and implementation process, were the major inputs in the preparation of this paper. The paper attempts to assess the environmental policy by considering the following areas:

- ◆ **Context:** events leading to the policy;
- ◆ **Definition and focus:** determining the issues and policies;

- ◆ **Assumptions:** assumptions upon which the policy is based;
- ◆ **Outcomes:** intended and unintended outcomes;
- ◆ **Conclusions:** dilemmas existing around the policy and ways of resolving them.

Box 1-Explanation of terms related to policy analysis

Policy Analysis is a process of identifying the issues inherent in, or related to, a policy statement.

Policy Evaluation (PE) is a process which continuously analyses and evaluates policies as they are planned and implemented in terms of the objectives they are designed to meet.

Policy Impact Assessment (PIA) is the process of assessing plans in terms of their unintended consequences.

Policy Assessment (PI) is a process concerned with assessing all intended and unintended outcomes of policies being planned, proposed, implemented or reviewed.

Policy Vetting (PV) is an in-house policy impact assessment with less procedural requirements

Source: F. Vanclay and D. Bronstein, 1995.

3. Context: Events Leading to the Policy

Three reasons which prompted the launching of the CSE process may be cited:

- ◆ It all started in the wake of the 1984/85 famine, when the horrors of the famine were still being felt. There was a consensus among the technocrats and politicians that environmental mismanagement was one of the central causes of famine.
- ◆ International organizations were also busy trying to find solutions to the problems of food insecurity and were running up and down to live up to the expectations of the Brundtland Commission's report 'Our Common Future'. Developing countries were being aggressively enticed to endorse and exercise a number of internationally driven strategic framework exercises (SFEs), such as the National Environmental Action Plan (NEAP) of the World Bank, National Conservation Strategies of IUCN, the Tropical Forest Action Plan of FAO, the UN National Action Plan to Combat

Desertification, etc. Some countries were wooed into simultaneously conducting two or more strategic framework exercises even when it was apparent that these SFEs had the same process and outcome. Some of the initiatives such as the World Bank's NEAP later became conditionalities for accessing loans of the Bank and IMF.

- ◆ The organization that initiated the CSE, *Zemecha Memria*, was a powerful entity that had the mandate to make decisions on such issues.

It can, thus, be concluded that the initiative to launch and conduct the CSE was a result of both internal and external pressures, with external sources providing the funding for the exercise. One doubts if the same level of funding would have come from government coffers to support the policy formulation process in the absence of external assistance.

4. Definition and Focus

4.1. Determining the issues

The most important step in a policy formulation process is the proper identification of issues that the policy is intended to address.

In the case of the CSE, the process of identifying and agreeing on the major environmental issues was arduous and time consuming. It included holding discussions with sample communities, carrying out zonal level assessments, conducting a series of workshops and conferences and undertaking a comprehensive literature review.

On the basis of the findings from such consultations and literature review a number of major problems were identified and subsequently outlined in the environmental policy as follows:

- ◆ Agriculture accounted for about 45% of GDP, 85% of export and 80% of total employment, and it has been the main source of the stagnation and variability of GDP growth caused mainly by policy failures exacerbated by recurrent drought, civil war, natural resource degradation and poor infrastructure;
- ◆ Deterioration to low level of productivity of renewable natural resources;

- ◆ Deforestation ranging from 80,000 to 200,000 hectares per annum, mainly as a result of rain-fed agriculture expansion;
- ◆ Burning of dung as fuel resulting in grain production loss of 550,000 tons per year;
- ◆ Accelerated soil erosion resulting in grain production loss of 40,000 tons per year;
- ◆ Destruction of pasture lands by soil erosion resulting in loss of 1.1 million Tropical Livestock Units (TLUs) in 1990;
- ◆ Low utilization of mineral, water and energy resources;
- ◆ Erosion of genetic diversity of domesticated plants, unique flora and fauna due to long history of disruptive interventions by the state, and weakening of local management in the face of an expanding population and increasing needs of agriculture;
- ◆ Insufficiency and very poor quality of current stock of urban housing and poor sanitation services in all urban areas;
- ◆ Threat to cultural heritage through neglect, decay, removal or destruction as well as through the less visible and tangible impacts of changing socio-cultural values, foreign ideas and imported technologies.

The following paragraphs briefly discuss the underlying causes and attempt to explain the significance of the identified issues, wherever possible, in quantitative terms.

Stagnation of GDP, Predominance and Decline of Agriculture: Economic growth has stagnated over many years; in fact, the per capita GDP has declined from 255 Birr in 1986/87 to 233 Birr in 1994/95. This is also tied up with heavy dependence on the agricultural sector, which has been negatively affected by policy failure, recurrent drought, civil war, resource degradation and poor infrastructure.

The predominance of agriculture by itself need not and should not be a problem if only agriculture as practiced in Ethiopia resulted in quality of life improvement for farmers and was able to feed the nation. The view that agricultural predominance is a problem emanates from the following:

- ◆ The people engaged in subsistence farming have stayed very poor, and one does not see any change in the quality of their life for decades;

- ◆ Subsistence farming has become hereditary and has persisted for generations with no sign of shift to modernization;
- ◆ Lack of technology has forced farmers to spend time on activities otherwise performed with less energy and time, thus occupying people who could otherwise be productively engaged in other development activities, assuming other conditions such as employment opportunities are available;
- ◆ Subsistence farming relies on extensive agriculture, which requires large tracts of farming and grazing land, thus contributing to deforestation.

Deterioration of renewable natural resources: The nation has continued using renewable resources, but it has not been able to efficiently and effectively convert and transform these resources into assets, goods and services. Soil resource in many parts of the country is losing its fertility due to erosion. Indigenous forest resource is being depleted at an alarming rate, and it no longer has the requisite environmental condition to regenerate. Our waters have been flowing out of the country at the rate of more than 100 billion cubic meters per year, without being put to use, taking with them some billion tons of fertile soil.

Burning of dung: Dung is by and large the most readily available source of energy for cooking in rural Ethiopia. Its value as fuel is more appreciated and recognized than its use as fertilizer. It has been estimated that the burning of dung for fuel instead of using it as fertilizer causes an annual reduction in grain production by some 550,000 tons. Assuming there were 8 million farming households in 1990, the loss to each household was about 0.7 quintal per year. The annual consumption of animal waste for fuel was estimated at 3,942 million metric tons or 13,798 Tcal. The average consumption per family, then, would have been 0.49 tons (490 kg) per year. The average price of 0.7 quintal of grain may have been between Birr 23 and 105 (CSA, 1989), depending on the type of grain, while 490 kg of dung may have cost over Birr 120. It was observed that, currently 1 kg of dry dung costs Birr 0.25 at Debre Berhan, Semien Shoa and Birr 0.50 in Addis Ababa. It thus makes economic sense to use dung for fuel rather than for soil conditioning. The labor required to prepare dung cakes for fuel rather than compost for fertilizer may have additional advantages. Another major factor influencing the use of dung for fuel is deforestation, which has made it increasingly difficult to get wood near rural villages.

Accelerated soil erosion: Soil erosion in 1990 has cost the nation an annual loss of grain production estimated at about 40,000 tons. The permanent loss in values of the country's soil resources caused by erosion in 1990 was estimated to be Birr 59 million (Environmental Policy, 1997).

The Amhara RCS indicates that soil erosion is greatest on arable land, and the average annual soil loss is estimated to be 42 tons per hectare with an estimated total of about 1.1 billion tons per year. The situation in Oromia and SNNP regions is pretty much the same.

The seriousness of the problem is obvious. Deforestation and poor farming practices, which cause soil erosion, are by and large behavioral issues. They require the understanding and sensitivity of policy makers and the full understanding and concern of farmers.

The CSA agricultural survey (1998) indicates that in 1997/98 there were 9.3 million agricultural households in the country, of which 6.4 million had 4 to 9 family members, 6.9 million (74%) were illiterate, and 86% had a landholding of 0.10 to 2 hectares. Of these 8.3 million (89%) were found in Oromia, Amhara and SNNP regions. These figures vividly show the sources of land fragmentation as they relate to household sizes, the problems associated with lack of education and low awareness level and the problems related to soil and land management, given the heavily fragmented subsistence holdings.

Low utilization of natural resources: Resource utilization in the country can be characterized as exploitative and destructive, in some aspects, and unacceptably low in other aspects. Not more than one percent of our water resource is put to use, which then only irrigates less than 4 % of the irrigation potential area, supplies domestic water supply to less than 30% of the population and does not generate power of more than 2% of the available potential. The mining sector's contribution is also minimal, accounting for less than 3% of the GDP in 1985 (CSE, Vol. I, 1997). Tourism's contribution is pitifully low when compared to the potential available and to that of neighboring countries.

Erosion of biodiversity: The policy blames the erosion of biodiversity on the long history of disruptive interventions by the state and the weakening of local management in the face of an expanding population and increasing needs of agriculture. It is interesting to note

the the negative role played by governments in the degradation of the country's biodiversity is cited as an underlying cause for this major environmental problem. Volume I of the CSE briefly treats the historical setting for environment and development in Ethiopia. It traces back the mismanagement of the Ethiopian environment to the prevalence of pillage, land tenure of the feudal system, alienation and denial of organization of the peasantry.

Deterioration of the urban environment: The level of urbanization is low in Ethiopia, currently at about 15%. The stock and quality of houses are very poor in all urban centers. Access to potable water supply and appropriate sanitation services is very low. The annual housing need over the past two decades was estimated at 77,600 units while the annual supply has been 6,000 units only. About 31% of the households in Addis Ababa have no sanitation facilities, while in other urban areas the proportion is about 48% (CSE, Vol. I). Migration from rural areas to all urban centers is increasing, with the resulting unemployment and the ever-increasing number of street children and beggars. Industrial pollution is increasing in and around Addis Ababa and some other urban centers.

Mismanagement of natural and cultural heritage: The CSE classifies Ethiopia's cultural and natural heritage into: **immovable** (historic buildings, archaeological sites); **movable** (ethnographic and traditional objects); **historical and spiritual heritage**; **traditional technologies and sport games**; and **natural heritages** (caves, endemic birds and plants). Due to shortage of skilled people, financial constraints and the unmanagable number of heritages all of the above are in real danger.

Major Issues, their sources, current and desired situation

Major issues in the early 90s	Perceived by who (1) Guarantor (2)	Current situation (3)	Perceived desired situation (4)
Stagnation of GDP, predominance and decline of agriculture (45% of the GDP, 85% of export, 85% of total employment) In bil. Birr Yr Ag Ind. Ser. 87/88 3.9 1.6 1.6 93/94 4.5 1.5 1.6 GDP per capita has decreased from 255 Birr in 1986/87 to 233 Birr in 1994/95	Decision makers and planners 2/CSE Planners 2/CSE	No change	Industry and service sectors growth E.g USA. Agri. 1.7% Services 75.4% Industry 22.9% GDP growth e.g In USA GDP per capita is Birr 226400. (1997) Real GDP growth was 2.4% 1990-96
Deterioration of renewable natural resources (land, water,	Planners, some members of the urban public	No change	Rehabilitated renewable resources to high level of

forest.)	2/CSE and various		productivity
Deforestation Rate 80-200,000 ha/yr	Planners, most members of the rural and urban public 2/CSE and various	No change	Decreased deforestation (increase alternatives)
Burning of dung Loss in grain production of 550000 tons/yr	Planners 2/CSE and various	No change	Decreased dung burning (increase energy supply, change in tradition and rural environment)
Accelerated soil erosion Loss in grain production of 40,000 tons/yr	Planners, some members of the urban and rural public 2/CSE and Various	No change	Decreased soil erosion
Destruction of pasture land Loss of 1.1 TLUs per year	Planners, some members of the urban and rural public 2/CSE and various	No change	Pasture lands rehabilitated
Low utilization of mineral resources Contribution to GDP less than 3%	Planners and some members of the urban public 2/CSE and various	Little change	Increased mining activities
Low utilization of water and energy resources Irrigation less than 5% Power less than 2%	Planners 2/CSE and various	No change	All irrigation and power potential exploited, full water supply coverage achieved
Erosion of biodiversity due to long history of disruptive interventions by the state and weakening of local management	Planners, most members of the urban and rural public 2/CSE and various	Little change	Conserved biodiversity Empowered people and democratic governance
Urban environment deterioration 77600 housing units annual demand, supply 6000 units	Most members of the urban communities 2/CSE and various	No change	Habitable urban environment (educated and enlightened municipal leaders and empowered citizens)
Mismanagement of natural and cultural heritage	Most members of urban and rural communities	No change	Well managed heritages

1. There was no survey done to assess who perceived or shared the same opinion on the appropriateness of the identified issues and are only the author's judgements. However discussions on the issues have been held with sample communities and other bodies.

2. Guarantor is a body who is an authority on the captioned information. It may be the planning authority or an individual researcher.

3. The current situation is the author's personal judgment. For some issues the judgement is backed by quantitative data.

4. The perceived desired situations are the author's assumptions.

Major Issues and underlying Causes

Major issues in the early 90s	Direct causes	Underlying causes	Policy response - sections in the environmental policy are indicated) Sections 4.1 to 5.3 are applicable to all
Stagnation of GDP predominance and decline of agriculture	♦ No alternative employment	➤ lack of education and skills ➤ land tenure policy	Sec. 3.1 (2)
	♦ recurrent drought ♦ civil war ♦ resource degradation ♦ poor infrastructure	➤ policy failure ➤ lack of appreciation for indigenous knowledge	
Deterioration of renewable natural resources (land, water, forest...)	♦ industrial pollution ♦ loss of soil fertility ♦ deforestation		Sec. 3.2 Sec. 3.8 Sec. 3.9
Deforestation	♦ agricultural expansion	▪ lack of alternatives	Sec. 3.2

	<ul style="list-style-type: none"> ◆ use for fuel and construction ◆ forest fire ◆ shifting cultivation 	<ul style="list-style-type: none"> ▪ lack of legislation ▪ lack of security of tree tenure 	
Burning of dung	<ul style="list-style-type: none"> ▪ available and convenient resource to use 	<ul style="list-style-type: none"> ▪ no alternative energy sources 	Sec. 3.2 Sec. 3.5
Accelerated soil erosion	<ul style="list-style-type: none"> ▪ deforestation ▪ farming practice ▪ climate and topography 	<ul style="list-style-type: none"> ▪ land tenure policy ▪ lack of incentives 	Sec. 3.1
Destruction of pasture land	<ul style="list-style-type: none"> ▪ soil erosion ▪ livestock number 	<ul style="list-style-type: none"> ▪ lack of state support ▪ loss of grazing areas 	Sec. 3.1
Low utilization of mineral resources	<ul style="list-style-type: none"> ▪ inadequate information in mineral resources ▪ no indigenous mineral end user industries ▪ insignificant participation of groups 	<ul style="list-style-type: none"> ▪ low capacity of private and government sectors 	Sec. 3.6
Low utilization of water and energy resources	<ul style="list-style-type: none"> ▪ low capacity in project implementation ▪ limited financial resources ▪ transboundary issues 	<ul style="list-style-type: none"> ▪ lack of irrigation policy and strategy ▪ lack of vision 	Sec. 3.4 Sec. 3.5
Erosion of biodiversity due to long history of disruptive interventions by the state and weakening of local management	<ul style="list-style-type: none"> ▪ low level of peoples participation ▪ religious and social taboos ▪ lack of support to enhance local management 	<ul style="list-style-type: none"> ▪ disruptive state interventions ▪ inept governments 	Sec. 3.3
Mis management of cultural and natural heritage	<ul style="list-style-type: none"> ▪ neglect ▪ removal and destruction 	<ul style="list-style-type: none"> ▪ low level participation ▪ shortage of manpower and finance 	Sec. 3.10
Urban environment deterioration	<ul style="list-style-type: none"> ▪ low rate of housing construction ▪ low water & sanitation services capacity 	<ul style="list-style-type: none"> ▪ low level of peoples participation ▪ low capability of municipal leadership 	Sec. 3.7

1. See Annex 1-Problem Tree for further reference to identification of causes and underlying causes.

2. The most direct relationship between major issues and the policy elements are indicated. It has to be noted that the same issue can be addressed by other policy elements also.

4.2. Determining the policy

Once the issues and problems were identified and agreed upon, it was a matter of repackaging these issues and rewording them into specific objectives of the policy. Sectoral and cross sectoral issues which were envisaged to meet these objectives were formulated along with what should be done under each issue. Common values, which are guiding principles and overall goals, were also developed.

The fundamental concern the policy aims to address is sustainable development, a complex concept which embraces such notions as meeting the needs of present and future generations through sound management and use of resources.

The overall policy goal is *to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of natural, human-made and cultural resources and the environment as a whole so as to meet the needs of the present generation without compromising the ability of future generation to meet their own needs.*

There is no denying that the policy goal is strongly influenced by supra-national concepts. For example, the elements of the Bruntland Commission's definition of sustainable development are apparent in the policy goal statement.

The Ethiopian environmental policy has substantially drawn from international initiatives, such as the UN Agenda 21 and the IUCN's Caring for Earth. It has, however, made a commendable attempt to adapt the principles contained in these sources to Ethiopian realities.

The essential elements of the policy goal are the following:

- ◆ improve and enhance the health and quality of life of all Ethiopians;
- ◆ promote sustainable social and economic development;
- ◆ sound management and use of the environment;
- ◆ meet the needs of present and future generations.

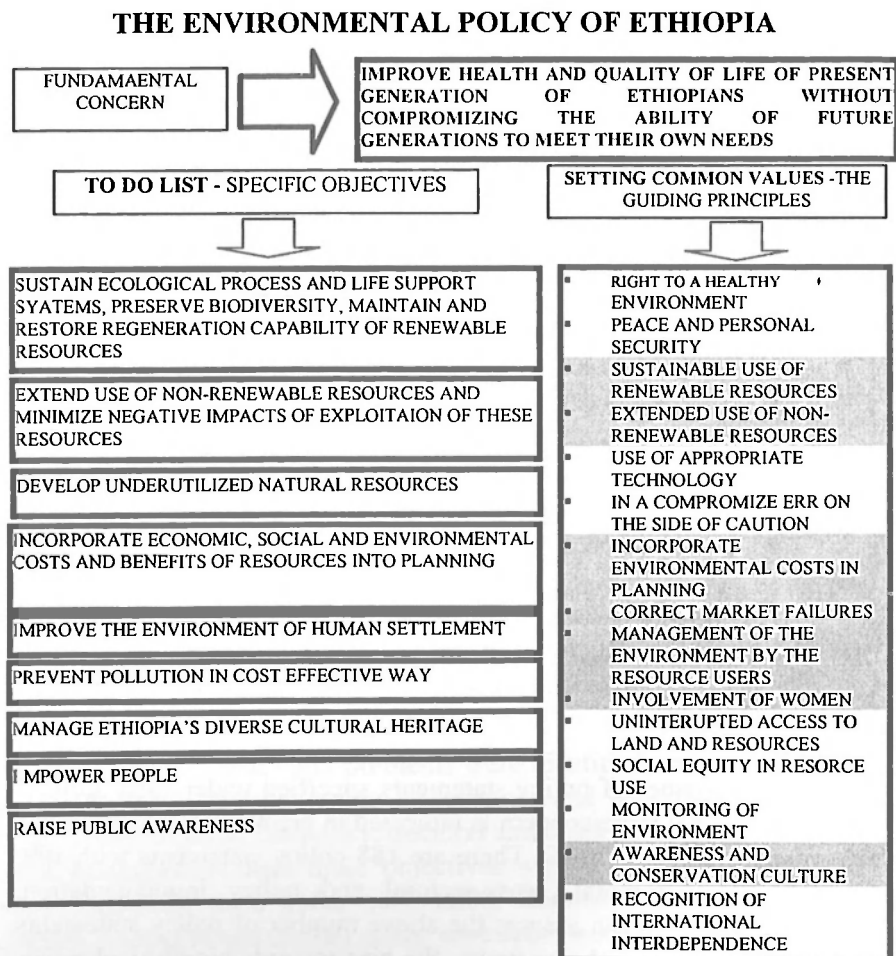
This is a major departure from the traditional and preservationist type of goal setting, which focused on preserving the environment. Here the focus is on improvement and enhancement of the health and quality of life of all Ethiopians.

The number of policy statements specified under each sectoral and cross-sectoral issue/concern is indicated in brackets in the schematic presentation on pages 28-29. There are 188 policy statements with 109, 61 and 18 for sectoral, cross-sectoral and policy implementation, respectively. If one can assume the above number of policy statements as indicators of comprehensiveness, the bias towards biophysical issues

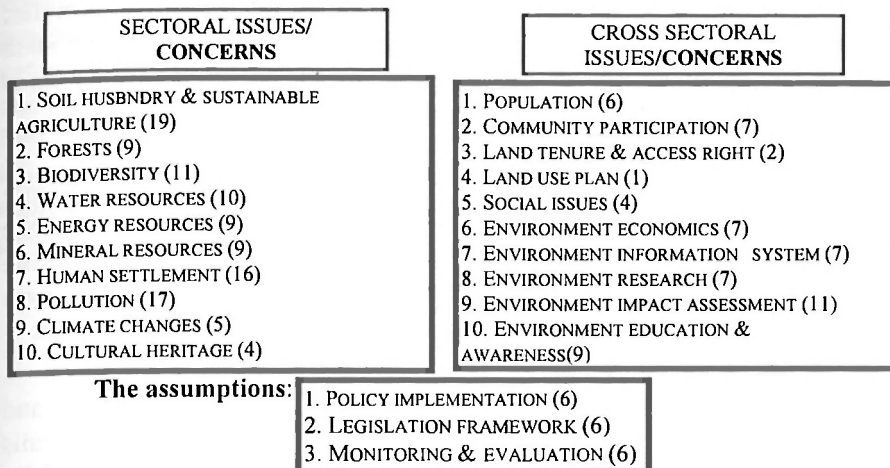
is apparent in that the number of policy elements recommended for socio-economic issues is almost half of what is recommended for the sectoral concerns.

The policy summary is presented schematically in order to capture the essential elements of the environmental policy at a glance and to be able to appreciate the interconnectedness of the various components of the policy.

In the schematic presentation of the environmental policy, guiding principles, which are shaded, represent principles which are already embodied in the specific objectives of the policy.



[ENVIRONMENTAL POLICY OF ETHIOPIA SCHEMATIC PRESENTATION, CONT'D.]



5. Assumptions

The environmental policy has six major sections. These are situation synopsis, policy goal, objectives, key guiding principles, sectoral and cross-sectoral policies and policy implementation.

The policy is based on the assumption that all stakeholders will embrace and practice the principles enumerated under the guiding principle section, and it further assumes that the proposed institutional and legislative requirements will be realized.

The following major assumptions, which include some of the guiding principles and the policy implementation provisions, are discussed briefly. The policy statements are indicated in bold letters.

Every person has the right to live in a healthy environment

This is, in fact, a constitutional right and may not be taken as part of the policy. Policies, constitutional provisions and principles differ with respect to durability. Policies do not have permanence, they are action-oriented and do not allude to principles, which only have symbolic values. How this right can be realized for every Ethiopian, or whether a citizen can make such a demand of the state as a matter of his or her right, is not immediately obvious and straightforward.

The above principle, for example, entails the right of a citizen to live in a clean and habitable house with a provision of potable water, adequate sanitation and clean surrounding. It is essential that the state and its citizens adopt a common value of this nature whose realization is a long-term process, even if it is symbolic.

Sustainable environmental conditions and economic production systems are impossible in the absence of peace and personal security. This shall be assured through the acquisition of power by communities to make their own decisions on matters that affect their life and environment.

This is indeed a great principle to embrace both by the state and its citizens, but very difficult to uphold in practice. This principle entails the existence of a functional justice system, the ability to peacefully resolve conflicts, the existence of enlightened bureaucracy and communities as well as a democratic government. Given the current situation, we have a long way to go to live up to the above guiding principle, but there should be an unflinching resolve on the part of the people to influence the state to practice what is prescribed in this principle of the environmental policy.

Appropriate and affordable technologies, which use renewable and non-renewable resources efficiently, shall be adopted, adapted, developed and disseminated.

Government agencies, such as the Science and Technology Commission, Energy and Mines, and Agriculture need to do more in encouraging local innovators and industries to engage in the production of appropriate and affordable technologies.

When a compromise between short-term economic growth and long-term environmental protection is necessary, then development activities shall minimize degrading and polluting impacts on ecological and life support systems. When working out a compromise, it is better to err on the side of caution to the extent possible, as rehabilitating a degraded environment is very expensive and bringing back a species that has gone extinct is impossible.

The first part of this principle embodies the requirement of conducting environmental impact assessments (EIAs) for development projects. The second part is non-committal but recommends, *to the extent possible*, to decide in favor of protecting the environment when one doubts the impact of development activities on the environment. Past decisions made regarding projects such as the Soda Ash Project on Lake Abijata did not conform to this principle. It may not be possible to apply the principle retroactively, but it would be wise to revisit such projects for the sake of posterity.

The existence of a system which ensures uninterrupted continuing access to the same piece(s) of land and resource creates conducive conditions for sustainable natural resource management.

This principle was formulated in accordance with the constitutional provision on land tenure. There are various options and arrangements for the realization of the above principle, including a private land-holding system. Uninterrupted access to a piece of land is a necessary but not sufficient condition for building confidence among farmers. The uninterrupted access right to the same piece of land does not offer the freedom to farmers to move to other livelihoods when conditions and opportunities arise, since they are not guaranteed to get the value of their land as they would if they were able to rent it for a long-term period or even sell it.

The environmental policy further recommends the recognition and protection wherever possible of the customary rights of access to and use of land and natural resources which are constitutionally acceptable, socially equitable and are preferred by local communities.

This recommendation is carefully worded to be in accord with the constitutional provisions. However there may be situations where the three conditionalities, i.e. constitutional acceptability, social equity and preference by local communities do not occur simultaneously. In such an event, customary rights of access to and use of land, which are socially equitable and are preferred by local communities, should be allowed to override the constitutionally acceptable conditionality, the reason being that constitutional provisions are less permanent than those customary rights preferred by communities and are socially equitable.

Social equity shall be assured, particularly in resource use.

How do you ensure social equity in resource use in a decentralized, ethnic-based federal set up and in a situation where regional states have full legal power to manage and use their natural resources within their respective boundaries? Are not all resources in any part of the country common property belonging to every Ethiopian? This requires a full-fledged study by social scientists. The use of resources located in one region, such as oil and gas, hydropower and water sources, by other regions needs careful consideration, given the legal power vested in the respective regional states with respect to resource use. The current state of affairs with regard to resource use and sharing can at best be described as unspoken gentlemen's agreement among regions. Any crisis will surely precipitate the need for clearly defining the use and sharing arrangement of resources among regional states.

Regular and accurate assessment and monitoring of environment conditions shall be undertaken and the information widely disseminated within the population.

This requires setting up a system that enables the EPA to conduct regular and accurate assessment of environmental conditions. The major components of such a system may include developing key environmental indicators, securing the agreement of federal and regional partners to cooperate in undertaking the monitoring exercise, training people, developing a reporting format and putting in place a functional reporting mechanism. Above all, access to information by the public should be ensured, as it is a constitutional right and one that is also strongly recommended by the EPE. The current situation whereby the bureaucracy is making it almost impossible to acquire any information must be critically examined and dealt with.

Local, regional and international environmental interdependence shall be recognized.

Local interdependence refers here to national level interdependence. This requires some effort and time to get the understanding of all stakeholders at a national level. The need for this understanding will be more obvious with respect to moving resources such as water use and sharing between upstream and downstream

regions. Regional states are observed formulating and implementing their respective five-year development plans and undertaking large-scale private investment projects without giving due consideration to the principle of interdependence.

To give political and popular support to the sustainable use of natural, human-made and cultural resources and environment management for effectiveness at the federal, regional, zonal, woreda and community levels.

The political support obviously should come from the politicians and government officials at all levels, while the popular support should come from community leaders and organizations, NGOs and the public at large. This support will not come by itself. It needs a concerted awareness and public relations campaign on the part of the EPA and other concerned organizations supported by implementation of practical sustainable development programmes.

Coordination and management bodies at all levels plan and implement the sectoral and cross-sectoral issues of the policy.

The practical arrangement to accomplish the above requires that all such bodies are familiar with the content of the environmental policy and that they have internalized all provisions in their plans and programmes. The status of the EPA does not allow it to go beyond soliciting voluntary cooperation with such bodies in the implementation of the provisions of the policy. In some cases the EPA may have to use the good offices of the Council of Ministers to assist it in getting the cooperation of other institutions. A fundamental question may arise with regard to the environmental policy's comprehensiveness and inclusion of all sectors of development. Is it possible or feasible for EPA to coordinate the implementation of such wide ranging policy areas? How can it prompt other institutions to take the lead in the implementation of aspects of the policy under their mandates?

One way is to proceed with the ongoing series of workshops on policy awareness and institutional arrangement for policy implementation. Other ways, such as holding face-to-face negotiation meetings with individual agencies on specific areas of the policy should also be explored. The feasibility of establishing environmental units in

all agencies, or the naming of individuals as environmental focal points, should also be discussed. Organizations mandated for environmental affairs should be established at regional levels to oversee the coordination of the implementation of the environmental policy and the regional conservation strategies.

To separate regulatory and management bodies.

The institutional arrangement for environmental management in Ethiopia has changed over the years as many times as the whims of individuals and decision-makers dictated. In the last two decades alone there were a Forestry and Wildlife Authority, a Valleys Development Authority, a Ministry of Agriculture, a Ministry of Agriculture and Natural Resources, a Ministry of Natural Resources and Environment Protection, an Environmental Protection Authority, the one replacing the other with no consideration given to the resources wasted in the process of making the changes. The above principle, which advises not to mix regulatory responsibilities with management mandates, should be observed if any meaningful advance is to be made in the implementation of the environmental policy. The temptation of dismantling organizations on the basis of unjustified ambitions of individuals should give way to respecting existing policy guidelines and national interest.

To encourage peoples' participation.

The centerpiece of the environmental policy is genuine peoples' participation. This requires the understanding of the policy by the common citizen, which in turn requires the availability of the policy document in understandable language to the public, the conduct of regular public discussions on various aspects of the policy and defining the role of the public in its implementation.

To provide both punitive and incentive measures.

Environmental legislation should always consider both punitive and incentive measures to enhance the management of the nation's resources, preferably showing inclination towards the incentive measures. The incentive measures may include tax incentives for those who:

- ◆ undertake environment-friendly projects and production systems;
- ◆ import and disseminate alternative energy technologies, such as solar-powered equipment and utilities;
- ◆ wisely and efficiently use renewable resources;
- ◆ provide support to the nation's protected areas;
- ◆ involve in poverty alleviation and address the plight of the urban poor;
- ◆ contribute to the enhancement of the urban environment.

Farmers who invest in soil conservation and improvement of land productivity should also benefit from tax incentives, including subsidies. Annual national awards should also be launched for all those who make outstanding contributions to the implementation of the environmental policy.

6. Outcomes

The policy is only about three years old, and there are not many noticeable outcomes resulting from its implementation. The formulation of laws and guidelines are now in process.

However, some intended and some unintended outcomes of the policy formulation process and of the policy itself are discussed below:

- ◆ The process has led to the formulation of a comprehensive federal environmental policy and the formulation by all regions of regional conservation strategies.
- ◆ The process and the policy also gave impetus to the establishment of the Environmental Protection Authority and establishment of Regional Environmental Coordinating Committees (RECCs) in all regions. These committees have not yet been legalized and are not as functional as they are expected to be.
- ◆ The consultation and awareness process, including initiation of training in environmental areas, has resulted in the availability of a network of environmentally-aware people and has led to the establishment of a sustainable environmental management training locally.

- ◆ An encouraging beginning has been made to put in place an environmental impact assessment system and the application of environmental economics in the country.
- ◆ Among the unintended outcomes the following can be mentioned:
 - The creation of high expectations on the part of the public which apparently assumed for the policy to reverse the environmental conditions of the country within a short period.
 - A tendency on the part of some government institutions to believe that environment management is now the affair of the EPA only.

7. Conclusions

The aim here is to point out the dilemmas that exist when one examines the various provisions of the environmental policy vis-a-vis existing and emerging government macro policies and some of the prevailing situations in the country. The macro policies considered include decentralization, agriculturr-led industrialization, privatization and investment promotion. Only a few selected sectoral and cross-sectoral policy issues are considered.

Soil husbandry and sustainable agriculture: Decentralization

The section of the environmental policy on soil husbandry and sustainable agriculture recommends fostering a feeling of assured, uninterrupted and continuing access to the same land and natural resources on the part of farmers and pastoralists so as to remove the existing artificial constraints to the widespread adoption of, and investment in, sustainable land management technologies. What happened recently in one of the regions with respect to land reallocation simply negates the above mentioned environmental policy provision. The impact of such land reallocation measures was not limited within the region but has sent the wrong messages to all other regions and will take some time to reassure farmers that such actions will not happen in the future. Decentralized decision making should take into consideration the impact of decisions on other parts of the country when it involves such sensitive issues as land tenure. There are also instances of positive

development in encouraging individuals and associations to plant trees on public lands through long-term free land lease arrangements.

Soil husbandry and sustainable agriculture: Agricultural-Led Industrialization

The environmental policy states that "inputs shall be as diverse and complementing as the physical, chemical and biological constitution of the soil requires and shall not focus solely on a quick and transitory increase in plant nutrients to the long-term detriment of soil structure and microbiology." It further recommends "shift [of] emphasis in crop breeding from single-line plant varieties and animal breeds to multiple lines involving as many different but adapted lines as possible in order to increase both plasticity in adapting to environmental variations, and resistance to pests and diseases."

A careful and well considered evaluation of the current extension package and the promotion of monoculture high yielding varieties of crops and animals need to be undertaken in order to establish the extent of adoption of the current approaches and their impacts within the framework of the above recommendation of the environmental policy.

Forest, woodland and tree resources: Privatization and Investment promotion

The environmental policy section on forestry recommends pursuing "agricultural and other policies and programmes that will reduce pressure on fragile woodland resources and ecosystems."

The current situation, in which private investors are provided with various incentives to invest in the regions, especially in the peripheral ones, has turned into a situation where regional states are losing control over the uncontrolled exploitation of forest resources in the name of agricultural investment. This is not to claim that this phenomena is an adopted policy by any regional state, but to imply that there are a number of unintended outcomes of the investment policy which are seriously affecting the environment. There are cases of "modern slash-and-burn" farming practices whereby investors clear a large area of forest for agriculture and abandon the cleared area on account of unsuitability of the soil for agriculture. This practice is inexcusable in that investors are expected to

conduct their investment on the basis of feasibility study, among which soil suitability should be one component. If this practice is allowed to continue, some regions are bound to lose both their resources base and the investment.

I hope this brief paper has contributed to the ongoing debate on environmental change in Ethiopia and to a successful implementation of the Environmental Policy of Ethiopia.

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Sustainable Development Indicators and Environmental Policy

Getachew Adem and Demele Yismaw

Introduction

Economy and natural environment are dialectically linked: every economic agent's action can have some effects on the environment as every environmental change can in turn have an impact on the economy. Broadly speaking, the natural environment serves three major functions: it has direct utilitarian value to individual consumers; it supplies inputs to the economic process; and it provides services that support life. Hence, the environment's first role is to supply the resources needed by individual economic agents (business firms, households, governments, NGOs, etc.) in their efforts to satisfy societal needs. The environment's second role is to serve as a sink (receptor) for waste products that directly result from the process of production and consumption.

Mankind has been exploiting the natural environment since time immemorial. The major preoccupation in this respect has been the maximization of economic benefits while little attention has been paid to the consequences this has on sustainability and intergenerational equity. The debate over environment and development had been limited to conservationist dialogue up until the Brundtland Commission's "Our Common Future" was published in 1987. Since then, and as a result of subsequent developments (e.g. the 1992 Rio Summit), the concept of sustainable development has taken center stage in the debate over environment and development. The central message of the Brundtland Commission Report emphasized the extent of the overlap between economic and environmental objectives, the link between the two being two-directional.

Natural resource accounting represents one of the emerging tools and approaches for integrated economic and environmental management and development planning. This technique helps rectify the shortcomings of conventional measures of macroeconomic performance (GDP) through adjusting environmental values and non-market values of environmental goods and services and depletion of natural assets. This, among others, helps establish the link between economic activities and

their use of natural resources as well as the impacts they have on the environment. This further helps enhance the capacity of policy makers and development planners to properly evaluate the complex trade-off between economic expansion and environmental degradation by way of providing more accurate indicators of well being and macroeconomic performance, such as "genuine" savings.

The most pressing environmental problems in LDCs are prevalent in rural areas, where the bulk of the population lives and whose livelihood depends on agriculture and related activities. These are, in the main, crop production and livestock rearing by small-holder resource-poor farmers who also supplement their income from forestry, fishery, and hunting activities. In such economies, the agricultural sector signifies the major link between the economy and the natural environment, since the activities of the population involves the exploitation of land and other natural resources.

The ill-advised rural development state programs have contributed to the acceleration of environmental degradation during the period following the 1974 Revolution. Much has been said and written on the extent of degradation of the natural resource base of Ethiopia. Study reports by multilateral donors, such as the World Bank and FAO, and Government-sponsored studies (such as the Conservation Strategy of Ethiopia) have provided ample evidence on this score.

However, a number of questions are in order: have macro level indicators of sustainability ever been developed to create awareness among policy makers and send signal on the severity of resource degradation and depletion? Have the measures taken so far helped mitigate the environmental degradation problems in Ethiopia? Has there been a conducive environment for the implementation of the policy? Is the legacy of duplication of institutional accountability and responsibility for the management and administration of natural resources resolved? For instance, to what extent are the responsibilities or accountability of Federal institutions, such as the Ministry of Agriculture, and that of Regional Bureaus delineated? Extraction of resource rents being one avenue for optimal resource use and management, and hence sustainable development, has the Ministry of Finance ever paid enough attention to the exploitation of the natural resource base and the damaging effects of environmental degradation? Ethiopia has also witnessed profound policy changes and

macroeconomic reform measures during the last nine years. What implication does this have for the environment (particularly natural resource degradation) and sustainable development?

Questions of the kind listed above call for a framework for assessing the working of the hitherto adopted policies and programs to alleviate the problem of natural resource degradation. This has become a formidable challenge in the Government's effort towards alleviating poverty (especially rural poverty) which is believed to have compounded the environmental degradation problem in Ethiopia today.

Our presentation has the following format. Section one starts by outlining the major shortcomings of the conventional measures of macroeconomic performance, such as GDP. This is logically followed by a discussion and interpretation of the concept of sustainable development.

Section two outlines the basic features of the natural resource accounting (NRA) framework, which has recently gained currency towards operationalizing the concept of sustainable development. This framework serves as an important tool by way of generating sustainability indicators, such as environmentally adjusted domestic product and "genuine" saving.

NRA practices are currently non-existent in Ethiopia. A synthesis of the experiences and results of a number of recent applications in African countries will be reviewed in Section Three in order to throw light on its potential contribution to integrated economic and environmental management for sustainable growth and development. A valuable lesson could be drawn from this approach for future endeavor in this direction in Ethiopia.

Section Four deals with the environmental administration and management practices of Ethiopia. The Government's effort towards addressing the legacy of overlap in institutional accountability and responsibility, which is believed to exacerbate the problem of environmental degradation, is also pointed out. This will be complemented by a review of the salient features of the Environmental Policy of Ethiopia, followed by a cursory evaluation of the Policy against the backdrop of possible conventional policy instruments that could be adopted in the Ethiopian context. The possibility for employing

these types of instruments and EPA's mandate and capacity to institutionalize them will be reflected.

Lack of a coordinated resource inventory of efforts in Ethiopia, which would have served as a stepping ground to NRA, will be the focus of our discussion in Section Five. The need, at least, for physical resource accounts (PRA) for selected resource sectors (forestry, water, and fishery) in Ethiopia will be underscored. Section six winds up the presentation by outlining adjustment mechanisms involved within the SEEA framework in correcting conventional measures of macroeconomic performance (GDP) to arrive at environmentally adjusted domestic product (EADP). The discussion concludes by pointing out the policy implications of these adjusted measures (EADP) based on the estimates for developing countries, thereby identifying areas of emphasis for future improvement in environmental policy analysis in Ethiopia.

I. Concepts & Interpretation of Sustainable Development

1.1. Conventional Economic Perceptions and Concepts of Growth and Development

1.1.1. Conventional Economic Perceptions and Shortcomings of the Measures

The goals, strategies and tools of economic development planning have significantly expanded beyond the economic growth and efficiency paradigms over the past four decades. The search for better definitions for the development process led to the incorporation of a number of non-efficiency criteria, such as social development (human resource), reduced poverty and inequality, and environmental health. As a result, the focus of policy design shifted to include attainment of social equity and preservation and enhancement of the natural resource-base besides optimal macroeconomic management.

Over the past three to four decades, the System of National Accounts (SNA) has been the main source of information on the production and disposition of economic goods and services between intermediate use, final consumption and savings. Besides, it also provides information on employment of primary factors of production

(land, labor and capital) and the creation and distribution of income and wealth within national economies.

Several criticisms have been leveled recently against some important shortcomings in the present SNA, particularly in its treatment of the value and services of natural assets and environmental quality. Among the major shortcomings of the SNA is its exclusive focus on the production and use of manufactured goods and produced assets that are bought and sold in the market. This automatically excludes the multitude of benefits derived from and costs caused by the use of tangible and intangible non-market environmental goods and services. Examples of missing environmental values include: fire wood¹ directly collected by millions of rural families in developing countries, the carbon-fix function of standing forests, the watershed protection² as well as many other direct and indirect ecological services that are crucial to human life.

While accounting for depreciation of human-made (manufactured) capital, it does not do the same for consumption of natural assets in deriving net national and domestic product (NNP and NDP). This is because, when exploitable natural resources, such as minerals, timber, and fish are extracted and sold, net receipts register as value added in the present SNA without making allowance for the depletion in asset stocks as a result of the extraction. There is also an argument that many biological and environmental resources do not find their way in to the SNA balance sheet. Besides, natural growth in biological resources and discoveries of mineral stocks that show up in the balance sheets of SNA are not reported as they occur, but recorded as income at harvest (Harrison, 1993).

The third deficiency of the SNA has to do with its treatment of various outlays expended on environmental protection and enhancement, pollution abatement and the reduction of risks associated with environmental hazards resulting from economic activity. These are added to income and GDP measures in the present SNA (Leipert, 1986). This treatment is considered inappropriate on various grounds and

¹ According to the SNA guidelines, all firewood utilized by rural households should be accounted for in GDP as far as data availability allows.

² There is also a logical argument that watershed protection of standing trees is already reflected in productivity of agricultural output. The issue here is adjustment needed for sectoral distortion (sectoral contribution).

arguments are made for treating such expenditures differently either as intermediate expenditure or as capital investment, as they do not qualify as final consumption expenditures.

1.1.2. Economic Growth versus Economic Development

Development implies change that leads to improvement or progress. It involves a real change or transformation of the socio-economic system. For instance, an economy that raises its per capita real income level over time without transforming its social and economic structure is unlikely to be viewed as developing. Gillis (1987) illustrated this concept by noting the achievements of South Korea & Libya:

... What has been happening in South Korea since 1960, for example, is fundamentally different from what has been happening in Libya as a result of the discovery of petroleum. Both countries have experienced a large rise in per capita income, but in Libya this rise was achieved through foreign corporations staffed largely by foreign technicians who produce a single product - oil - to be consumed elsewhere. Although the government and people of Libya have received large amount of income from their oil, they have had little to do with producing that income. Hence, Libya's experience is not usually described as economic development. On the other hand, South Korea's economy has been transformed apart from the increase in per capita income, which has now reached the level of developed western countries. The most important structural transformation in South Korea has been the rising share of industry accompanied with the declining share of agriculture in gross domestic product (GDP).

Thus, economic development is defined as achieving a set of social goals. Since these goals change (dynamically) over time, economic development is considered to be a process. A society in the process of economic development is likely to experience a combination of three sets of changes (Pearce and Ford, 1993):

- (a) An advance in utility which is simply satisfaction and well being experienced by individuals in society:

A major factor contributing to advances in well-being is real income per capita, which is almost universally true for poor countries. Another factor contributing to utility or well-being is the general quality of the environment. More importantly, if the well-being of society as a

whole improves, but that of the most disadvantaged sections of society (the poor) worsens, it seems reasonable to say that such a society is not developing.

(b) Advances in skills, knowledge, capability, and choice harnessed through human resource development (education, health, etc.).

(c) Self-esteem and self-respect.

A society is said to be developing if it exhibits a growing sense of independence, which may be independence from domination by others or independence from the state. According to this construct, economic development is a much wider concept than economic growth.

Economic growth is generally defined as an increase over time in the level of real gross national product (GNP) per capita, or sometimes, the real level of consumption per capita. In the foregoing illustration, the case of Libya is an apt instance of economic growth while that of South Korea is one of economic development. The distinction between development and growth is important, for it means that qualifying the term 'development' with 'sustainable' distinguishes sustainable economic development from sustainable economic growth.

1.2. Sustainable Development: Concepts, Definitions, and Interpretations

The term "Sustainable development" is of recent origin, perhaps not older than a couple of decades or so. The qualifier 'sustainable' in 'sustainable development' is an outcome of the pre-occupation of economists (environmental economists) with achieving two objectives in tandem: economic expansion without sacrificing environmental quality. The concept of sustainable development took center stage in the debate over environment versus development when the Brundtland Commission's "Our Common Future" was published in 1987. The concept has been embraced by the International Union for the Conservation of Nature (IUCN) in 1980, but by and large, it has been limited to the area of conservationist dialogue and thus has had a limited impact on the thinking of governments and aid agencies (Pearce and Ford, 1993).

At its most basic level, sustainable development asserts that environmental quality and general services performed by natural environment are far more important than past development planning and economic management assumed (Pearce and War Ford, 1993). Through raising the profile of the environment, sustainable development reflects a better understanding of the functions fulfilled by the natural environment, which serve three major economic functions: it supplies direct utility to individuals; it supplies inputs to the economic process; and it provides services that support life. These three functions have direct relevance to how sustainable development is interpreted.

The most publicized definition of sustainability is that of the World Commission on Environment and Development (WCED) (the Brundtland Commission). The Commission defines *sustainable development* as "development that meets the needs of the present without compromising the ability of future generations to meet their needs" (WCED, 1987, in Turner, 1993: 43). Both an equity dimension (intergenerational and intragenerational) and social/psychological dimension (the term 'need' is used rather than 'wants') are clearly highlighted by this definition in line with the attributes of development outlined above. The main rationale for sustainable development (SD) is, therefore, increasing people's standard of living (broadly defined) and, in particular, improving the well-being of the least advantaged people in society, while at the same time avoiding uncompensated further costs (irreversible environmental damages).

What are the necessary and sufficient conditions for sustainability? Most environmental economists do not have clear-cut answers to such a complex issue. However, environmental economists of the "London School", among others, have argued that a non-declining stock of natural capital over time is a necessary condition for sustainability, because of sustainability limits in production processes as well as other factors (Turner, 1993). This is what is referred to as a strong sustainability (SS) position and it is an ecological-economics approach. The proponents of the SS contend: "as environmental degradation occurs, some life support processes and functions will be systematically eroded (because they are under-valued), thereby increasing the vulnerability (reduced stability and resilience) of the ecosystem to further shocks and stress." According to the SS view, it is not sufficient to protect the overall level of natural capital, as some critical components of natural capital (such as the ecosystem) should be maintained intact for they may be non-

substitutable (irreversible). Thus, the SS rule requires that natural capital be maintained, constantly measured and monitored via physical indicators (this is where NRA technique is critically important, as will be discussed in the forthcoming section). The case for the SS view is based on the combination of a number of factors: uncertainty about ecosystem functions and their total service value; risk of irreversibility in the context of some environmental resource degradation and/or loss; the loss aversion felt by many individuals when environmental degradation problems are at work; and the critical non-substitutability of some components of the natural capital.

The other view is the weak sustainability (WS) position which does not single out the environment for special treatment but simply sees it as another form of natural capital. Therefore, what is equally required under sustainable development is the transfer of an aggregate capital stock (in its natural or produced form). WS is based on a very strong principle of perfect substitutability between these different forms of capital. This approach to sustainability is based on the Hicksian definition of income; i.e. income seen as the maximum real consumption expenditure that leaves society as well endowed at the end of a period as at the start. The definition pre-supposes the deduction of expenditure to compensate for the depreciation or degradation of the total capital asset base that is the source of income generation, i.e. conservation of the value of the asset base. Assuming perfect substitution possibilities, the Hartwick (1994) rule states that consumption may be held constant in the face of exhaustible resources if and only if rents deriving from the intertemporally efficient use of those resources are reinvested in reproducible capital (man-made capital). Those who hold this view define sustainable development as "at least a non-declining consumption per capita or per unit of GNP or some alternative agreed indicator."

In any case, sustainable development is future-oriented in that it seeks to ensure that future generations are at least as well-off, on a welfare basis, as current generations. In economic terms, this is a matter of intergenerational equity, not just efficiency. The ethical argument is that future generations have the right to expect an inheritance sufficient to allow them the capacity to generate for themselves a level of welfare no less than that enjoyed by current generations.

The NRA technique can contribute the information needed for constructing indicators for the conditions of both the sustainability

paradigms outlined above. Thus, sustainability indicators for monitoring progress towards **WS** targets are much less demanding than those needed for **SS** targets, and they can be adequately provided within the NRA framework (Pearce *et al.*, 1996).

II. Approaches Towards Operationalizing Sustainable Development: The Need for and Approaches Towards the Application of NRA

NRA takes the task of adjusting the conventional SNA for omissions and erroneous treatment of environmental values. The use of NRA has increased during the last two decades or so to cover a wide range of applications. Various approaches have been followed, especially in industrialized countries, to make up for omissions related to environmental assets and services and to improve measures of income and well-being generated by the current SNA. The approaches and methods adopted range from minor adjustments of certain aspects of existing accounting frameworks (the construction of separate satellite accounts) to major restructuring of conventional economic accounts.

2.1. Approaches to NRA

2.1.1. Physical Resource Accounting (PRA)

Physical resource accounting (PRA) represents the earliest attempt to account for the extraction and use of natural resources and the generation of waste and environmental externalities in physical terms. PRA was initiated as a simple extension of the national balance sheet accounts to record changes in the stocks of key natural resources and pollution and energy flows. These accounts were put to several uses related to integrated economic and environmental management. The PRA approach is also interchangeably referred to as the material balance approach.

This approach is also used to monitor sectoral resource use and the depletion or increase of stocks as well as generation and disposition of pollutants in developed countries. Both stock and flow accounts were developed as satellite accounts separate from the SNA. Norway and France adopted this approach for selected resource sectors (Peskier & Lutz, 1993; Bartemus *et al.*, 1991).

The initial focus on commercially exploited resources (minerals) later extended to the harvesting of timber and fish resources as well as uncultivated biological resources. The contribution of this approach to correcting measures of economic welfare for depreciation of natural capital, non-market values of environmental goods and services and pollution damage has been limited by the inability to assign monetary values to physical material flows.

However, PRA has been, and still can be, used to address many important environmental management and economic planning questions through integrating resource use and waste generation with economic activity models. For instance, PRA can provide the required information to construct indicators for resource scarcity (depletion) and determine the ballpark (distance) from critical ecological limits (e.g. degree of degradation of biological resources and levels of environmental damage). Such indicators as already pointed out are critical for evaluating progress towards strong sustainability (SS) conditions.

The information generated by PRA on the links between economic activity and the environment provides the basis for evaluating the impacts of alternative development strategies, trade policies, and structural change on the state of the environment and the natural resource base. This enables assessment of the implications of environmental policy and resource management strategies for economic activity and growth. PRA is generally believed to be very useful for constructing SS indicators as it contains valuable information on ecological assets and processes.

2.1.2. Monetary Accounts

The monetary accounting approach to NRA represents a step forward from physical resource accounts to correcting current measures of income and wealth for sustainability. Monetary accounting for the environment followed a broad range of applications and procedures and has a wide scope. The following are examples of steps commonly followed in the effort towards full environmental accounting.

a) Treatment of environmental expenditures:

The approach works within the existing structure of the SNA, leading to minor modifications, particularly in the definition and

classification of income and expenditure entries. These involve, for example, separating expenditures on pollution abatement from final demand (investment and consumption expenditure) and subtracting them from GDP as intermediate inputs, like that experienced in France and Japan (Hasan, Hamilton and Lange, 1999). Environmental defense outlays by consumers are similarly removed from consumption and added to intermediate consumption (expenditure), i.e. they are excluded from value added, as they are believed to have over-stated income estimates in the SNA. Arguments in favor of this treatment are advanced by Dally (1989), Horizon (1989) and Peskin (1989).

(b) Treatment of Natural Assets Depreciation:

This, too, is another partial treatment within the existing accounting framework of the SNA. Although this approach has been in the main adopted for marketed natural resources (those having market prices), such as minerals, timber, and fishery, studies in developed countries have indicated attempts made to other non-marketed renewable resources and environmental assets, e.g. agricultural land (soils), carbonstock, biological diversity, air and water quality (World Bank, 1997; Repetto *et al.*, 1989; World Bank, 1997; Young, 1993; Vincent, 1997; Hoofers, 1996). The cited studies used a wide range of methods to calculate depreciation in stocks of natural assets, the most commonly used ones being the Net Price Methods and the Present Value techniques of computing values of depletion of natural assets.

The most useful outcomes of these corrections are related to adjusting saving measures of the whole economy (such as gross domestic/national saving). An important member of this is the 'genuine' saving derived by reducing a capital consumption allowance that measures depletion of natural assets and accumulation of pollutants from net saving, which itself is obtained by deducting capital consumption allowance for produced assets from gross national saving. Gross national saving may be obtained by deducting foreign borrowing from gross investment.

The direct policy relevance of such measures lies in the fact that persistent deterioration in genuine saving implies a constant decline in welfare (Hamilton and Atkinson, 1995). Adjusted saving measures also provide a useful decomposition of the portfolio of capital assets (produced capital, natural capital, and human capital) and sources of

change in their levels. This, in turn, generates valuable information for investment policy analysis and economic expansion strategies by providing a basis for evaluating the correlation between various measures of growth and macrocosmic performance and movements in the different components of the asset portfolio (produced, natural, human). This allows for a better understanding of the determinants of economic expansion and environmental degradation and conveys useful information in the trade-off between growth and sustainability to macroeconomic and environmental management and resource use policy design.

(c) Full Environmental Accounting Approach:

This approach represents attempts to accommodate all entries of a more comprehensive PRA in the current SNA with money values assigned. The System of Integrated Environmental and Economic Accounting (SEEA), suggested by the United Nations Statistical Division (UNSTAT) and other attempts of individual countries, are some of the efforts towards addressing many of the deficiencies of the SNA framework. The SEEA is a step towards adjusting conventional measures of income for natural asset depreciation and environmental degradation. Adjustments are made both to the current account (GDP and its component flows) and the asset accounts. The measures so obtained are termed as environmentally-adjusted domestic product (EADP) and green national income and savings.

Increased awareness of and sensitivity to environmental degradation and resource depletion issues are important indirect benefits obtained from these improved (adjusted) measures. Valuable information is also revealed with the improved measures via indicating where depletion is occurring at alarming rates or whether the country is living-off its capital stock. This also improves the capacity to evaluate the trade-off between current and future consumption. Moreover, valuable sectoral information and indicators are generated with regard to the rate of recovery of economic rents through taxation of extraction of subsoil assets and on how the proceeds have been spent, e.g. wasted by indulging in current consumption or invested to compensate for depreciation in the exploited natural assets. These monetary measures provide the basis for evaluating progress towards attaining weak sustainability (WS) conditions as do the PRA indicators for strong sustainability (SS) conditions.

The adjustment mechanisms based on a full-fledged Monetary Accounts proceeds as follows:

Given SNA-based Indicators:

$$Y = \text{GDP} = C + I + (X - M), \text{ where } C = \text{Aggregate Consumption (private \& public), } I = \text{Gross Domestic Investment, } X = \text{Value of Exports, } M = \text{Value of Imports}$$
$$S = Y - C = \text{Gross Savings}$$
$$S = I + (X - M)$$

- Adjustment for natural resource and environmental degradation involves derivation of the following indicators at national level for at least one resource sector of economic significance:

D_M = Depreciation Value of Produced (Manufactured) capital;

D_N = Depreciation of natural capital due to unsustainable extraction or use of renewable resources beyond their natural regeneration capacity (sustainable yield);

P_A = Allowance for the value of environmental pollution damages (welfare effects associated with excess morbidity and mortality) as effects on current output & economic assets are supposed to be accounted for in depreciation of man-made capital and productivity losses already taken care off by GDP;

HR_D = Recurrent Expenditure on Development of human capital in a given year;

O_V = Total value of omissions of environmental goods not accounted for in GDP.

- **Adjustment:**

- a) $Y + O_V = \text{Adjusted Gross Domestic Product (AGDP)}$
- b) $\text{AGDP} - D_M = \text{Adjusted Net Domestic Product (ANDP)}$
- c) $\text{ANDP} - D_N - P_A = \text{Environmentally Adjusted Net Domestic Product (EANDP)}$
- d) $\text{EANDP} - C + HR_D = \text{National Genuine Savings.}$

- Genuine savings as sustainability indicators and their implications on policy: Persistent decline in genuine savings implies a constant decline in welfare and conveys crucial information on the trade-

off between growth and sustainability and provides a better understanding of the determinants of economic expansion and environmental degradation. It also serves as an important signal for considering macroeconomic policies (fiscal, monetary, BoP) and environmental management and resource use policy design.

III. Survey of the State of NRA in Africa

To date none of the countries of Africa have started constructing NRA on a regular basis as an integral part of the formal national income accounting practice, except in only a few cases of individual research efforts and academic exercises to construct and use NRA. However, efforts to expand capacity in environmental economics in general, and to institutionalize NRA in particular, are under way via the catalytic role of two regional networks. The Environmental Economics Network for Eastern and Southern Africa (EENESA) and the Natural Resources Accounting Network for Eastern and Southern Africa (RANESA), which are based in Nairobi and Pretoria, respectively, have been playing important roles in this regard. The first attempt to construct NRA in Africa started in Botswana. Use (flow) and stock accounts were compiled for selected resources (forestry and water) in Botswana for the 1979-86 period (Perrings *et al.*, 1989). The preliminary estimates of the use and change in stocks of these resources were not used to adjust measures of income and wealth, although they did reveal important patterns in the rates of change in the resource stocks with major policy implications. The momentum had not been maintained and is currently being revived under a new regional initiative on NRA in southern Africa, involving Namibia, South Africa, Botswana, and Zimbabwe.

A number of attempts have also been made in Zimbabwe to construct environmental statistics and derive improved indicators of income and wealth. The Central Statistical Office (CSO) of Zimbabwe has compiled and published a set of environmental statistics, including land, soil degradation, forests and woodlands, fuel wood consumption, wildlife, mineral reserves, energy use, and selected pollution figures (waste, water and air quality in Harare) (CSO, 1994). The data generated mainly consist of physical units such as land areas in hectares and numbers and levels of substances and resources.

Two other studies by Coward (1994) and Adger (1993) produced estimates of resource use and values for selected sectors.

According to Coward (1994), the total value of resource depletion that is unaccounted for by the conventional SNA in the said resource sectors was estimated at approximately 2% of GDP during the study period, which is more than 200 million Zimbabwean Dollars in 1989 values. The study by Adger (1993) estimated the net reduction in wood stocks in Zimbabwe as a result of the extraction of fuel wood in excess of the natural supply to be 2.7 million tones in 1987. While most of these attempts in Zimbabwe remain within the research community, a growing interest has been noticed within the government in integrating NRA into the regular function of national income statistics. A new initiative by the National Planning agency and Statistics Department, supported by the regional NRA project in Southern Africa, is currently underway to pursue this task.

In the case of Tanzania, Peskier (1989b) estimated the imputed value of net depletion of forest resources in Tanzania, owing to fuel wood extraction alone, to be 5% of total GDP in 1980. This estimate was based on valuing the average time spent in firewood collection and an estimate of harvesting in excess of regeneration.

In Namibia, the Ministry of Environment and Tourism began a pilot project in 1995 to construct NRA for the evaluation of current natural resource policy to assist in designing ecologically sound development policies. The pilot project was completed in January 1997, in the wake of which a new phase of work to institutionalize NRA followed. The Namibian NRA generally follows the UN SEEA in its emphasis on constructing detailed PRA and its attempt to integrate NRA with economic models for policy analysis (Lange, 1997a). The Namibian NRA was constructed for water, fishery, minerals, and land degradation. Both use and stock accounts were constructed for most of the resource sectors mentioned, and plans are in place to extend the scope of accounts to cover forestry, energy, and pollution.

The information generated by these accounts was utilized to bring environmental consideration into economic management and planning in order to address specific macroeconomic policy issues at the national level. They also help analyze various aspects of resource management within an integrated framework and thereby provide a concrete basis for objective communication between line ministries on the potential impacts, trade-off and priorities of multi-sectoral development strategies and resource management policies.

Among the main results of the policy analysis applications of the Namibian NRA are:

- (a) Analysis of the rate of recovery of resource rents from the commercially exploited mineral and fishery resources showed that the Namibian Government had been relatively successful at recovering the rent generated by the mining sector over the past 15 years;
- (a) Analysis of the Namibian budget allocation revealed that about 40% of the Namibian Government budget was invested in the development of human capital. This magnitude of budget allocation out of current receipts has been considered significant in building alternative opportunities and sources of employment and income that can substitute for the expected future loss of economic benefits from mineral resources due to the depreciation in the stock of these assets;
- (c) On the other hand, recovery of resource rents from fishery has been less successful, with quota levies averaging only 30% of resource rent over the 15-year period since 1980.

Preceded by a number of independent and collaborative research activities, the University of Pretoria, in collaboration with other national institutions and with financial support from EENESA, completed a project in 1997/98. This undertaking has helped construct monetary and PRA for cultivated forests, natural forests, and woodlands and fynobs vegetation (Hassan, 1998; Hassan *et al.*, 1998).

The said studies established very high values for woody resources that are missing from conventional national accounts, and it has been indicated that the stock of cultivated forests was found to be accumulating at a positive net average annual rate equivalent to more than 2% of net national product and 31% of the total gross value added of agriculture, forestry, and fishery combined over the 1980-1996 period (Hassan, 1998a).

On the other hand, a net negative accumulation of asset stocks was registered for natural forests, woodlands and fynobs vegetation, indicating unsustainable exploitation rate that calls for better resource

management and economic development strategies to reverse the high rate of degradation and depletion of these resources. This has been particularly important, given the high value of the rich biological resources that this vegetation supports and harbors. Besides, these resources contribute to national income a combined direct use value that is unaccounted for in the SNA and which is equivalent to more than 5% of total value added in 1998 (Hassan, 1998a).

An attempt to adjust South Africa's Net Domestic Product (NDP) for resource depreciation (soil erosion and depletion in mineral resource assets and the value of pollution damage [CO_2 , NO_x , CO_2 particulate]) helped establish the green NDP for 1992. The calculations have reduced NDP for 1992 by 3.3% and 2.4% of GDP due to resource depletion and pollution damages, respectively, producing adjusted NDP that is 5.7% less than NDP. A measure of genuine saving for South Africa was calculated for the same year by deducting the value of resource depletion and the social cost of pollution emission from traditional net savings. The Gross saving rate for south Africa, which stood at 16.6% for the same year, was reduced to 1.5% when adjusted for depreciation of produced capital. This was further reduced to -3.8% of GNP when adjusted for the depletion of natural assets and the social cost of pollution damage. This shows that the rate of true saving in SNA in 1992 was overestimated and indicates that savings in 1992 was insufficient to offset depreciation in produced assets, natural capital, and environmental quality and the implication of which has been a declining welfare with persistent negative real savings. The NRA-based analyses in South Africa indicate very high values of disinvestment in selected resources. However, it was also indicated that the magnitude of disinvestment would have been higher than it was had many non-market products and ecological services as well as many other natural assets been accounted for.

All these country experiences show that southern Africa is taking the lead in NRA efforts compared to other parts of the continent. It is the only region where some attempts have been made in this direction in terms of pilot initiatives by individual academic research interests.

The comparative advantage of this region lies in the positive trend that is emerging in the region in terms of increasing attention and commitment from national agencies that generate economic and environmental statistics that are crucial to adjusting conventional

measures of national income and economic well-being for environmental degradation and natural resource depletion. This seems to be a key factor to jump-start NRA undertakings in any developing country. New opportunities which emerged in the region in support of capacity creation, institutionalization and research work are also being adequately exploited. Resource accounts for a resource of regional significance (**water**) is being initiated through the USAID-funded NRA project involving Namibia, South Africa, Botswana and Swaziland and Zimbabwe.

The ultimate objective of constructing NRA is the generation of indicators of sustainability at the macroeconomic level that have significant policy implications, such as *genuine* saving rates. This review, therefore, wraps up by providing such indicators (*genuine* saving rates) based on the study by Hamilton and Clemens (1998) for countries of Sub-Saharan Africa (SSA), including the South African region.

The genuine saving effort in Africa has been low, or even negative, in most instances and stands in sharp contrast to the robust savings in Japan and the moderately positive rates in the United States. This study treats current education expenditure as investment-boosting saving rates for countries that spend more heavily on education (Table 1).

Table 1: Average Genuine Saving Rates Including Current Education Expenditure (Percent (%) of GNP)

Country/ Region	1970s (Average)	1980s (Average)	1990	1991	1992	1993
Sub-Saharan Africa	8.1%	-3.9%	1.9%	2.0%	0.1%	0.8%
Nigeria	3.3%	-25.3%	-46.4%	-33.9%	-30.2%	-37.1%
Kenya	5.8%	5.1%	2.8%	7.0%	3.9%	1.4%
Ghana	4.1%	-6.0%	1.4%	1.8%	-3.2%	-4.6%
Cameroon	15.8%	7.7%	-7.0%	-2.5%	-3.6%	-0.6%
Madagascar	6.0%	-1.3%	1.1%	-8.7%	-3.9%	-0.2%
Senegal	6.5%	-4.1%	8.0%	2.3%	1.6%	3.2%
South Africa	10.4%	5.4%	5.5%	6.2%	4.7%	5.2%
Togo	13.9%	13.0%	12.4%	5.6%	2.3%	-12.5%
Uganda	NA	-23.2%	-13.7%	-0.6%	-0.2%	-8.6%
Zambia	-5.7%	-27.3%	-32%	-14.5%	-5.3%	-16.1%
Zimbabwe	9.1%	7.4%	15.6%	6.1%	-0.8%	8.7%
High-Income OECD						
Japan	26.5%	21.7%	31.2%	28.7%	28.3%	26.2%
United States	11.0%	9.0%	8.2%	8.8%	8.3%	9.6%

Note: 'Net price' valuations of depletion are upwardly biased. This particularly affects the estimated real savings rate of countries such as the Congo, Nigeria and Zambia.

Source: Hamilton and Clemens (1998) in Hassan, Hamilton and Lange (1999).

IV. Review of Environmental Management Practices and Reflection on the Implementation of the Policy

4.1. Environmental Administration and management Practices in Ethiopia

Lack of coordination and the overlapping of responsibilities and accountability among pertinent government agencies has long been the major impediment for environmental management and administration in Ethiopia. This has been the major drawback to tackling environmental **PROBLEMS**, especially resource degradation, in Ethiopia. There have been many agencies involved in some form of land-use planning and land development without any degree of integration of their activities. There have been instances where some plans have been formulated in isolation from the main implementing agencies (EFAP, Volume VII, 1991).

Government institutions involved in natural resource management and environmental protection have also been subjected to repeated restructuring. In the early 1990s, the institution responsible for natural resource management and environmental protection was the Ministry of Agriculture and Environmental Protection and Development. Later, a new Ministry for Natural Resources and Environmental Protection was established. Following this, the Federal Democratic Republic of Ethiopia undertook some restructuring, and the Ministry of Natural Resources and Environmental Protection was dissolved. The mandates of this Ministry were shared among the newly established Environmental Protection Authority, Ministry of Water Resources and MoA. Such frequent restructuring of institutions will obviously have negative impacts on the implementation of environmental programs as a result of inevitable gaps during the transfer of duties and responsibilities. The larger the number of institutions involved in environmental affairs the more pressing it would be on the thinly spread government budget, which renders coordination difficult and results in duplication of efforts and conflict of interest.

At the federal level many institutions are directly or indirectly involved in the management and planning of natural resources and environmental matters. The Council of Representatives approves policies and laws. MEDaC is responsible for coordinating the activities of all government ministries and agencies through the planning and

budgeting process. MEDaC also houses the Environmental Planning Unit, which in turn houses the National Conservation Strategy Secretariat. There are also separate departments for mines, energy & water; trade & Industry, etc., all of which are, in one way or another, involved in natural resource management. The MoA is also responsible for agricultural policy formulation, including rural land use policies, the development and conservation of soils, forests, wildlife and small-scale irrigation undertakings.

Other institutions that have direct or indirect bearing on the planning and development of natural resource and the protection and management of the environment include: the ministries of Water Resources, Mines & energy, Health, Trade & Industry, the Science & Technology Commission, the Ethiopian Agricultural Research Organization, Wondo-Genet Forestry College, Alemaya University of Agriculture, Addis Ababa University, and several local and international NGOs. There are about 60 NGOs operating in the country, of which about 23 are engaged in natural resource conservation, such as bundling, afforestation, soil and water conservation and livestock development (MEDaC).

In 1997 the Conservation Strategy of Ethiopia (CSE) Project launched at the national level initiated the establishment of a Regional Environmental Coordinating Committee (RECC) and focal points for the purpose of formulating Regional Conservation Strategies (RCS). This was accepted by all regions, as all felt that a gap has been created by following the devolution of Natural Resource Bureaus. As a result, all regions, save Amhara, Oromia and Addis Ababa, delegated Regional Planning and Economic Development Bureaus as institutional houses to their respective RCS. Oromia and Amhara Regions delegated Regional Agricultural Development Bureaus as focal points for RCS, while the Addis Ababa Administration managed to establish an independent Environmental Protection Bureau.

A national environmental planning framework was developed in 1989 under the auspices of the then Ministry of Natural Resources and Environmental Protection. This initiative evolved into, or was later renamed as, CSE. Environment being a cross-cutting issue, the CSE has been viewed as an 'umbrella' strategy subsuming different programs developed for various sectors.

The period of CSE formulation coincided with the period when environment and development issues were deliberated upon at an international forum (the Rio Summit from June 1-14, 1992). The most significant outcome of this summit was the consensus reached among participant countries that strategies for sustainable development should integrate environmental issues into development plans and policies. Ethiopia is signatory to one aspect of the Rio Declaration: the Convention on Biological Diversity (CBD) and Framework Convention on Climate Change (FCCC).

Following the Rio Summit, the Ethiopian Government has taken a number of steps towards dealing with the most pressing environmental problem of natural resource degradation. A Task force was set up by the Prime Minister of the TGE to consider the appropriate organizational structure for environmental protection and to make recommendations for the implementation of the Rio Summit. One of the recommendations of the Task Force was the need for the establishment of a national body with regulatory power on environmental issues and which would see to it that there is a cross-sectoral coordination. This culminated in the establishment of the then Ministry of Natural Resource Development and Environmental Protection (MNRODEP). This latter gave way to the birth of the now Environmental Protection Authority (EPA), reporting directly to the Prime Minister and with more autonomy and power to discharge its responsibilities.

As per EPA's establishment proclamation No. 9/1995, the role of EPA is summarized as "policy formulation and integration, drafting of environmental legislation, standard setting, awareness creation and environmental monitoring," among others. EPA is, therefore, the first government institution with the overall mandate for coordinating, regulating and monitoring broad-based, cross-cutting environmental issues in the country.

EPA being an autonomous government institution directly accountable to the Council of Ministers, it has the Environmental Protection Council (EPC) as the highest executive organ in its structure. According to the Proclamation to provide the establishment of EPA, the EPC comprises the Minister of Agriculture, as chairman, and the Ministers of Trade and Industry, Health, Mines and Energy, Water Resources, the Commissioner of Science and Technology and the General Manager of the EPA, as members. The major powers and duties

of the EPC are: deliberating upon policy matters regarding environmental protection and submitting its recommendations and evaluating and approving standards and directives submitted by the EPA. EPA is supported by two technical departments (the Environmental Impact Study and Control Department and Environmental Policy and Legal Department), three services (Planning and Programming Services, Environmental Education and Public Relations Services, and Administration and Finance Services), and one Coordination Office for Regional Environmental Affairs. EPA has no branch offices at the regional level to date although its the proclamation establishing it has a provision empowering it to open up the branches.

4.2. Why Environmental Policy Is Necessary?

One reason why environmental policy is necessary is the need for rectifying the dissociation between costs and benefits of environmental damage resulting from widespread mismanagement-management of environmental resources: namely, land, soil, forests, water, air and energy. Special problems arise when benefits and costs of environmental damage accrue to different groups: the benefits go to private resource users, while the costs usually fall upon the shoulders of the community at large. For instance, in the case of pollution, the polluter does not only not pay the cost but perversely maximizes his or her benefits by using, free of charge, the property of others and future generations.

The dissociation between costs and benefits of environmental damage reflect a combination of policy failures, institutional failures, and market failures. Policy failures arise when government intervention distorts the market through certain taxes, quotas, subsidies, etc. Institutional failures arise when critical factors of production (resources) remain outside the domain of the market: its main manifestations being the existence of unowned, unpriced, and unaccounted-for resources and unestablished or unenforceable property rights. The problem of 'commons', which has already gained currency in the literature on the environment versus the economy, is the outcome of institutional failures. The environmental problems in Ethiopia in the main being deforestation and land degradation, they have had a lot to do with institutional failures. Market failures occur when there are externalities from the use of resources. This occurs when the actions of one economic agent have effects on the utility or production function of another agent.

Another reason for environmental policy is the need for rectifying the dissociation between resource scarcity and resource prices. The contention here is that the environment should be considered as an economic resource. For its use to be socially efficient, the costs of environmental depletion and damage must be internalized within the resource user's economic decision.

In the real world, however, the environment has been used by profit maximizers who externalize environmental costs that are ultimately borne by the poor and future generations. The reason why some resources such as water, forests, and clean air are under siege, while others such as metals and energy are not, is that the scarcity of the latter is reflected in market prices where the forces of substitution, technical progress, and structural change are strong. The first group is characterized by open access with no incentive to use them sparingly. Policies and institutions are, therefore, necessary to force decision-makers -- corporations (companies), farmers, governments, and households -- to take account of the social value of these resources.

Environmental policy, in principle, is aimed at addressing the problems outlined above. Policy does not work in a vacuum, however. The socio-political system, the setup of institutions and the market system are all at work. Thus, instruments that are applicable/workable within the system need to be devised for the successful implementation of the policy. Before embarking on the review of such instruments, the salient features of the Ethiopian Environmental Policy are outlined.

4.3. Some Salient Features of the Ethiopian Environmental Policy and its Background

One of the notable achievements of the country has been the formulation of the CSE which culminated in the issuance of the Environmental Policy of Ethiopia (EPE) on April 2, 1997. The CSE was formulated in collaboration with the Ministry of Economic Development and Cooperation (MEDaC). The EPE touches upon a wide range of resource sectors: soil, forest and woodlands, biodiversity, water resource, energy, mineral resources, urban environment and environmental health, industrial pollution, atmospheric pollution, and cultural and natural heritage. The policy also encompasses other cross-sectoral issues such as population and the environment, community participation and the environment, tenure and access rights to land, etc.

The policy document has comprehensively addressed the environmental problems of Ethiopia.

The overall goal of the policy is to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of natural, human-made and cultural resources and the environment as a whole, so as to meet the needs of the present generation without compromising the ability of future generations to meet their own needs.

The implementation of the Policy has started with the conservation strategy (CSE) Phase III project (1996-2000), which aims at capacity-building for improved environmental conservation at the federal and regional levels. The project is being implemented jointly by the Environmental Protection Authority (EPA) and the Ministry of Economic Development & Cooperation (MEDaC). The important components of the project include:

- Development of Regional Conservation Strategies (RCS);
- Development of Action Plans and Institutional Framework; and
- Integration of Environment into the development process, particularly development planning.

The implementation status of these project components and activities is summarized in Table 2 below:

Table 2: Status of Major Activities of the CSE Phase III Project as at June, 2000 (Source: EPA, July 2000)

No.	Activity	Region
1	Development of RCS	
	• RCS draft documents prepared	All Regions
	• RCS conference conducted	Tigray, Oromia, Somali SNNPR, Gambella & Addis Ababa
	• RCS needs editing	All regions, except Afar, Somali, Oromia, and Addis Ababa
	• RCS documents summarized	Afar, Amhara, Oromia, Benishangul, SNNPR and Addis Ababa
	• RCS summary under preparation	Somali
	• RCS approved	Amhara, Harari and Dire Dawa
	• RCS document submitted to Regional council for approval	Oromiya
	• RCS translated into different languages	Amhara, Addis Ababa & Afar
	• RCS needs publishing	All Regions
2	Establishment of Institutional set up or Delegating a focal point	
	• Regional Planning & Economic Development Bureau as a focal point for RCS	All regions except Amhara, Oromiya, and Addis Ababa
	• Regional Agricultural Development Bureau as a focal point for RCS	Oromia & Amhara. But in Amhara a nucleus environment institution is going to be established.
	• Environmental protection Bureau established & functioning	Addis Ababa

As can be seen from Table 2 above, all regions have completed the preparation of the draft documents of their Regional Conservation Strategies. Three Regions (Amhara, Harari and Dire Dawa) have already approved their RCS. But none of the Regions have succeeded in publishing the RCS final document.

Environmental issues could be incorporated in the development planning process through several ways: National Development Policy and Planning, Project Development and Monitoring, Environmental Impact Assessment, and National Accounting. In Ethiopia, arrangements to integrate environment in the development process involve many institutions, such as Federal Sectoral Ministries and Regional Authorities. At the Federal level, MEDaC is currently undertaking some attempts in this endeavor.

With regard to incorporating environmental issues into the National Development Policy and Planning, there appears to be an opportunity to address the link between economic, social and environmental components in the development process. The Policy Framework paper (PFP) addresses environment as a cross-sectoral issue, as distinct from sectoral policies. However, the criteria for prioritization of public investment programs (PIP) makes it difficult to incorporate cross-sectoral issues into the PIP, as they consider only sectoral projects. What, then, needs to be done? Will capital budget allocation for environment be compromised because a sectoral implementing agency, say, a Ministry of Environment, does not exist, or should it be included in the Ministry of Agriculture and Ministry of Water Resources budgets? Can environmental activities be included in other ministry budgets? These are some of the key issues worth considering.

With regard to integration of environmental issues into project development and monitoring, MEDaC has a central role to play, particularly in federal government projects. Thus, there is a potential for integrating environment at this level. However, this process would be much more effective if environment were adequately integrated at the policy and program levels.

Considering environmental impact assessment (EIA) as a useful tool for integrating environment into the development planning process, a simplified guideline for project preparation and appraisal has been prepared by EPA. However, the potential usefulness and impact of EIA

should be extended beyond projects, i.e. to strategies, policies and programs.

In Ethiopia, valuation of natural resources and accounting of non-market activities are not included in the estimation of GDP. Given the fact that Ethiopia has a natural resource-based economy, their exclusion can be said to represent a significant distortion. Hence, it would be necessary to start valuation and pricing of environmental goods and services.

4.4. The Need for Workable Policy Instruments and Some Reflections on the Capacity of EPA to Implement the Policy

The CSE that was developed in three phases culminated in the formulation of the Environmental Policy of Ethiopia issued in 1997. The EPA is entrusted with the implementation of the policy, of course with the support of its highest decision making body, the Environmental Protection Council (EPC) supposedly comprising federal ministries and organizations that are directly linked with the environmental issues of the country. However, the composition of the EPC still does not seem to be representative of all stakeholders within the environmental arena. Most notably, the Ministry of Economic Development and Cooperation (MEDaC), the Central Statistical Authority (CSA), the Ministry of Finance (MoF), the Ethiopian Quality and Standards Authority and the Addis Ababa University, among others, should have been represented in the council.

The representation of stakeholders is essential at policy proposal and decision-making levels to make sure that the views of all stakeholder institutions are well represented. Implementation of the provisions of the policy on the ground seems to be quite a big task for EPA, given its organizational setup and young life span, as it was established only in 1995. Besides, the EPA is not yet structured down to the Regional level.

In this regard a number of questions are in order: What instruments has the EPA employed to monitor implementation of the policy or to check environmental degradation problems? Are there coordination mechanisms to enforce the application of these instruments? Is EPA mandated or authorized to impose charges or fees

aimed at mitigating environmental problems? If not, won't there be a gap in policy implementation?

There are two broad categories of conventional policy instruments that could be employed to deal with environmental problems: the Command and Control (CAC) type and Market-based (economic incentive) instruments that are being used in the main within the developed world. The former category refers to regulatory instruments, such as standards, permits, and licenses as well as control mechanisms that need to be obtained or observed in the operation or use of natural resources. The latter category is basically designed to restore the link between resource scarcity and resource price and involves any one of the following: taxes, fees, subsidizing performance bonds, and assignment of property rights.

Degradation of natural assets being the overriding environmental problem in Ethiopia, our discussion on policy instruments focuses on those instruments that are believed to be relevant to Ethiopian circumstances (resources in which Ethiopia has a comparative advantage in its developmental endeavor). Thus, our focus generally is on land (soil), forestry, water and fishery resources. Soil, seen separately from land, is considered a natural resource as per the SEEA conventions.

Action Impact Matrix describing economy-wide policy reforms, goals, and instruments that have direct bearing on the environment (sustainable development) is described in terms of resource sectors that are of significance to Ethiopia in Table 3 below.

Table 3: Economy Wide Policy Reform Goals/Instruments and Sustainable Development Issues Action Impact Matrix for Sri Lanka Adopted for Resource Sectors of Interest to Ethiopia)

Economy-wide Policy Reform Goals/Instruments	Sustainable Development Issues		
	Forest and Biodiversity Protection	Agricultural land Conversion and Degradation	Water Resource Depletion and Degradation
1. Resource Access Rights and Tenure	[+]decentralization and social forestry-type institutional support will reduce open access exploitation of forest and wildlife resources	[+]tenure security will promote investment and improve land management (note: in some cases, privatization may be externally imposed on communally managed lands, leading to a breakdown of traditional management systems)	[+]introduction of community rights over fishing & mangrove resources would encourage better resource management

2. Promote Private Investment	[+]alienating land for plantations or allowing sufficiently long-term leases could promote plantation development	[+]may increase investment in land improvement	[-]together with price increases, this may reduce access to water by the poor
3. Government Deficit Reduction:	[-]protection efforts may be reduced, especially in forestry (e.g., Forest Department budget constraints)	[-]reduced agricultural extension programs, increasing problem of cultivation, soil erosion	[+/-]reduced subsidies will discourage wasteful water use, but poor communities may have reduced access to safe supplies
◆ Cut Expenditures, Reduce Subsidies			
◆ Introduce Resource Rent Taxation and User Charges	[+]reduce pressures on use of forests and protected areas and raise funds to improve community self management or government protection services	[+]taxation of idle or neglected lands will encourage land improvement	[+]encourage more efficient use of water resources
◆ Introduce Environmental taxes and fees	[+]reforestation deposits could encourage sustainable logging		[+]tailings or discharge fee will reduce water degradation problems
4. Trade Promotion	[-]export stimulus may increase timber cutting depending on land tenure and accountability, this may worsen deforestation	[+/-]both crop output and input prices will be affected if they are tradable; better land management is encouraged by higher crop prices if tenure is secure (see tenure issue above)	
◆ Export Promotion and Foreign Exchange Liberalization			
◆ Reduce Tariffs and Other Trade Barriers		[+/-]may initially affect industrial output & employment as inefficient firms fail to compete with imports; long-run improvements in resource allocation should increase employment & income, reducing pressures for marginal resource exploitation	

Source: Adapted from World Bank Publications

Note: "+" = Positive Impact

"-" = Negative Impact

EPA has not yet issued a nationally designated CAC-type or the economic incentive-type instrument to be observed by agents involved in the use of the natural resources just mentioned. The mandate and capacity of EPA in instituting and enforcing instruments (particularly economic incentives) has been already questioned. Hence, resort will be

made to individual attempts of federal government institutions responsible for the management of the above resource sectors.

In regard to forestry, the need for economic incentives (price-type) instruments for proper management of forest resources has been long recognized by the MoA when it sponsored "Forest Products Pricing and Marketing Study" in 1988 (MoA, 1990). In the preface to the study, the rationale for the study was stated in the following terms: "the price of any forest product should at least cover the cost of replacement and, if possible, to further development of the resource (forest resource). Forestry should in the longer term be self-financing, whether practiced by the state, organizations or by individuals" (MoA, 1990). The need for establishing royalty rates reflecting resource scarcity was also stated: "while the price structure of the enterprises (SFCDD) tends to account for their costs of production and a margin for profit, the 'royalty' claimed by the SFCDD could be considered as arbitrary because it is neither the appropriate 'residual' computed on the basis of consumers' willingness to pay nor the value computed on the basis of replacement costs for the commodity harvested" (MoA, 1990).

According to Proclamation No 192/1980, only public enterprises, including the then Munessa Shashemene Integrated State Forest Development and Utilization Department (MSFDP), Fuel wood and Construction Production and Marketing Enterprise (FCPME), Sawmills and Joineries Production and Marketing Enterprise (SJPME), and Incense and Resin Production and Marketing Enterprise (IRPME), were legally permitted (the same is true today) to sell wood and other forest products harvested from state forests and plantations and peasant associations and Urban Dwellers' Associations (UDA) lands. Individuals are supposed to sell only wood taken from their homesteads. In practice, however, there are a large number of private individuals who sell forest products collected from a variety of areas, mainly in urban centers. Because of scarcity (demand exceeds supply relationships) selling prices of such 'collected' forest products are often higher than the selling price fixed by public enterprises such as the then SFCDD. Under such conditions, the then State Forest Conservation and Development Department (SFCDD) and its successor, the current Natural Resource Management and Regulatory Department, (NRMRD) stands to lose most (MoA, 1990).

The bottom line here (the policy implication) is that royalty aimed at extracting as much economic rent as possible from forestry resources has not been appropriately set in Ethiopia. As things stand now, forest resources (forest lands) fall under the jurisdiction of either the Federal or Regional Governments. Royalties, if any, set by the two tiers of government need to be set at appropriate levels to reap as much economic rent as possible from forestry.

Another instrument worth considering, and which seems to be extremely crucial for the conservation of forest resources in Ethiopia, has to do with property rights and property regimes. Forests being state property, they could be protected by state agencies such as the NRMRD of the MoA. This may hold true when the times are auspicious. Forests, however, have been the victims of political instability, apart from population pressure on land, as communities around them have shown no mercy whenever social instability occurs. They even at times perceive them as a menace to the surrounding community. Thus, they become open access resources and are subjected to severe destruction, particularly at times of political instability.

According to Desalegn (1996), massive destruction of forests and woodlands in Ethiopia occurred on three significant occasions in the decades following the 1960s. This was when the imperial regime proclaimed in the mid-sixties that all large-scale forests belonged to the state; the second occasion was in 1975, following the land reform and expropriation of all forests; and the third was at the time of the fall of the Derg in 1991. This attests to the importance of institutional arrangements (common property rights, which means group rights for local communities) and local authority systems to enforce those rights. Thus institutional vacuums created when such instances occur has to do a lot with the destruction of Ethiopia's forests although the impact of demographic pressure should not be underestimated.

However, the claim that these destructive practices are the logical result of expanding population is being questioned on the grounds that policy response may be misdirected if the primary cause is attributed to population growth while the real cause of natural resource destruction lies in the failure to create institutional mechanisms for the management of same (Bromley, 1991).

The same line of argument was followed by Desalegn (1996) who illustrates his case by pointing out the environmentally responsible farming practices experienced in the enset zones of the South, one of the regions with the highest population density in the country. According to Desalegn, the areas in the South have managed to escape the drought tragedies that were experienced in the north and northeastern parts of the country. The Konso and Gamo areas, which have won world-wide acclaim in reforestation programs, are also a case in point to attest to the claim that environmental management practices are a response to demographic pressure on land shortage (Desalegn, 1996). All these arguments stand in support of the need for the promotion of indigenous environmental management practices and institutionalization of local authority systems (empowerment of local communities, accompanied by a scheme that would enable them to benefit from surrounding natural resources, which would have otherwise faced threats in the form of eviction).

The Environmental Policy of Ethiopia has made a provision for the setting up Community Environmental Coordinating Committees to mobilize communities in an effort towards protecting the environment. However, incentive schemes need to be devised to ensure that members of the community benefit, in any form, from the resource under consideration, say, community forests. If the schemes are not designed in such a way that community members have stakes in those resources, there is little guarantee for their protection. According to the current practice in Ethiopia, Peasant Associations (PAs) and Urban Dwellers Associations (UDAs) organize wood harvests and take care of the proceeds. One question that poses itself is as to how individual members of these associations resist the temptation of destroying trees whenever the opportunities to do so arise?

It would have been interesting to know what in-built instruments/mechanisms EPA has so far devised to create incentive structures among local communities whose livelihood in many ways depends on the various resources (forest, water, fishery). The need for reviving indigenous practices of environmental management of natural resources (woodlands, grassland, pasture, farmland, water resources, etc.) has been noted by Desalegn (1996). These are: management by individual biological and physical conservation practices; management by customary rules and regulations; and management by religious sanctions. Institutionalization of local authority systems (decision-

making on the use, management and allocation of resources) needs to be considered, and EPA, together with other pertinent institutions, is expected to play a vanguard role in instituting such instruments and enabling them to function efficiently.

Efficient utilization of water, of which Ethiopia has immense potential, also deserves consideration. Given the multi-purpose use of water (e.g. for household consumption, factories, irrigation, and electricity), water pricing should from the outset be given utmost priority. In this regard, the Ethiopian Water Resource Management Policy has been already issued. The Policy has recognized water as a natural resource with economic value and has put in place provisions to ensure that fees are paid for services rendered. The policy also has provisions for water tariffs to "be site-specific, depending on the particulars of the project, location, the users, the cost and other characteristics of the scheme." Poverty reduction being the overriding objective of the government, efficiency criteria alone may not be the best instruments for water resource management. Thus the policy has also recognized the need for addressing the management of water resources in conjunction with basic social equity norms (MOWR, 1999).

Another area of emphasis is the impact of overall development programs, macroeconomic reform programs and structural reforms (such as privatization) on the environment. The experiences of developing countries, especially of those with natural resource-based economies, have helped identify three inter-related reasons for natural resource degradation. These are: the intentional policies of governments in need of foreign exchange; well-intended but unspecified policies that were actually established with resource management and protection in mind; and broad economic and agricultural sector policies that cause problems for the use of land and natural resources (Bromley, 1991).

The TGE (and now EPRDF) adopted the Agricultural Development Led Industrialization (ADLI) strategy at national level, with agriculture being the central focus on the development agenda. ADLI is expected to achieve two objectives in tandem: boosting the supply of agricultural output to provide enough food and raw materials for manufacturing and exports, on the one hand, and creating effective demand for manufactured products on the other. This is expected to strengthen the link between the agricultural and industrial sectors, which is considered essential for a viable economy. This could be achieved

either by extending (expanding) agricultural land through deforestation or encroaching into marginal lands, or by intensification (through the use of commercial fertilizer) agriculture to improve productivity. The consequence of this on the environment and the benefits (increased productivity) are both a matter for consideration. This could be in line with the third cause of natural resource degradation cited above.

On the macroeconomic policy reform front, Ethiopia has been undergoing profound socioeconomic transformations following the demise of the Derg Regime in 1991. Following this, the TGE launched the Economic Reform Program (ERP), which is aimed at redressing the macroeconomic imbalances caused by the misguided policies of the Derg. The most notable macroeconomic policy measure was that effected on the external sector - the devaluation of the Birr against the US Dollar by about 59% in USD terms. This was aimed at promoting the export sector, which is dominated by primary agricultural commodities accounting for 90% of exports. Prices of exportable commodities for primary export-based developing countries being determined by the international market (which is subject to frequent instability), utmost effort is being made to keep up with supply to offset the effect of changes in price through volume increases. This may have impact on resource degradation (over exploitation), depending upon the type of tenure on natural resources and of the export commodity under consideration. This deserves consideration especially for mono-export countries like Ethiopia. (The possible impacts of economy-wide policy reforms and instruments have been indicated in Table 3 above.)

V. How Can Implementation of EPE be Assessed?: The Need for a Coordinated Effort Towards Institutionalizing NRA in Ethiopia.

The review made of the experiences of Southern African countries in section three above will help draw lessons on the use of NRA as a monitoring tool of environmental policy. As a monitoring framework, the NRA can provide aggregate physical indicators and an improved indicator of macroeconomic performance and environmentally adjusted domestic product (EADP) via monetary accounts if computation is feasible for all important resource sectors (soil, forest, water, fishery, etc.).

The emphasis on the NRA, as compared to other sources of data on the environment, has to do with the direct link it has with economic accounts (national accounts) for integrated environmental analysis. The advantage of a direct link with separate micro or sectoral level analysis of economic and environmental problems lies in the fact that it forces economists to recognize the links and to take into account potential trade-off between economic and environmental goals.

Any environmental policy can be assessed through an NRA framework by constructing PRAs and, subsequently, monetary accounts which serve as a bridge between conventional measures and environmentally adjusted national income measures, such as EADP. But, as has been already indicated, NRA has never been practiced in Ethiopia.

NRA undertaking being a multi-disciplinary activity, it calls for a concerted and coordinated effort of all concerned national agencies that generate economic and environmental statistics that would help adjust conventional measures of national income and well-being.

The Ministry of Economic Development and Cooperation (MEDaC) generates national income accounts statistics, which serve as a basis for NRA undertaking. The Ministry of Agriculture (MoA) and its federal affiliates (the Ethiopian Agricultural Research Organization [EARO]), and the Biodiversity Institute generate statistics on land use patterns, rates of soil degradation, the profile of biodiversity, and coverage and volume of forest resources in Ethiopia. The Ministry of Water Resources is expected to provide statistics on the types (ground and surface) and volume of water generated in each case and the distribution of these water types in the country. The Ministry of Mines and Energy is also expected to provide statistics on sub-soil assets (minerals), their deposits, rates of extraction and scale of operation (commercial versus artisan mining). Extraction of as much economic rent as possible from the exploitation of natural resources (renewable or non-renewable) being essential for optimal resource management, the involvement of the Ministry of Finance is also important.

A coordination mechanism need to be devised, and EPA and MEDaC are expected to play this role. Mechanisms also need to be devised for the involvement and participation of regional governments and municipalities as needs be. The very weakness of the

implementation process of the EPE and the CSE lies in institutional setups. While the implementation of the CSE and the EPE is supposed to be the concern of every sector, it is in the main left to the EPA, which currently has both limited technical capacity and organizational structure. The need for a coordinated effort is, therefore, crucial for monitoring the implementation of the policy which purpose NRA is expected to serve.

The construction and maintenance of NRA is an interdisciplinary undertaking that typically cuts across the responsibilities of a number of government organizations. It requires that different government ministries work together and that effective communication and interaction be established, with a central agency that can provide effective leadership in coordinating inter-agency participation put in place (possibly MEDaC/EPA).

It has already been indicated that the conventional national account series are the starting point for work on NRA. MEDaC being responsible for the estimation of the current national account series, it seems to have a comparative advantage in housing NRA. NRA being highly information-intensive, the very organizational structure of MEDaC seems to be conducive for the facilitation of activities related to NRA. Almost all line ministries and other government institutions are represented at least at the team (division) level within MEDaC's existing organizational structure. The fact that MEDaC and EPA have jointly conducted the formulation of the CSE, which is the basis of the policy, is by itself an indication that MEDaC and EPA could jointly undertake NRA. They could best complement each other in this endeavor.

Having briefly outlined the institutional arrangements needed for a coordinated effort towards monitoring the Policy's implementation, we now turn to outlining the preliminary steps towards commencing work on NRA in Ethiopia:

- a) Identify key resource sectors with potential for the future growth and development of the Ethiopian economy. These are land (soil), forestry, water, minerals, and fishery, for whose omission, depletion and degradation GDP/GNP need to be adjusted to ultimately arrive at environmentally adjusted domestic product at macro level.

- b) Establish Physical Resource Accounts (PRA) or material balance, or resource inventory accounts, for uses (flows) and assets (stocks) for specific resource sectors (land accounts, forestry accounts, water accounts, fishery accounts, etc.).
- c) Determine resource rents for resource use (flow) and value of depletion of asset stocks using standard methods of valuation (**Net Price and/or Present Value** methods).
- d) Establish Monetary or Economic accounts for each resource sector based on the results in steps 'b' and 'c' above.
- e) Provide standard conventional measures of economic activity (national account estimates) via the production, income and expenditure approaches at the level of aggregation deemed appropriate for adjustment.
- f) Effect the adjustment process to obtain environmentally adjusted domestic product (EADP).

VI. The Adjustment Mechanism Within the SEEA Framework: How Feasible is it For Ethiopia?

The conventional national account estimates are the starting point for work on NRA or the adjustment process via the SEEA framework. At least two shortcomings are apparent in the carrying out of such an exercise in Ethiopia. The first is the very weaknesses of the national accounts themselves. This is reflected in the absence of key aggregates (flows), such as allowance for consumption of produced capital, commonly referred to as depreciation of fixed assets. Measures of economic activity (GDP) by income approach are not also currently made available. This is one hindrance to the adjustment process to arrive at (EADP). The second shortcoming is the lack of PRA-type systematic accounts for major resource sectors (forestry, water, land (Soil), Fishery, etc.). These, with the accompanying monetary unit values (as has been indicated in section 2) are the basis for adjusting conventional measures for omission of uses and depletion/degradation of economic and non-economic environmental assets.

The gaps in the SEEA framework, if adjustment were to be made for forest resources in Ethiopia, are described in Table 4 below.

Three categories of assets can be identified in any economy: produced asset, natural economic and non-economic environmental assets³, and human capital. The SNA has provisions for adjusting the first category of capital for consumption of fixed capital (depreciation), although some developing countries may not still adjust their estimates owing to data deficiencies. They report their value-added estimates in gross terms. GDP adjusted for consumption of fixed capital is net domestic product (NDP). What has been missing (and which is the subject of this study) is adjustment for omissions from SNA and depletion of the second category of capital (natural economic and non-economic assets).

To conduct the adjustment mechanisms (i.e. implement the SEEA framework) the data for produced assets is taken from the basic SNA framework (national accounts estimates). The first step is to adjust the GDP figures (obtained from SNA framework) whose uses have not been recorded in the conventional estimates, for instance, forest products that have not been already accounted for in GDP, such as fuel wood consumed by subsistence households and other minor forest products that are of significance to the poor.

The next step is to adjust the resultant estimates for depletion and degradation of non-produced economic and environmental assets. The depletion of a non-produced asset is measured by the difference between the value of closing stocks and the value of opening stocks and other volume changes. For instance, environmentally adjusted domestic product (EADP) for the depletion of forests is obtained by subtracting the depletion so obtained from the conventional GDP augmented by resource use not accounted for in the conventional GDP (e.g. fuel wood consumption not accounted for in forestry value added).

Is this adjustment feasible for Ethiopia? As has been already pointed out, there has not been any attempt to construct NRA (even PRA-type systematic accounts for individual resource sectors). Our

³ Non produced economic assets are those natural assets that are exploitable or likely to be so for economic purposes even if no explicit ownership or control is currently exerted over those resource such as commercially exploitable timber in the forests. Non produced environmental assets are those assets for which neither ownership rights are enforced nor economic benefits are derived from their use such as forests which are not commercially exploitable.

national accounts series are not even robust enough to serve as a basis for adjustment. Thus, some entries within the national accounting system would remain empty if we were to launch the adjustment process as described in Table 4 below. PRA and monetary accounts are the prerequisites for full adjustment for a given resource sector.

Table 4 illustrates what the entries would look like if we were to adjust Ethiopian National accounts for forest resources as things stand now. Although this may not lead to environmentally adjusted domestic product (EADP) for Ethiopia, this signifies the critical data gaps that needs to be filled via, at least, PRA type accounts. The importance of full-fledged NRA is there by underscored.

The adjustment normally commences with the popular Identity:

$$GDP=Y= C+I+X-M$$

Where:

Y= GDP at current market prices

C= Consumption (both private and public) on GDP

I= Gross Domestic Capital Formation (Investment - both public and private)

X= Export of Goods and non-factor services

M= Import of Goods and Non-Factor Services

The three alternative methods of GDP computation (as per the SNA framework) are summarized as follows:

(a) GDP as the Sum of Final Demand

"+" Personal Consumption Expenditure

"+" Gross Domestic Capital Formation (Investment)

"+" Government Consumption Expenditure on Goods and Services

"-" Imports of Goods and Non-Factor Services

(b) GDP as the sum of Values Added Across Economic Activities or Sectors of the Economy

"+" Value Added in Agriculture

"+" Value Added in Industry

"+" Value added in Services

Where Value Added = Gross Value of Output less Value of Intermediate Input in each Sector

(c) GDP as the Sum of Income Payments to Factors of Production

"+" Compensation of Employees for the Whole Economy

"+" Net Interest Payments for the Whole Economy

"+" Rental Income for the Whole Economy

"+" Profits Accrued to Entrepreneurs

= National Income

"+" Indirect Taxes

"-" Subsidies

= National Product

"+" Depreciation on man-made Capital

= Gross Domestic Product

"+": Plus, "-": Minus

Note: Gross National Product (which, in fact, is an income concept)

is the sum of GDP and Net Factor Income from abroad.

Table 4: Illustration of Data Gaps in the Adjustment Process the Case of Forestry

No.	Indicator	Reference Year	Value (Million Birr)
1)	$Y=C+I+X-M$	1995/96	56967.2
2)	$GNP=Y+NFIA$	1995/96	56691.8
3)	Gross Capital Formation(I)	1995/96	9176.1
4)	Consumption of Fixed Capital (CFC)	1995/96	?
5)	Net Capital Formation of produced Assets (NAPA) (3-4)	1995/96	?
6)	Accumulation of Non-produced Economic Assets (Growth of natural forests and afforestation) (ANPEA)	1995/96	?
7)	Use of non-produced Economic assets (Harvesting of trees) =UNPEA	1995/96	?
8)	Net capital Formation of non-produced economic assets (5-6)=NANPEA	1995/96	?
9)	Net Accumulation of Economic Assets (5+7)=NAEA	1995/96	?
10)	Value Added of Forestry Sector	1995/96	5585.1
	◆ Fire wood	1995/96	5185.3
	◆ Charcoal	1995/96	170.3
	◆ Round wood for construction	1995/96	226.4
	◆ Gum and Incense	1995/96	3.1
11)	Value of use of forest products not accounted for in value added of forestry(Value Added)	1995/96	?
12)	Adjusted value added of forestry (10+11)	1995/96	?
13)	Adjusted Net Domestic Product (ANDP) (Y-4+11)	1995/96	?
14)	Value of Degradation of Environmental Assets (VDEA)	1995/96	?
15)	Environmentally Adjusted Domestic Product $EADP=C+NAEA - DEA+(X-M)$	1995/96	?

Source: MEDaC (Provisional)

The block of entries indicated by "?" in the above table is an apt illustration of the huge data gap that needs to be filled in order to generate sustainability indicators in Ethiopia. The illustration is for forestry, but the same would apply if other resource sectors were considered. This simply shows how big our future agenda in this endeavor is. The block of entries can be completed with quantitative indicators of the type generated through the NRA framework in the presence of full-fledged forest accounts of the type described in table 5 below.

Table 5: Typical Monetary (Economic) Accounts for Forests

Activity/forest Type	Value in Million Birr
1. Opening stocks	
2. Changes due to Economic Activity	
2.1 Depletion ("·")	
– Logging (legal + illegal)	
– Logging Damage	
2.2 Afforestation ("·+")	
3. Other volume Changes (±)	
3.1 Reduction (-)	
– Forest Fires	
– Stand Mortality, Insects, and diseases	
– Animal grazing	
– Shifting cultivation	
4. Other Accumulations (±)	
4.1 Additions ("·+")	
– Natural Growth(Mean Annual Increment)	
– Regeneration	
5. Transfer of land to other Activities	
6. Net Volume changes	
7. Revaluation	
8. Closing Stocks	

In the absence of such indicators, a simple preliminary exercise has been conducted, based on available statistics on forest depletion and the existing national accounting system of Ethiopia, in order to get a feel of what is involved in such a framework.

Assumptions

According to the EFAP (1994), estimates for the depletion of forest resources was conducted for the year 1991/92 based on the following assumptions:

- (a) At least 150,000 hectares of forest are depleted annually;

- (b) An average growing stock of 40m³s per hectare, which is in the lower range of growing stock estimates for heavily disturbed forests. This loss of forest amounts to 6 million m³s⁴ per annum.
- (c) Under the assumption that the forests in Ethiopia could be replaced, the appropriate unit value is the stumpage price⁵
- (d) With a stumpage price of Birr 20 per m³s for fuel wood and Birr 50 per m³s for pole wood, and assuming that 90 per cent of the wood is used for fuel and 10 per cent as pole wood, the full value of forest depletion amounted to 138 million Birr in 1991/92, i.e. (0.9) (6) (20) + (0.1) (6) (50) = 138 million Birr. This was equal to 1/3 of forestry's contribution to GDP during the same period (year), i.e. about 420 million Birr.

This exercise is based on the assumption that this same proportion is depleted annually and is maintained for all subsequent years, although maintaining such a rate of depletion (33 per cent) seems to be unrealistic, given the ongoing alarming rate of deforestation (including by forest fire). Besides, depreciation of man-made capital is assumed to be about 5 per cent of GDP, given the limited industrial and infrastructural base of the country. Education expenditure (recurrent) for the year 1995/96 stood at 951 million Birr. Owing to data limitation no allowance is made for pollution damage and the indirect impact of deforestation on productivity of the agricultural sector.

Given this background, adjusted (genuine) saving rate computation proceeds as indicated in Table 6 below. All the indicators refer to the 1995/96 Gregorian Fiscal Year.

Table 6: Conventional versus Adjusted Indicators

S.N.	Item	Value (Million Birr)
1	GDP at current market price (Y)	56967.2
2	Gross Domestic Saving	3705.7
3	Gross Domestic Saving as percentage of GDP(%)	6.5%
4	Allowance for the consumption of produced capital or depreciation (5 % of GDP assumed)	2848.4
5	Net Domestic Product at current market prices ((1)-(4))	54118.8
6	Forestry Value Added	5585.1
7	Value of depletion of forest resources (1/3 of Forestry's Value Added) (very conservative estimate)	1861.7

⁴ Volume of wood is measured "solid over bark" (m³s)

⁵ The stumpage price is the price for a unit of unprocessed mature timber on the stump. It represents timber sale proceeds less the cost of harvesting, transportation to the mill, and processing.

8	Environmentally Adjusted Domestic Product (EADP) = ((5)-(7)) (for forest depletion)	52257.1
9	Private Final Consumption Exp. (Cp)	49021.7
10	Government Final Consumption Exp. (Cg)	4239.7
11	Aggregate Consumption Exp. (9+10= Cp+Cg=C)	53261.4
12	Environmentally Adjusted Domestic Saving : EADP-C= ((8)-(11))	-1004.3
13	Current Education Expenditure	951.0
14	Genuine Saving(11+12)	-53.3
15	Genuine Saving as percentage of GDP (%)	-0.10%
16	EADP as percentage of GDP (%)	92%

Source: MEDaC for the national accounts estimates (provisional) and EFAP (1994) for the crude estimates of value of forest depletion.

Note that Gross Domestic Saving (not adjusted for the value of depletion of forest resources: $Y-C = 3705.7$) is a much higher positive figure than the one adjusted for forest resource depletion. The non-adjusted gross saving by itself is even very low by sub-Saharan Africa (SSA) standard, standing at a mere 6.5% of GDP during the period under consideration, i.e. 1995/96. Given the Rate of Gross Domestic Fixed Investment of 18% for the same year, gross saving itself falls short of gross domestic fixed investment by about 12% ($18\% - 6.5\% = 11.5\%$). This gap is being filled in the main by external loan and, to a lesser extent, by concessional loans or grants.

This is a cause for concern because it has had implications on external debt burden and capacity of debt servicing, given the less-than-satisfactory capital budget implementation rate of public sector projects. The absolute level of gross domestic fixed investment is essential for growth and, hence, for development. However, productivity (efficiency) of investment is far more important. The level of human resource development (skills and innovative capacity of the labor force) is an essential complementary input for economic growth and development. By the standards of developing countries (SSA), a modest level of gross domestic investment or saving ratio (at least 25% of GDP) is required to bring about a modest GDP growth rate of about 5% to 6% if productivity of investment measured by incremental capital output ratio (ICOR) is around 4. This means that a sustained increase in investment by 4 Birr is expected to bring about a steady increase in output (GDP) by one Birr in subsequent years. However, Ethiopia is far behind achieving even the minimum level of gross domestic saving or gross domestic fixed investment rate (25% of GDP) cited above. Note that these measures are not yet sustainability indicators, as they are not adjusted for the allowance of consumption of fixed capital (depreciation) of

manufactured (man-made) capital and depletion of natural economic assets (natural resource asset stocks) such as forestry, sub-soil, soil, water, fishery, etc.

The indicated negative genuine saving rate of -0.1% is too conservative, given the data limitations, to fully account for forest depletion in Ethiopia. The rate of dis-saving would have been higher than indicated (this being a very rudimentary indicator, given the data shortcoming). This by itself reveals that social welfare is declining over time. On the other hand, there is a belief that forest products are undervalued, although it is difficult to establish the rate of understatement at this moment for lack of a full-fledged NRA. Besides, EADP does not account for service values such as watershed protection and carbon sequestration, etc. which are also considered to be essential functions of forests. The differences between conventional indicators and adjusted ones, GDP & EADP and the related aggregates of gross domestic savings and genuine savings, respectively, serve as indicators of sustainability. The contrast between the gross domestic savings rate (6.5% of GDP) and the adjusted savings rate of -0.1% of GDP is evident from Table 6 above. For an economy to be on a sustainable path, the difference between GDP and EADP should ideally be zero. In the case of Ethiopia, based on the above preliminary exercise, EADP is 92% of GDP as shown in Table 6.

The question of what needs to be done to arrest such a state of conditions calls for a concerted and coordinated effort by all stakeholders: the Ministry of Economic Development and Cooperation, the Ministry of Finance, all other resource ministries (Water, Resource, MoA, Ministry of Mines and Energy) on the one hand, and the Environmental protection Authority (EPA) on the other. Domestic resource mobilization and the generation of surplus funds for investment is in the main the responsibility of the Ministry of Economic Development and Cooperation and the Ministry of Finance. Devising and employing a workable and effective natural resource management policy and strategy is the responsibility of stakeholder resource sector ministries. Devising workable and mainstreamed regulatory and economic incentive instruments of the type cited in our study should be the responsibility of the Environmental Protection Authority, in collaboration with the aforementioned federal government institutions. As it stands now, the Environmental Policy of Ethiopia (EPE) and the Conservation Strategy of Ethiopia (CSE) look like policies issued by the

Environmental Protection Authority to itself. Availability of all-encompassing and reliable sustainability indicators calls for the institution of a full-fledged NRA in Ethiopia, which is well-integrated with the national accounts.

VII. Implications on Implementation of the Environmental Policy and Some Recommendations

NRA-based indicators of economic activity and welfare facilitate policy analysis by sending signals to policy makers on the sustainability of resource use and environmental quality. These indicators provide a comprehensive view of sustainability via their linkage to conventional macroeconomic performance indicators, such as GDP and national savings. This is the hallmark of the NRA framework. The adjustment process, i.e adjusting conventional measures via NRA for resource depletion and environmental damage as well as omission of resource use, could be easily carried out without the basic distorting of the SNA framework via the SEEA.

What is the implication of such indicators to the environmental policy of Ethiopia? The survey of the experiences of Southern African countries and the tentative indicators derived for Ethiopia based on value of depletion of forest resources could help draw important lessons for Ethiopia:

- a) However rough the indicators are (derived from the exercise conducted above), they shade some light on the need for these very indicators for assessment of environmental policy, prudent natural resource management policies, programs, and strategies.
- b) There is a need for NRA-based indicators to judge the sustainability of resource use/to measure costs of environmental degradation and thereby conduct the monitoring of implementation of the policy. Environmental management/planning activities may be conducted on a sectoral basis, in a fragmented manner, for forestry, water, soil, etc. The NRA-based evaluation technique, however, has an added advantage of providing sensitivity indicators at an aggregate level (macro level) that could be easily felt by policy makers and planners. The signal sent by the indicator at macro level is expected to receive more attention at macro level than at sectoral level. Macro indicators

are more frequently consulted by policy makers and planners than sectoral (micro) level indicators.

- c) The need for a collaborative effort in instituting NRA has been underscored. The MEDaC and EPA are expected to play a vanguard role in this endeavor. The need for fine-tuning the national accounts of Ethiopia has also been emphasized, as they are the starting point for the derivation of environmentally adjusted indicators of overall economic activity and economic welfare. Such indicators are expected to facilitate environmental policy analysis. This needs to be supplemented/complemented by conventional policy instruments that are workable within the given socio-economic setting. Economy-wide policies and programs need to be forward-looking and environmentally-sensitive.
- d) The strengths of the EPE and CSE have been outlined. On the other hand, the problem associated with the institutional setup in implementing the EPE and CSE and the inability (at least so far) to devise instruments to address environmental problems has been underlined. There seems to be an institutional gap in implementing the policy. The implementation of the policy is supposed to be the responsibility of sectoral ministries or organizations under whose jurisdiction the resource sector (environmental problem) falls. In reality, however, it seems to have been left to the EPA. The EPA, however, receives too little support and insufficient financial and human resources to undertake this task on its own. The mandate of EPA to institutionalize policy instruments is also an issue that deserves consideration
- e) Putting the policy and the strategy (EPE & CSE) in place is a step in the right direction. However, clearly defined institutional responsibilities and centralized enforcement mechanisms (policy instruments) need to be devised for monitoring and assessing implementation of the policy and its efficacy. EPA needs to be charged with the mandate to introduce/employ policy instruments in collaboration with the stakeholder institutions mentioned in this study. Introduction of policy instruments needs to be streamlined to be equally observed by federal and regional government institutions.

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Indigenous Conservation Practices in North Shewa Administrative Zone, Amhara National Regional State

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ABSTRACT.

North Shewa Administrative Zone is part of the central highlands of Ethiopia, and it has a long history of early settlement and agricultural cultivation. Due to a number of reasons, most highland areas of the Zone have suffered from extreme degree of environmental degradation. The main cause of environmental degradation is soil erosion, which is mainly caused by water. In response to this problem, both concerned government and non-government development agencies have devoted substantial resources to the transfer and implementation of new conservation technologies for more than two decades now. In most cases, the technologies transferred to the farmers were brought from abroad. However, many farmers have recognized that these technologies do not always suit their specific needs and solve their problems. On the other hand, it has been observed that certain indigenous conservation practices have been widely used by some of the farmers in many parts of North Shewa Zone. However, since greater attention has been given to the introduction of new or modern technologies, the opportunities of at least knowing the existence of age-old indigenous conservation practices by concerned development agencies were very limited. This paper deals with the indigenous conservation practices that have been commonly and widely applied by the farmers in the traditional farming system since a long time ago.

1. Introduction

North Shewa Administrative Zone is one of the Administrative Zones found in Amhara National Regional State. It is part of the central highlands of Ethiopia, with a long history of early settlement and agricultural cultivation. Due to high population pressure (both human and livestock), intensive cultivation, overgrazing, steep slopes and relatively high rainfall, most highland parts of the Zone have suffered from extreme degree of environmental degradation. The main cause of environmental degradation is soil erosion, mainly caused by water. In response to this problem, both concerned government and non-

government development agencies have devoted substantial resources to the transfer and implementation of different conservation technologies for more than two decades. In most cases the technologies transferred to the farmers were brought from abroad. Development workers at different levels were given responsibilities to try and adapt them to the local conditions. However, many farmers have recognized that these technologies do not always suit their specific needs and solve their problems. Therefore, the acceptance of these technologies by the farmers was limited. Although there could be many reasons for the limited acceptance of these technologies, one could imagine what would happen to their sustainability because of their limited or poor acceptance on the part of the farmers. In fact, it has been observed that certain indigenous conservation practices have been well accepted and widely used by some of the farmers in many parts of North Shewa Zone. However, since greater attention has been given to the introduction of new or modern technologies, the opportunities of at least knowing the existence of age-old indigenous conservation practices by development workers were very limited.

In recent years, however, development workers working at different levels and different development agencies have gradually come to recognize the importance of identifying and evaluating indigenous conservation practices. In line with this, in 1996, the Bureau of Agriculture for the Amhara National Regional State initiated the study of indigenous conservation practices in each Administrative Zone of the Region, with a financial support obtained from the Swedish International Development Agency (SIDA). Accordingly, a preliminary survey was carried out in the North Shewa Administrative Zone in 1997. This paper presents the results obtained from that survey. Although there has been a lot of debate in recent years about the term 'indigenous', in this paper it refers to the local practices or techniques which have been adapted by the farmers since a long time ago as distinct from the newly introduced/modern techniques imposed from outside. Since the survey carried out was a preliminary one, focusing only on identifying the major (i.e. the most commonly and widely used) indigenous conservation practices, it doesn't cover all aspects, such as detailed technical parameters, socio-economic conditions, etc. However, it can at least highlight the existence and importance of some indigenous conservation practices, which have been commonly and widely applied by the farmers in the traditional farming system.

2. General Description of North Shewa Administrative Zone

2.1. Location and Topography

North Shewa Administrative Zone is one of the 11 Administrative Zones of the Amhara National Regional State and is located in the central highlands of Ethiopia. It lies approximately between 8° 38' and 10° 42' north latitude and between 38° 40' and 40° 03' east longitude and covers an area of about 17,215 km². It comprises 18 weredas, including the Zonal capital, Debre Berhan. The topography is characterized by highly dissected, mountainous, undulating and rugged terrain, with slopes ranging from very steep to almost flat and an elevation ranging from 988 to 4,000m asl.

2.2. Climate

According to the traditional climatic terms, four zones are recognized in North Shewa; namely: *wurch*, *dega*, *weynadega* and *kolla*. Based on the data collected by the Ethiopian Meteorological Agency from four observation stations from 1985 to 1994, the mean annual temperature varies from 12°C to 24°C. The highest temperature of the year prevails between March and May, and the lowest temperature between November and December. The mean annual rainfall, which falls in two rainy seasons, varies from 772 to 1,012 mm. The main rainy season (*meher*) is from June to August and the short rainy season (*belg*) is from February to April.

2.3. Soil

Detailed information on the soil of the Zone could not be obtained. However, according to color and texture, the soil is generally classified into four major types. These are black soils (vertisols), red clay soils, brown soils (luvisols) and gray soils and the share of each is 42%, 26%, 15% and 17%, respectively.

2.4. Population

According to the 1994 census, the total population of the Zone is 1,560,916 of which 784,207 (50.2%) are male and 776,709 (49.8 %) are female. Out of the total Population 1,413,964 (90.6 %) are rural residents, of which males and females constitute 50.6 % and 49.4 %, respectively.

respectively. The urban population is 146,952, of which 68,191 (46.4 %) are male and 78,761 (53.6%) are female.

The social composition of the Zone is made up of Amhara (93.7%), Oromo (4.3%), Argoba (1.7%) and others (0.3%). The predominant religion is Orthodox Christian (94.6%) followed by Muslim (5.3%) and others (0.1%).

The total number of livestock and poultry is estimated at 3,643,682 and 112,518 respectively (1994 census). Out of the total population of the livestock cattle, equines, sheep and goats and camels account for 35.9%, 6.6%, 57.3% and 0.04%, respectively.

2.5. Agriculture and Land Use

Since 90.6% of the total population of the Zone are rural dwellers, agriculture is the basis of the economy, though some people derive additional income from pottery, weaving, etc. Farmers depend for their livelihood on subsistence crop production under rain-fed conditions and on livestock husbandry. Traditional farm implements, such as the ox-drawn plough, are used in cultivation. According to the CSA's 1994/95 agricultural sample survey, cereal crops constitute the largest share, which is 78.5% of all the food crops. The important cereal crops are *teff*, wheat, sorghum and barley. Pulses account for 20 % of the total food production.

The data collected from the Weredas indicate that out of the total area of the Zone, 39% is under cultivation (of which annual crop accounts for 38% and perennial crops for 1%), 16 % is under grazing, 16% is under forest and bush, 3% is cultivable land, 19 % is uncultivable land and 7% others.

According to the data collected by each wereda in 1997, the average area of land per household head varies from 0.9 ha to 4.2 ha, which is broken up (fragmented) into a number of small separate plots, often distant from each other. The major cause of land fragmentation could be the land inheritance custom. The land is inherited and shared by sons of one family, and the interest of each household head is to have a plot from all the major categories of land (mainly depending on the type and fertility of the soil) in the community during redistribution of land. For instance, on the average, a single peasant in Andit Tid area operates

5.93 plots, and in extreme cases, he may have as many as 11 or 12 parcels. The distances traveled by a farmer to his fields ranges from 0.2 km to 4.65 km, with an average distance of 1 km to each parcel (Yohannes, 1989). The data collected from different weredas shows that the average area of cropland per household decreased from 2.35 ha in 1993 to 2.1 ha in 1997. This is obviously the result of population pressure.

3. Objective of the study

The objective of the study is to carry out a preliminary survey of the indigenous conservation practices in the North Shewa Administrative Zone commonly and widely used by the farmers.

4. Methodology

To carry out the study, a survey-format developed by the Regional Bureau of Agriculture was used, with little modification to fit the local condition. The format was developed based on the questionnaire prepared by the World Overview of Conservation Approaches and Technologies (WOCAT-CDE, 1996).

Since it is very difficult to cover the whole Zone within the limited time on hand, only some areas where indigenous conservation practices were widely applied by the farmers were chosen. Moreover, to get a full picture of the Zone, some weredas which represent different agroclimatic conditions (*wurch*, *dega*, *weynadega* and *kolla*) were also chosen for the study. Then, the actual field survey was carried out and the required information for each indigenous conservation practice filled in the survey format.

5. Results and Discussion

Based on the survey carried out, different age-old indigenous conservation practices were identified. These practices were grouped under three major categories generally known as physical, vegetative and soil management measures, as indicated in Table 1.

Table 1: Lists indigenous conservation practices identified in North Shewa Administrative Zone by major categories

#	Major categories		
	Physical measure	Vegetative measure	Soil management measure
1	Stone bund	Area closure	Manuring
2	Unploughed strip		Soil burning
3	Traditional broad bed furrow		Kraal manuring
4	Traditional ditch		
5	Traditional cut-off drain		
6	Traditional water way		
7	Traditional check dam		
8	Trash lines		

During the survey it was observed that some of the indigenous conservation practices, such as cut-off drain, water way and check dams, were used with the other major practices in combined form (as complementary). Therefore, in this paper only the major conservation practices commonly and widely used by the farmers are discussed briefly below.

5.1. Stone Bund

Stone bund/stone terrace, which is locally known in Amharic as *kab* or *erken*, is found to be briefly used by some of the farmers of North Shewa Zone, regardless of the different agroclimatic zones. The results of the survey revealed that, although the distribution (area coverage) of the stone bund greatly varies from area to area, it is widely used in *weynadega* (medium high land) parts of the Zone.

According to the farmers, stone bunds have been constructed to capture the soil washed down the slope by flood during the rainy season, in order to get better crop yield from the given farm land. Farmers mentioned that the construction work demanded much labor and that it was tiresome. Therefore, most of the farmers who have the capacity to prepare food and local drink (*tella*) used the labor contributed by the traditional labor co-operation system, locally known as *debo*, in addition to the labor directly provided by family members.

The layout was done by each landowner (mostly male) without using any surveying instruments (e.g. line level). Nevertheless, during

the survey period, it was observed that some of the farmers were able to construct the stone bunds along the contours. Before the stones are piled up, a foundation trench at least 0.5 m deep and 0.5 m wide is made, in order to make the stone bunds stable. This foundation trench is called in the local Amharic as *assas* or *armen* (in Ankober Wereda). According to the farmers (especially in Ankober Wereda), there are two types of stone bunds, based on the way they are constructed. These are called in the local Amharic *and anjet* and *hulet anjet*, meaning 'single-line' and 'double-line', respectively. The farmers said that the single-line stone bund was mainly constructed in areas where the stones are scarce and the slope's gradient is higher (greater than 20% - personal average estimation of the fields by farmers). The double-line stone bund, according to the farmers, is constructed in areas where the stones are abundant, the slope's gradient is lower (less than 20% - personal estimation) and where very strong stone bund is needed (i.e. within or at the boundary of the farmland).

Based on the information obtained from farmers, most of the stone bunds which are now on different farmlands were not constructed at once but gradually over the years, starting from the lower boundary and going up the slopes until the entire farmland was covered. It was observed that the different parameters (height, width, etc.) of the stone bunds greatly varied from farmland to farmland, and even within the same farmland. The height varies between 0.5 m and 4 m and the width (upper) between 0.3 m and 2 m. The spacing between two consecutive stone bunds varies between 2 m and 30 m. Most of the farmers said that the stone bunds were constructed in a staggered arrangement to facilitate ploughing by oxen. Moreover, this arrangement allows the spread of the sediment accumulated above one stone bund to the nearby area found below another stone bund during ploughing time, as explained by one farmer during the survey period.

5.2. Unploughed Strip

Farmers deliberately leave unploughed strips, locally known as *dember*, within or at the boundary of their farmland for the purpose mainly of decreasing the hazard of flood coming from the uplands. Through time, the unploughed strips are gradually developed by the trapped soil. The survey results indicate that this practice has been exercised throughout the North Shewa region, although there are big differences in its distribution. It is widespread in the *dega* agroclimatic

zone. Most farmers consider the unploughed strips as one of the sources from which animal feed is obtained.

Like the stone bunds, the different parameters of the unploughed strips greatly vary from farmland to farmland and within the same farmland as well. The height varies between 0.8 m and 3 m; the width between 0.5 m and 4 m, while the spacing between two consecutive strips varies between 3 m and 40m. Similar to the stone bunds, the arrangement of the unploughed strips within the farmland is staggered in order to facilitate ploughing. During the survey it was observed that some of the farmers started ploughing some portion of the unploughed strips to reduce their width. Based on the discussions made with some of these farmers, the unploughed strips were cultivated because of shortage of cultivable land. Although these farmers were aware of the problem that follows the destruction of unploughed strips, they said that there were no other alternatives but to do what they did in order to feed the ever-increasing 'mouths' in their respective households.

5.3. Traditional Ditches

Traditional ditches, locally known as *boy* or *fesses*, are constructed every cropping season and run diagonally over the cultivated land. They are made by pressing a *maresha* (plough) deep into the ground and can be easily differentiated from the normal plough furrows. This practice has been widely used in the *dega* and *weynadega* agroclimatic zones. Some of the older farmers mentioned that they had been using traditional ditches for a long time and that the practice had been inherited. For this reason, there are a lot of local farmers' sayings on traditional ditches: '*kezera gebere yaboyew yibeltal*', which means 'a farmer who made traditional ditches is by far better off than one who sowed' (from North Shewa) and '*arso yale fesses temwagto yalewass*', which means 'one can't imagine ploughing without traditional ditches as litigation without bail is unthinkable' (from West Gojam). Such sayings indicate the historical importance of ditches within the traditional farming system (Million Alemayehu, 1996). As indicated by the farmers, traditional ditches are generally used for two purposes:

1. To protect the soil from being washed away by run-off or overland flow coming from the uplands and to reduce the surface run-off generated within cultivated land during the rainy seasons on steep and gentle slopes;

2. To drain excess water from almost flat cultivated plots during the long rainy season.

The width, depth, length, spacing and gradients of traditional ditches differ from area to area. The width of a given ditch is determined by the width of the ox-plough used, and it varies between 30 cm and 50 cm. The depth is mainly determined by the depth of the soil, and it varies between 5 cm to 25 cm. The gradient of the traditional ditches is determined by each farmer and thus varies considerably, as between 3 and 20 percent. Spacing of traditional ditches is dependent on the steepness of the slope, where steeper, cultivated land has more traditional ditches than cultivated land on gentler slopes. However, traditional ditches are also used on almost flat and waterlogged land. In most cases, and traditionally, the length or width of each farmer's cultivated land determines the length of traditional ditches, which is usually proportional. Although most of the farmers construct traditional ditches diagonally in relation to the cultivated area, some are constructed perpendicularly in relation to the contour of the cultivated land.

Farmers construct different shapes of traditional ditches, based on their needs, ranging from linear ditches to contour ditches, arc ditches to "X-wise" ditches. On most water-logged cultivated land the traditional ditches cross one another for better drainage. However, the shape of the traditional ditches differs from one piece of land to another, according to the interests of the landowner. On flat land, where drainage is a serious problem (heavy clay soil), farmers use traditional ditches with ridges, mostly constructed diagonally or perpendicularly in relation to the ridges. The ridges along the traditional ditches do not prevent water movement because the excess water filters into them easily and drains out of the cultivated land.

Different types of traditional ditches are used on cultivated land which already has existing indigenous or modern soil and water conservation measure. Some of the farmers construct traditional ditches which drain excess water to the side of the artificial or natural waterways. Others construct traditional ditches that cut across the soil and water conservation measures, i.e. stone bunds and unploughed strips.

5.4. Area Closure

Area closure is the practice of protecting certain areas from livestock and human interference for a limited period of time (5-12 months) by the full agreement of the local communities. The community members decide when to close the given area and open it again for common access. It was found that this practice has been exercised in North Shewa regardless of the different agroclimatic conditions. It is mostly practiced in the areas where the problem of land scarcity, especially for communal grazing, is high and the common interest of the community members prevails. The purpose of area closure is mainly to get better yield of local grass. When the grass reaches maturity, the community members gather and decide to share the products among themselves and open the area again for communal use, especially for grazing.

The Guassa area, covering about 98 km², is one of the areas where area closure has been practiced by the local community for many hundreds of years (Zelalem Tefera *et al.*, 2000). The grass collected from the closed areas could be used for thatching roofs and making ropes in addition to being used for animal fodder. It could also provide income to some of the households, especially the local grass known as *guassa* (*Gestuca* sp.).

5.5. Soil Fertility Management Practices

5.5.1. Manuring

Manuring is one of the indigenous soil fertility management practices, which has been used by some of the farmers in the North Shewa Zone. Although the extent to which farmers apply this practice varies greatly from one place to another, it was observed that manuring is widely practiced in the *dega* and *weynadega* agroclimatic zones. Based on the information obtained from elder farmers, manure is prepared every year although the quantity mainly depends on the number of livestock one owns. Moreover, farmers said that the high value of dung for use as fuel did greatly affect the quantity of manure prepared each year. Because of this reason, the rate of manure application to farmland has been reduced. During the survey, it was observed that manure was applied to the farmlands, especially those located near the homestead.

5.5.2. Soil Burning

Soil burning, which is locally known as *gay* has been widely practiced in the *dega* agroclimatic zone of North Shewa. Farmers said that *gay* is mainly used for short rainy season (*belg*) crops, such as barley. According to the farmers, *gay* helps increase crop yields, especially for the first year. They said that the crop yield obtained from a field where *gay* was applied was even better than that obtained from a field where commercial fertilizer was applied. However, most of the farmers are aware that crop yields decrease rapidly if farmland is used continuously for more than a year. This indicates that farmers understand both the advantages and disadvantages of *gay*, which helps increase the availability of plant nutrients, such as calcium, potassium and phosphorus, while destroying organic matter in the soil (Tahal, 1988; Yohannes, 1989). Moreover, farmers said that, because of the shortage of cultivable land currently existing, they couldn't carry out this practice every year. Therefore, the frequency of putting the land under *gay* system has been decreasing from time to time.

5.5.3. Kraal Manuring

Kraal manuring is a system of improving/maintaining soil fertility by keeping animals in temporary fences (constructed within a given farmland) for a limited number of nights. Farmers mentioned that the number of animals and the soil fertility status of a given farmland mainly determined the number of nights the animals were kept at one place. If the number of animals is higher and the soil fertility is better, the number of nights the animals were kept in one place would be reduced. Based on discussions made with the local farmers, this practice can be carried out by one farmer or a group of farmers. A farmer who has got many animals can easily do kraal manuring on his farmland, where as a farmer with small number of animals has to cooperate with his neighbors and form a group in order to apply kraal manuring on their respective farmland on rotational basis. In general, it was found that this practice was exercised mostly by some of the farmers who form groups. The survey result indicates that kraal manuring has been carried out in the *kolla* agroclimatic zones of the North Shewa.

In general, although the identified indigenous conservation practices were grouped under different categories and discussed separately, it was observed during the survey period that some of the

farmers integrated these practices on their respective farmlands. The importance of integrating different practices was explained in Amharic by one woman-farmer (W/ro Ayelech Fikre of Ankober Wereda): '*mereten sirbat magures siberdat malbess*', which means one must 'feed the earth when it is hungry and provide it with clothing when it is cold'. W/ro Ayelech explained the saying as follows. The land gets hungry when it is eroded and small gullies form, making the land open its mouth. If this happens, it is better to feed stone, grass or whatever else is convenient to that hungry land immediately. If the hungry land is left without any treatment, it will die forever. According to her understanding, all sloping land gets hungry, even before the gullies have formed, because the soil is washed down the slope during each rain. The land gets 'cold' when it loses its fertility. Such land should be covered with manure, compost, croton leaves, and the like, which can improve its fertility. She is convinced that, even if the land is treated with different techniques (stone bunds, cut-off drains, etc.) only to be left without any cover, it still gets cold. According to W/ro Ayelech and most of the farmers of North Shewa Zone, the application of different practices within a given farmland has played an important role in the farming system.

6. Conclusion and recommendations

The results obtained from the preliminary survey indicate that there are various age-old indigenous conservation practices which have been carried out by the farmers in many parts of the North Shewa Administrative Zone. These practices are still widely used by farmers, even in areas where the conventional conservation practices are implemented. However, the approaches and methods used by the two systems (indigenous and conventional) to implement conservation practices seem to be very different. In the indigenous system, the practices are implemented gradually and with great flexibility (time, space and dimensions), whereas in the conventional system, the practices are implemented at once and with constant ('standard') dimensions. In general, the indigenous system seems to apply specific solutions for specific problems while the conventional system uses standard solutions for general problems. Do these systems complement each other or are they in conflict? This question could be answered by undertaking a detailed study of each indigenous conservation practice as used by the farmers for generations. Therefore, it is highly recommended that a study of all the aspects (i.e. detailed technical, socioeconomic and

cultural aspects) of indigenous conservation practices be made in order to clearly bring out their effectiveness or/and weaknesses. The results of such a study could influence development workers and concerned development and research organizations in giving due attention to the local knowledge of the land users of our country.

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Gender and Natural Resources Management

Bogalech Alemu

As human beings are the center of concern for sustainable development, Ethiopian women, who constitute no less than half the population of the country, have essential role to play in sustainable and ecologically sound consumption and production patterns and approaches to natural resource management.

Resource depletion, the degradation of natural systems and the dangers of polluting substances have increased markedly in the past decades in Ethiopia. These worsening conditions are destroying fragile ecosystems and displacing communities, especially women, from productive activities supporting their livelihood.

Through their management and use of natural resources, Ethiopia women provide sustenance to their families and communities. As consumers and producers, care takers of their families and educators women play an important role in promoting sustainable development through their concern for the quality and sustainability of life for the present and forth coming generations.

Ethiopian women are absent from, or have limited representation at, all levels of policy formulation and decision-making in natural resource and environmental management, conservation, protection and rehabilitation. Very few women were professionally trained as land use planners, foresters, soil scientists and environmentalists, and those trained are often under-represented in formal institutions whose decision-making affects environmental quality.

Most women in Ethiopia live in rural areas and their relationship with the environment is grounded in their concern about ensuring household food security and family welfare. Changes in land tenure and uses of technology and input are seen by women in terms of the availability and the supply of water for domestic use, the possibility of gathering food, fuel wood, fodder, medicinal plants and raw materials for small scale industries. Women are custodians of biodiversity and agricultural and livestock genetic resources. Wildlife is a major component of household food security for women as are the

identification, preservation and use of a wide diversity of domestic plants and animal species, which women have carefully selected, bred and exchanged throughout history.

Both rural and urban women in Ethiopia play key roles in the management of natural resources, as they are often the collectors, users and managers of such resources as water and fuel wood for household consumption. In particular, they have a considerable knowledge about water resources in terms of quality reliability, acceptability and storage. They have been using traditional methods for the conservation of natural resources.

Rural women must cope with the insufficient availability and quality of the means of production as a result, directly or indirectly, of environmental degradation. Thus increasing demands are made on them on top of the overloaded task they perform domestically, on the farm and in the community in their effort to satisfy the food needs of their families.

Rural women's technical knowledge of sustainable resource use in soil and water conservation and management, forest use, conservation of plant and animal genetic resource needs to be recognized. The female farmers of Konso and Northern Shewa have demonstrated their indigenous skills in effective conservation of soil fertility.

Understanding the impact of environment on women's and girls' livelihood and the well-being of their families is an important step in establishing a more sustainable development framework. In highly deforested areas, it takes women longer time to collect fuel wood, thereby reducing the time available to them for other activities, least of which is not their own self-development.

Due to the lack of access to alternative sources of household energy, women spend much of their time cooking with biomass fuel, such as wood straw or dung, in poorly ventilated rooms, and they are thus exposed to high levels of indoor air pollution which results in acute respiratory infections and bronchitis.

Women's use of cow dung and manure for household energy has a negative impact on soil fertility, and this could be reversed if agricultural research and extension programs give priority to the

development of fuel wood trees at the homestead and community levels and promote the use of alternative energy sources and fuel-conserving technologies for household consumption. Agricultural extension programs should be able to target women who are married and those women who are heads of households as beneficiaries of extension services and training programs in natural resource management and conservation techniques.

Indigenous women have particular knowledge of the ecological link between the management of natural resources and the preservation of environmental resources.

Land

In many parts of Ethiopia land ownership system is patriarchal and land is registered to the man who inherits it from his parents. Most married women have access to use of land, but in the majority of cases, control of land remains with the husband. Even if the national constitution and the newly drafted family law provide legislative support to equal land ownership inheritance and equal use right for women and men, the majority of rural families practice according to what has been bequeathed to them by custom. The patrilineal tradition of land inheritance has for long limited women's access to and control over this major productive resource.

Even though insecure land tenure affects both women and men, women face added difficulty, as they depend on their spouses even for the use of small plots of land. In most cases, even if they have their own plots, they are usually small, dispersed, remote or less fertile than what the men get.

Forests and Trees

Ethiopian women are the primary users of forest resources. They gather fuel wood, fodder, grass, barks and leaves, either for fuel or for making utensils, they collect roots and herb for medicine and ornamental purposes, various plants, including aromatic plants, to supplement family diet and to earn additional income for their families.

Currently, efforts are being made to involve women in nursery and forest development activities. Women's knowledge of plants and

their special interest in the diverse and multiple use of plants, whether for food, fuel, health care, or crafts and ornamental purposes, play a decisive role in the conservation and management of different species and varieties.

Plant genetic resources: These resources are exploited by women on the basis of nutrition, taste, texture, processing and storage requirements, quality, resistance to pests and diseases, soil and agro-climatic adaptability.

Moreover, women's knowledge and role in seed production, crop management, improvement and protection and in the conservation and sustainable use of the genetic resources available to them is indispensable. Thus it becomes necessary to recognize the gender differentials in access to and control over resources. There is also the need for information regarding the roles played by women and men in crop production and protection in order to design effective extension and training programs that effectively address their needs.

It has now been recognized that for a more sustainable and effective agricultural development, agricultural resource and technology development must be carried out in consultation with both male and female farmers in order to respond to their needs and, also, to benefit from their knowledge and experience.

Ethiopian women, both pastoralists and agro-pastoralists, have major contributions to make to ***livestock development***, as they play key roles in harvesting, raising animals and processing livestock products both for household consumption and income generation. In most cases, male farmers have major control over large livestock, while women perform most of the household labor devoted to animal production. During off-farm seasons male farmers are away from their homestead seeking employment or traveling to distant places, during which time rural women usually assume greater role in managing the family livestock production around the home. In most urban and semi-urban areas of Ethiopia livestock raising has become a major input for family income generation, and this helps improve the production capacity of women these in this activity.

Women's indigenous knowledge and contribution to the raising of livestock and processing and marketing of livestock products should

be recognized, and extension services should be designed with their particular needs and desires in mind. It is also important to improve their access to technologies that are efficient, labor saving environmentally friendly, affordable, and profitable.

Both women and men should be recognized as partners in livestock development, including in decision-making regarding technology generation and adoption. Both must be targeted to equally benefit from training and capacity building in the technical and managerial aspects of livestock production and processing.

Issues to Consider in Gender and Natural Resources Management in Ethiopia

Women have a wealth of knowledge and experience in soil and water management, crops and animal husbandry, and this knowledge is not recognized and incorporated in the process of technology development and transfer. But the traditional division of labor between men and women puts heavy burden on women's time and energy leaving them with little opportunity for innovation and self development.

The traditional patriarchal system of resource control limits women's access to and control over productive resources, such as land; their access to credit schemes and training is also limited. This in turn impedes their effective participation in development and puts them in a position in which they cannot benefit from agricultural extension services.

Availability of gender disaggregated data and information for professionals working on the planning and implementation of agricultural and environment-related projects is limited.

Women lack access to information and appropriate technology, including tree plantation and land management techniques. The number of female professionals in the area of natural resource management is limited.

To enhance the status of Ethiopia women, increase their productivity in natural resource management and strengthen their decision-making power and leadership roles the following principal courses of action should be taken in the area of natural resource and rural development programs:

- Gathering statistical data and undertaking research on all issues related to gender and natural resource management;
- Disaggregate all the information in the agriculture sector by gender;
- Advise those who design policies concerning women in natural resource development at both the national and regional levels, using research findings and gender disaggregated information;
- Run gender training and awareness creation programs for all stakeholders, including professionals, policy makers, the community, etc.;
- Assist women in implementing agricultural development projects and programs and in mobilizing the necessary resources. All development programs should give greater recognition to women's special needs, such as income generating activities and control of income thus generated, providing education and training opportunities for women and promoting technologies that reduce their work load and promote sustainable development;
- Recognition by development planners, policy makers and professionals of women's role and contribution to social and economic development and natural resource management;
- Undertake studies to identify obstacles preventing women's participation in decision making at all levels and take steps to remove them;
- Promote role models and the activities of innovative women and men in effective natural resource management;
- Recognize and promote women's indigenous knowledge in natural resource management and provide training and capacity building to female farmers.
- Integrate the gender dimension into environmental policies, strategies and structures;
- Develop procedures and gender guidelines to ensure women's and men's equal participation in natural resource management activities;

- Promote the role of women in the decision and policy making processes with regard to resource allocation;
- Assist in the establishment of women's and mixed-gender organizations and associations, cooperatives, credit and savings unions, etc.;
- Train women on gender concerns, leadership, assertiveness, business management and investment techniques in agricultural fields to increase their opportunities for economic gains;
- Encourage the enrollment of girls in environment-related disciplines at higher learning institutions to increase the number of female agricultural professionals, researchers, decision makers and extensionists;
- Conduct gender analysis to identify problems, constraints and opportunities for enhancing gender equality in the division of labor, access to resources and decision making and to improve the position of women and men in the agricultural sector.

Conclusion

To fully integrate gender concerns in government and non-government development programs and projects, agricultural development should tackle the causes of women's poverty and promote equal opportunity for both women's and men's development. Since most women are in a subordinate position, special efforts and resources are required to recognize and promote their active participation in natural resource management. There is a positive policy environment and legal support to enhance the status of women and to establish a more sustainable development in Ethiopia. This can be made effective by mainstreaming gender concerns in all the sectoral and sub-sectoral programs of environmental resource management.

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Common Property Resource Management: A Real Solution for Environmental Management in Ethiopia

Eyasu Elias and Pippa Trench

Introduction

In Ethiopia, as in many other countries in sub-Saharan Africa, common property resource management is not considered a viable way of ensuring sustainable management of natural resources. This assumption has been based on the fact that an individual's interests will always override the interests of the broader community, leading to what has become known as the 'tragedy of the Commons' or the uncontrolled and unsustainable levels of exploitation.

To prevent this tragedy, two solutions are generally proposed: nationalize the resources, giving ultimate control to the State; or privatize the resources, putting ultimate control in the hands of individuals or private enterprises. Debates about land right policies in Ethiopia have thus tended to focus only on nationalization and privatization. The alternatives, which range from transferring full management responsibility to communities to joint management by the community and the state, are relatively ignored.

In this paper we argue that privatization and nationalization cannot provide the solution for natural resource management in all areas and for all land-use systems. We revisit the concept of common property to see how it can provide a viable alternative management model.

We take the example of pastoralism as one such form of land use. In dryland areas, pastoral production requires mechanisms to respond to ever-changing and uncertain availability of resources, depending on rainfall patterns. Complex customary systems combining reciprocity and rules regulating access to resources by many different groups (i.e. common property systems) were developed over time to deal with this uncertainty and improve productivity. But these systems have been undermined, and today, they face serious challenges.

The paper begins by providing a conceptual framework, defining what we mean by 'common property', in particular differentiating common property from open access regimes. Conceptual clarity on common property regimes vis-à-vis nationalization and privatization is essential in the light of the current land tenure reforms and decentralization policy of the government. Using the case of the Borana pastoral system, the paper attempts to demonstrate how common property systems have traditionally served the Borana people. The impact of past national policies and technical interventions on the rights and management of natural resources by local people is also discussed. Finally we identify some constraints to common property systems in Ethiopia today as well as key areas of support required to strengthen and validate such systems.

2. Conceptual Framework

Common Property Defined

The concept of 'common property' needs to be clearly defined from the outset. Common property resources are resources that are communally owned and used by multiple users and for which there exist communal arrangements for the exclusion of non-owners as well as for allocation of co-owners (Berkes, 1989; Ostrom, 1990).¹ In contrast to this, open access resources are owned by no one and they belong to everyone, with no defined property rights governing access and use of the resources.

Common property resources are governed by institutions that claim ownership and management rights over the resources in question on behalf of a known group. These rights include, in particular, the right to deny access to those who do not belong to the community or those without property rights. This possibility of excluding outsiders is the fundamental feature of the common property concept (Hesse and Trench, 2000). Groups often restrict alienation of land to outsiders and, thus, seek to maintain the identity, coherence and livelihood security of the group members (Cousins, 2000).

¹ Under Anglo-Saxon legal systems, common property refers to co-ownership rights. These cannot be divided, alienated or developed without the unanimous consent of all common property owners, or according to the rules established by the common owners (IIED, 2000).

Under common property management systems, the use rights of individuals, whether or not they are members of the group, are defined and limited to prevent overuse of the common resource. Generally different rules will apply to non-members and members, or 'them' and 'us', based on some form of social territoriality. Management of the commons, as with any resource, depends on the ability of members to stop 'free-riders' encroaching on the resource and disregarding these rules.

Common property implies that a management system is in place and rights and duties of groups of users are defined and enforced, as distinct from open access resources that have no management system. This is an important distinction: by taking common property to mean open access, development policy did not recognize or value existing customary systems. Instead it looked towards installing new management systems, often with disastrous effects.

Let us give a concrete example. In a pastoral system, access to water during the dry season limits access to vast areas of grazing land – without water the pasture becomes useless. It is not surprising, therefore, to learn that controlling access to water has traditionally been the main mechanism used by pastoralists to manage their resources rather than direct management of access to vast areas of grazing land (Thebaud, 1999; Oba, 1998).

In Borana, pastoralists rely on deep well complexes for water during the dry season (Garse, 1999; Oba, 1998). These wells are recognised as belonging to a particular clan or group of families. They need extensive maintenance, and no one can use the wells without the consent of the *Konfi*² who manages the wells on behalf of the clan. The *Konfi* will rarely turn a pastoralist away without water, because the clan may need water from that fellow pastoralist in future. However, he can and will instruct the fellow pastoralist when he can water his animals (he must join a queue), he can limit the number of animals that stay (if the herd is very large he may request the pastoralist to take a certain proportion elsewhere) and he can limit the length of time he can stay.

² *Konfi* is the first person who initiated the digging of a pond or excavation of a well. *Konfi* clan members have the priority in the right of access to dry season water sources. Non-members of the *Konfi* clan have secondary access rights.

These decisions will depend on the number of animals already using the well and the quality of the pasture around the well at that particular time. In other words, there is a common property management system in place. Access to dry season water must be negotiated and renegotiated among different social groups.

In contrast, a development project in Niger in West Africa during the 1980s installed a series of concrete wells in pastoral areas without addressing the question of who would manage access to those wells. Theoretical carrying capacities were calculated but never enforced. The wells belonged to the state, which all pastoralists interpreted as being open to use by anyone. With no management mechanism in place, the wells were an open access resource. No one had priority over anyone else unless by force of arms. Many pastoralists competed to use the wells, pressure on the surrounding pasture was high and conflicts were common. What is more, the traditional wells around the concrete well fell into disrepair, as there were no longer any incentives for their owners to maintain them. In time, the total amount of water available in the dry season was less than it had been before the concrete well was put in place.

The 'Tragedy of the Unmanaged Commons'

Communally owned natural resources, such as grazing lands and community forests, are often thought to be open access resources among policy makers and technicians. Much of this confusion stems from the very influential article entitled "The Tragedy of the Commons" (Hardin, 1968). Hardin's tragedy-of-the-commons model, which still guides the thinking of many resource managers today, assumes that common property means the same as open-access and that such resources are doomed to overexploitation, since each resource user places his or her immediate interest above that of the community. Hardin's article establishes a causal link between overstocking and consequent land degradation and communal property regime. The model, therefore, leads to the conclusion that resources that are customarily held in common should be either privatized or controlled by the central government to prevent the degradation of resources and ensure sustainable use.

Hardin's model had a very fundamental influence over the thinking and planning of most pastoral development policies. Taking Hardin's assumption as fact, policy makers generally believed that

extensive pastoralism characterised by seasonal or annual mobility of livestock in search of pasture over a large area of rangeland leads to overgrazing and desertification, as livestock numbers would increase without limit. However, Hardin was a geneticist who knew nothing of pastoralism. His model did not consider the fact that common property resources are governed by local institutions through negotiation between different users. A few years after his article was published and disputed by many professionals, he published another article, this time titled "The Tragedy of the *Unmanaged Commons*," but the logic behind his model appealed to many and the damage had already been done.

There is now increasing scientific evidence to show that extensive pastoralism, based on principles of reciprocity, mobility and flexibility, is the best response to dryland environments, and many of the assumptions that livestock inevitably degrade their environment are unfounded (see Behnke and Scoones, 1993). This research makes a distinction between equilibrium and non-equilibrium range ecology systems.

Equilibrium environments are those with greater and more predictable rainfall and dominated by perennial species. In such environments, grazing intensity and grazing duration are important factors that affect vegetation growth. If more animals are kept than the range can support, permanent land degradation is a serious risk (Pratt and Gwynne, 1977; Le Houerou, 1988).

Non-equilibrium environments are areas with very unpredictable and low rainfall patterns and are dominated by annual species. Annual species are generally richer in nutrients and are more valuable pastoral resource. In these environments, drought and other external events (such as disease) are the most important factors that determine the production potential of vegetation and, therefore, livestock numbers. Where annuals are dominant, provided they are allowed to flower and produce seeds, permanent land degradation is not a major risk.

In non-equilibrium environments rainfall tends to be highly variable in space as well as in time. It is impossible to predict from season to season the number of animals that can be supported in any one area. Under non-equilibrium settings, where range productivity is unpredictable and uncontrollable, land is best utilized when people and

cattle can move to optimize the use of dispersed resources and to allow annual species to mature. Management systems need to be flexible (Behnke and Scoones, 1993). Blanket rules that limit the number of animals using any one area at any given time are inappropriate in such conditions. The areas required to ensure enough pasture to support one herder over a number of years are vast. It would not be physically or economically viable to prevent others from accessing the area. State-controlled grazing schemes cannot provide the flexibility required to respond to the constantly changing environment over such vast areas and have proved equally ineffective. Where privatization of range has been tried experience shows that productivity within boundaries declines as pasture is routinely undergrazed as well as overgrazed, and moreover, the private ranchers depend on access to pasture outside their boundaries whenever rainfall is poor (e.g. Trench, 1997; Thebaud *et al.*, 1998). Provided resource use is *managed*, common property management systems represent the most effective way of preventing tragedy in the rangelands.

3. Indigenous resource tenure rights and management of the commons: the case of Borena

We have shown above that the 'tragedy of the commons' overlooks the existence of common property arrangements and their potential for accommodating sustainable resource use. The Borena people in Ethiopia, like many other pastoral communities, developed traditional management strategies for resources customarily held in common and they have complex institutional arrangements to regulate resource use and management (Oba 1998; Swift, 1991). Community-based management is traditionally a principal means of ensuring livelihood security for the Borena people. Natural resources, such as forests, pasture, and water, are of great importance to local livelihoods and are used by different groups of people who use the resources for different activities at different times. There have been traditional mechanisms for equitable use of resources with a minimum of internal strife or conflict.

According to the customary concept of resource rights, the land belongs to all Boran, while the non-Borans have secondary or even tertiary user rights. Even within the Boran themselves, different clans have different rights of access, particularly to the deep well complexes.

Forests are valued as dry season grazing reserves for herders, a source of wood and non-timber for home consumption for agro-pastoralists, and a source of livelihood to wood-cutters and sellers from urban areas. All such multiple users and multiple rights are governed by local institutions and managed under traditional rules. Rights of access vary across different groups of people and are often governed by a range of social factors including kinship, ethnicity, status and residence that have been established historically as a result of alliances, collaboration, and competition between groups. Notions of flexibility, mobility and reciprocity are embedded in the Borana customs (Garse, 1999).

The institutional authority for property rights of land, water and forests in Borena rangelands is vested in the *Raba gada* who enact rules and regulations for resource use by and reallocation for different users (Oba, 1998). Different uses of land, such as wet and dry season grazing reserves, community forests, and farming areas, are governed by different rules and regulations. Fines are enforced for violations. Rules mutually agreed upon provide efficient means of conflict resolution. New rules that help cope with changing ecological and socio-economic and political climate are passed by the general assembly of all Borans (*Gumi Gayo*³) every eight years. Key resources such as the village fodder banks are communally owned and jointly managed by the collaborating village community (*olla*). These are reserved for key classes of animals, such as calves and breeding female herd. In times of drought any categories of livestock are excluded until expressly permitted. The preserved areas are not fenced, but access is restricted through consensus, or what the *Boran* call fencing by rules and regulations (Oba, 1998).

A classic sectoral approach in pastoral rangeland management cannot take the holistic nature of dryland pastoral production system into account. Grazing management is flexible, based on range suitability assessments using soil and vegetation type, pasture condition (previous grazing pressure), and accessibility to water as suitability indicators. Access needs to be constantly renegotiated, and who is better placed to do this than the people using the resources themselves.

³ The Gumi Gayo council is the supreme decision making body.

4. National tenure policies and policy outcomes in pastoral areas

Some policy makers and development workers are still doubtful as to whether common property resources can be properly managed by community-based organizations. Thus, development initiatives seeking to promote localized natural management face significant problems when it comes to incorporating multiple user groups. This is especially the case with respect to resources shared by mobile and sedentary users.

The land laws in Ethiopia, like in many other countries in Africa, do not take proper account of common property management systems, preferring instead to deal in simple concepts of individual property. Under different political regimes, policies have tried to implement externally imposed resource allocation without a proper understanding of the ecology, the indigenous production system, and the traditional arrangements for resource management. Except for episodic droughts, many of the difficulties faced by pastoralists today, such as food insecurity, environmental degradation, and resource conflict, have their origins in inappropriate land policies and tenure insecurity. Land tenure policies have tended to support the privatization of land ownership, get pastoralists to settle, and encourage cultivation rather than extensive cattle keeping.

There has been a fundamental misunderstanding of pastoral systems, which has become institutionalised. Because pastoralists move over a large area of land, pastoral areas are generally regarded by decision-makers to be under-utilized and, therefore, need to be developed for agricultural purposes. The objectives of pastoral development interventions have thus been to settle pastoralists and turn them into farmers, the abandonment of traditional pastoralism and the institution of new range management systems.

Although national policy documents acknowledge traditional ownership rights of land by pastoral people, privatization of communal land is actually allowed on the ground. Pastoral lands have been vulnerable to settler occupation and alienation by the state for commercial production by private investors, demarked as state forest, or enclosed as national parks for wild life conservation. Pastoralists have tended to become permanent settlers themselves, combining

opportunistic agriculture with livestock management, trade and wage labour.

- The justification for the transfer of communal land to private ownership is that land could be put to better use and the people would benefit from the development. However, such resource alienation has created shocks that lead to breakdown of the traditional institutions and has ultimately destabilised the pastoralist economy (Oba, 1998). These changing land use arrangements have caused a number of environmental and socio-economic problems:
- Agriculture is proving very risky option in the area with crops failing an estimated three years out of five, but once ploughed it takes a long time for pasture to become re-established;
- The establishment of ranches on communal grazing lands meant the displacement of pastoralists from the best dry season grazing lands and increasing pressure on already degraded rangelands;
- The development of water points attracted permanent settlement, leading to the abandonment of the traditional mobility patterns, and the rangelands surrounding permanent water points were overstocked, thereby causing severe environmental degradation;
- Kinship and other social linkages that once held pastoral property tenure system together have been either destroyed or severely undermined;
- The indigenous institutions are incapacitated to regulate resource use and management due to the administrative interventions that undermine traditional institutions;
- The indigenous institutions are incapacitated to regulate resource use and management due to the administrative interventions that undermine traditional institutions.

Rather than being active participants in resource management, the community became observers, and this in turn aggravated resource degradation. There is a growing body of empirical evidence to suggest that local people are more likely than the state to manage natural

resources in a responsible way because their livelihoods depend on it (see Hesse and Trench, 2000).

A key question that arises from this and needs to be answered by policy makers is: "Do pastoralists, as citizens, have rights to land, whether of use and/or ownership?"

Conclusions

Common property refers to the rights held by a recognised group of people to control access to the resource in question, and the duty of others to respect those rights (Bromley & Cernea, 1989). Common property systems assure access to important natural resources by all members of a community and fulfil social functions such as conflict resolution as well as conservation of natural resources and bio-diversity.

Customary tenure systems, with their communal forms of ownership and management of natural resources, are typical of and essential for pastoral production systems and pastoral communities. Pastoral systems are not open access – mechanisms for management exist. However, a *tragedy-of-the-commons* scenario can occur when the community is unable to stop individual herders from over-exploiting the resource.

We have shown how past policies have undermined customary systems and lead to resource degradation, conflict, and increased poverty among pastoral populations. As traditional management systems have broken down, mechanisms to limit access and prevent 'free-riders' have become ever weaker, reinforcing the impression that pastoralists are unable to manage their own resources. This in turn has reinforced the assumption among policy makers, academics, and development workers that the only way to avert an environmental disaster was for the state to take charge and impose an external solution, namely privatization or nationalization.

But the vast scale and unpredictable nature of pastoral resources makes such policies highly problematic. Customary systems have evolved to cope with these challenges. Rather than undermining them and creating open access conditions, we need to develop appropriate management systems which take into account mobility and multiple user

rights and which reinforce local people's capacities to manage common property resources in an equitable, peaceful, and sustainable manner.

In dryland areas, the demands placed on local level institutions are particularly high. They need to be flexible to cope with climatic variability and multiple resource use (Scoones, 1995). They need to be able to address the internal tensions caused by unequal power relations within their communities resulting from growing social and economic stratification. They also need to adopt management techniques that reconcile increasing demands with sustainable use. Large, centralised state bodies are by definition unable to respond to these demands.

Much development work today is geared towards supporting grassroots indigenous institutions to enable greater participation of local communities in natural resource management. This is based on an assumption that local people are more likely than the State to manage natural resources in a responsible way because their livelihoods depend on them. Such local level institutions have also evolved organically and are thought to be able to understand and cope with the needs for reciprocal and flexible resource access arrangements.

Common property systems based on customary arrangements allow a broad spectrum of management alternatives, from the transfer of full management responsibility to communities to joint management by the community and the state. Land tenure legislation and policy need to support such systems as viable and valuable alternatives to the more commonly debated extremes of nationalization and privatization.

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Managing Forests As Common Property : Collaborative Forest Management in Ethiopia

Ben Irwin

Why Should We Be Concerned About Property Systems, but Particularly About Common Property ?

Land tenure and property systems determine how access to land and other natural resources like forests and water is managed. In other words, who gets access to resources and who makes decisions concerning resources? Access to land and other resources is fundamental to rural people, who secure their livelihoods from these resources.

Important aspects of common property

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|---|
| <ul style="list-style-type: none">❖ Common property systems include all community-based resource management systems.❖ Common property systems assure access to important natural resources by defined groups of a community, often including the landless and other marginalized groups.❖ Common property systems also fulfil important social functions, such as maintaining conflict resolution mechanisms.❖ Common property systems can also assure conservation of natural resources and biodiversity. |
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Classical rural development approaches have for a long time condemned customary resource management systems (common property systems in particular) as being counter to development and unable to prevent (or even cause) resource degradation.

The alternatives to common property systems have been nationalization, on the one hand, and privatisation on the other. However, in certain situations these alternatives have not provided a solution to development problems, and in many cases, they have made them worse. Therefore, professionals are looking back to customary and other common property systems to resolve these problems. Customary systems, adapted to cope with the new pressures of present-day resource management, are being seen as legitimate and effective management alternatives for natural resource management.

Understanding Different Property Regimes and Their Associated Advantages and Disadvantages for Sustainable Resource Management

Looking at and defining what is meant by property regimes and the range of different property systems that exist, makes our understanding of each system and its implications for resource management clearer.

A classic example of where confusion exists over the definition of property regimes is the much talked about “Tragedy of the Commons” (Harden, 1968). This article is often quoted as proof that common property resource management is not only not sustainable but also uncontrollable and contributing to degradation. However, by analyzing what the author is discussing in his paper, we find out that he is referring to a property system where there are no management rules and resource users work independently of each other. Such a system is explicitly an ‘Open Access’ system.

Through the identification of advantages and disadvantages of the functioning of different property regimes we can begin to take informed decisions as to which system fits, or is most appropriate, to specific resource management scenarios.

What Is Meant By Property? Key Characteristics

Recent studies on property define property not as an object, such as land, but rather as a right to a flow of benefits that is only as secure as the observance of duties by all the beneficiaries to respect the conditions that protect the flow (SMCPR, 1999).

In other words, property means that someone has a *right* to something that is *recognised* by *law* and in *practice* and that all others have a *duty* to *respect* that *right*.

A property system means that *one party* has the *right* to *exclude others* who do not have rights to the resource in question.

Property systems also only occur when use of the resource by one party reduces the availability of the resource to another (e.g. it would not make sense for the sun to be property because one person’s

use of the sun does not reduce another person's access to it). This diminishing factor is known as *subtractability*.

So property is characterised by *subtractability* and *exclusion*.

A pasture, an irrigation system, fisheries, forests and wildlife can all be common property resources if they are managed communally. They can all be owned, managed and used individually (privatized) or managed by the state (nationalized).

Certain resources in certain situations may have characteristics that predispose them to be managed by an individual, a group or a government; there is no hard and fast rule. Decisions are made by governments and policy makers.

Defining Property Regimes: Different Kinds of Property Systems

There are four different kinds of property systems according to who has a right to the resource.

	Individual private property	Common property	State property	Open access
Claimant	Secure claim rests with an individual.	Individuals have claims on collective goods as members of a recognized group	Secure claim rests with the government, e.g. forest reserve, national park	Everybody and nobody has a claim

Open access: Each potential user has complete autonomy to use the resources, since no-one has the ability to keep any potential user out— in other words, it is not really a property regime as there are no duty bearers or right holders.

Advantages	Disadvantages
Short term access to all ?? No cost of management ??	Rapid resource depletion Resource access to the strongest No controls Conflicts No management, simply exploitation

Individual private property is probably the most straightforward system – owned and used by one individual who decides who can and cannot use the resource and how.

Advantages	Disadvantages
Management relatively simple – one decision maker	Exclusion of others – conflict
Potential for responsible management and investment	Management for individual vested interest
	Undermines traditional systems (CPRM)

State property: National government is formal authority on the management of natural resources through central regulatory policies and legal frameworks. Direct administration is a common way for governments to control use to address the problem of resource degradation.

Advantages	Disadvantages
Regulation / control	High cost to governments
Preserving resources for the common good	Difficult / Ineffective management (cannot lock up resources)
	Exclusion of local people – conflict
	Undermines traditional systems (CPRM)

Common property systems occur when use rights for a resource are controlled by an identifiable group and there exists rules defining who may use the resource and how and who may not use the resource.

A common property system is created when members of a defined group agree to limit their individual claims on a resource in the expectation that the other members of the group will do the same. Such a property system depends on rules regarding who may use the resource and how. The system also involves ways of stopping people cheating the system.

Common property resources are often use by the poorest in a community such as the landless.

Advantages	Disadvantages
Potential for responsible management and investment;	Past systems broken down;
Inclusive;	Pressure from modern land use – conflict
Equitable sharing;	Complex management systems
Access/opportunities to the poorest;	
Livelihood options.	

The Link Between Common and Private Property Regimes

In the above analysis many interesting similarities and differences can be drawn out and discussed to increase our understanding of the relationships and functions of different property regimes.

For the particular purpose of this paper I want to highlight particularly the link between Common Property and Private Ownership. As seen above, Common Property and Private Ownership share the same critical advantage of the potential for responsible management and investments in the resources for a return (although this advantage is often only recognised in Private Property regimes). In this way Common Property Regimes and Private ownership regimes can be seen as close to each other in terms of their function (Arnold, 1998). This fact is contrary to the common perception that Common Property regimes are close to Open Access regimes (uncontrolled use and environmental degradation). As we see from the analysis, Common Property regimes share none of the same advantages or disadvantages with Open Access property regimes.

The reason for this misperception is perhaps the fact that, when Common Property regimes have been disrupted, they are often replaced by Open Access systems. This has been the case with State intervention and the negative impact of state ownership in many countries. This transition has developed into an accepted association between the two systems.

Trends Towards Privatization: Implications of Privatizing Common Property

If common property resources are privatized, there is a risk of increasing inequality and disenfranchising the poor. Reducing access to resources has a highly negative impact on sustainable livelihood opportunities and serious economic implications, as more and more people become dependent on the state for welfare support. An obvious example of this is to be found in pastoralist areas; many people are dropping out of the system due to a number of factors, one of the key factors being resource base shrinkage due to land privatization (Helland, 1997).

Common property management is a viable alternative; it is complex, but it is equitable in that it offers people (regulated) access to resources that, at least traditionally, belong to them. Access to resources allows the opportunity for communities to pursue sustainable livelihoods (Hesse and Trench, 2000).

Principles Under Which Common Property Functions

The critical development question is: can Traditional Common Property regimes work in the present-day context of increasing resource conflict and competition ?

Functional common property regimes depend on the effectiveness of the system to control/to manage so as to ensure that all members and non-members respect the rules and regulations. Common property depends on members limiting/reducing the amount of resource that they are taking (Ostrom, 1998; Bromley and Cernea, 1989). Group members will only agree to do this if they know that others are also doing the same. If people are allowed to cheat the system, then there is no incentive for other members to respect the system and they will also cheat. If there are no rules controlling access, then the resource has become an open access resource.

Managing Forests as Common Property: Promoting Sustainable Resource Management Systems Through Stakeholder Collaboration - Collaborative Forest Management

Collaborative Forest Management (CFM) is used as a broad term to describe systems in which **communities** (forest users) and **government services** work together to manage forest resources. This management system aims to define the rights of forest use and ways of sharing management responsibilities, and divides forest benefits. The term CFM includes *Joint Forest Management*, *Participatory Forest Management* and other similar terms that are used to describe community-based forest management systems (BCFMP, 1999).

Rationale: Why CFM : Government Roles in NRM

The roles of governments are under re-consideration and evolving to fit the present-day context of increasing needs for sustainable resource utilization. In the face of difficult economic

conditions, governments are reassessing the workability of ambitious claims to provide universal services. Decentralisation of resource management is seen as cost-effective and also as a means to encourage greater levels of activity and participation in local resource management and economic development. There is more emphasis on the role of governments in providing a stable and enabling framework for economic and social development, while government intervention in productive sectors is questioned (SOS-Sahel, 1998).

In addition to this, governments have found themselves unable to enforce control over forest resource use. With no functional management system, forests have become open-access resources liable to over-exploitation.

The Opportunities of Traditional NRM Systems

It is widely recognized that governments, in asserting state ownership and control of natural forests, have undermined traditional common property regimes and resource management systems and disempowered local communities in terms of both resource ownership and responsible (controlled) resource use. Through state intervention, communities have been excluded from forest resources and any incursions were perceived as, and often were, destructive.

As these problems have become recognized, and confidence in state regulation has decreased, respect for the strengths of indigenous knowledge and traditional natural resource management systems has also been recognized. Forms of collaborative natural forest management have been pioneered in India, Nepal, South-east Asia and Latin America, and there is a growing body of experience in Africa (SOS Sahel, 1998).

A key challenge of the process is to put in place systems of resource management that are effective in today's context of increasing resource demand and land use competition and conflicts. It is important to recognize that, in practice, this dictates the need to modernize traditional resource management systems. Traditional resource management systems can be seen as the foundation on which to build new systems of forest management.

Stakeholder Analysis: Understanding Multi-users and Multi-users

If some form of CFM is to be the solution to unsustainable resource use, it is essential to understand the stakeholders and user groups who could be involved in sustainable management, and also to identify groups who could potentially gain or lose from changes. Stakeholder analysis will also reveal risks of conflict between user groups and needs for conflict resolution systems.

Stakeholders include not only local communities but also distant users and all who have an interest in the forests. ODA (1996) defines stakeholders as any person, group, community or body who has something to gain or lose from changes in management of the forest resource. Primary stakeholders have rights; secondary stakeholders have interests. This appears problematic: deciding who has a 'right' to use a forest involves difficult value judgements at the outset. It seems more useful to define primary stakeholders as those who make direct use of forests, and secondary stakeholders as those who use it indirectly or are interested parties. Among the users we can further distinguish between those who depend on the forest and those who use it along with other sources of livelihood.

Direct Users

The largest groups of direct users are the agro-pastoralist villagers in and around the forest and pastoralists who make seasonal use of the forests as a grazing reserve. Two further groups of possible direct users are the ex-soldiers in Negele, and the urban poor in all forest adjacent towns. A further direct user group is the army.

Indirect Users

The main indirect user groups are urban. Forest product traders and shop-owners in Negele and Yavelo towns retail timber and forest products, such as charcoal.

Builders rely on juniper timber as a termite-resistant construction material. Restaurant owners and bakeries buy fuel wood and charcoal in relatively large quantities. Most urban households buy cooking fuel from producers who bring it from the forests and

woodlands. The MoA and other government departments themselves use juniper for buildings.

Interested Institutions

The MoA State Forest and Wildlife Conservation Department (the FD) is responsible for controlling, protecting and managing the forest resources on behalf of the Regional Government. The PA Committees are charged by the government with local-level land management. The Ethiopian Wildlife Conservation Organisation (EWCO) has the national mandate for conservation.

The Boran traditional institutions and leaders are at least as important as the PAs as parties with a long-term and serious interest in forest conservation.

Various NGOs have demonstrated interests in these forests. NCA/Mekane Yesus in Yavelo and Arero has supported seedling production, plantations and construction of forest roads.

The Italian agency COOPI and SCF/US has played a similar role in Negele. The Ethiopian Wildlife and Natural History Society is carrying out surveys of bird species in the Borana forests with international NGO partners (Birdlife International), clearly indicating the international and national interest in wildlife conservation in this area.

Summary of Stakeholder Analysis

From the above list it is clear that the stakeholders are diverse in ethnicity, rural/urban background, type of use or interest in the forest and degree of dependence upon it. Inevitably, they will have widely differing perceptions of the forest and views on how it should be managed. A number of important questions emerge.

Key questions of Stakeholder relations:

- ❖ Which groups would be party to collaborative management arrangements? Can the interests of different groups in fact be reconciled?
- ❖ How will conflicts be resolved?

- ❖ Will forest management agreements result in loss of livelihood for the most vulnerable groups?
- ❖ To what extent do any groups have traditional usage or management control over specific forest areas?
- ❖ Would existing institutions form appropriate management structures? Are they equitable and representative?
- ❖ How can the interests of minority groups be adequately protected?

How Is CFM Established as a Management System - How Do We Do It ?

To put systems of CFM in place is a complex and long-term task. The process should not be regarded as an instant fix to the problem of over-exploitation of forest resources. Success will take time, and it requires investment by both Government and Communities to learn, plan, develop, adapt, negotiate and share the responsibility for forest management. The promotion of any new system is a process of joint learning and adjustment that requires an experimental, learning-by-doing approach. It will take time to re-establish community-based management systems and to redevelop community roles and capacity. To establish CFM systems, we start with a basic concept of shared management of common property resources. During the process of establishment we develop the ideas within the concept as we learn about the actual management opportunities and constraints, the needs of different users, and the site-specific requirements of each forest site.

The Challenges of a New Approach

CFM is a new approach, particularly in the Ethiopian experience. As with any new approach, many forestry professionals view CFM with some suspicion and concern, mainly due to a lack of clear understanding of the processes being promoted. In addition, there is an uncertainty about the new roles that professionals and community members will take up. It is useful from the beginning to dispel the myth that the CFM process simply entails the handing over of forest resource control to local communities, leaving them to manage the resources in any manner they see fit. As stated above, CFM is a management partnership between local communities and government services. How this partnership works is explained below.

Examining the New Roles

CFM is an on going partnership between Government Forest Services and local communities. It is a working partnership in which each party is interdependent on the other. The new approach requires new activities and roles from both forestry professionals and forest users. The box below identifies these new roles and activities. The list of actions is not exhaustive and should be developed as both the forestry professionals and forest users develop and understand their roles through learning and experience.

New Roles for Forestry Professionals	New Roles for Forest Users/Communities
<ul style="list-style-type: none"> -investigators of local forest uses; -identifiers of local management systems; -facilitators of situation analysis; -moderators of different local interests and of conflict and competition; -negotiators of forest management rules and regulations; -monitors of CFM processes and of forest management agreements; -advisors to FUGs and silviculture experimenters; -facilitators of FUG to FUG extension and exchange; -trainers in community management; -analysts of forest management problems; -generators of new technologies; -providers of information to complement FUG knowledge; -documentors/analysts of methods of CFM. 	<ul style="list-style-type: none"> -forest resource managers and legitimate resource users; -forestry operations actors; -resolvers of conflict and competition; -implementors of forest management plans; -protectors and controllers of forest resources; -evaluators of new ideas and technologies; -silvicultural experimenters; -communicators of own knowledge and findings to others; -analysers of own situation; -selectors of tree species for nursery production and planting; -assessors of forest resources; -marketers of forest products;

The Core Concept of CFM

CFM refers to the legal empowerment of local communities to manage forest resources for, in the first instance, their sustained livelihoods (basic needs), and in the second instance, for economic return.

The process of CFM involves the legal transfer of resources (use rights and/or ownership rights of) from the government to communities. This transfer is enabled by, and dependent upon, a negotiated and documented Forest Management Agreement.

The Forest Management Agreement (FMA) clearly details:

- ◆ the negotiated and agreed roles and responsibilities of both parties;
- ◆ the negotiated and agreed rules and regulations for the sustainable management of the forest resource.

The FMA is a legally binding contract between a defined community-based institution (Forest User Group) and the Government (represented by the Forest Services).

The FMA is periodically reviewed in order to monitor the effectiveness of the management rules and regulations, in terms of achieving sustainable forest management, and to provide opportunities to adjust the management document in the event of new learning.

Benefit-sharing arrangements are also clearly stated in the FMA. In economic terms, Forest User Groups can only be expected to take on the role of forest managers if it is an economically viable opportunity. That is, the forest resources will give adequate economic return for the investment of labour and materials made.

The CFM Process

The process of promoting CFM systems can be divided into three distinct stages:

- ◆ the *Investigation* stage;
- ◆ the *Negotiation* stage;

- ◆ the *Implementation* stage.

The Investigation Stage

During this stage of the process, investigations are carried out into past and present forest uses, forest condition, and forest management practices. Information is gathered using a number of participatory forest research tools, such as participatory forest mapping, historical timelines and matrices, resource use impact assessment charts, semi-structured interviews and focused group discussions.

The objective of the investigation stage is to develop a clear understanding of the forest resources, who uses them, what they are used for, what the existing management rules and the local capacity and opportunities for community management are.

The Negotiation Stage

Using the information gathered in the first stage, forestry staff and communities work together to develop Forest Area Management Plans and sign Forest Management Agreements.

As stated above, these plans aim to clearly define the roles and responsibilities of each party (government and community), to set out the rules and regulations governing forest use (user rights/harvest levels), and to develop activity plans for forestry operations. Forest user group relations and benefit-sharing arrangements are negotiated at this stage.

To facilitate this stage, Participatory Forest Management and Land Use Planning activities are used in a joint planning process. Conflict and competition over forest resource uses need to be understood, addressed and resolved at this stage of the process.

The Implementation Stage

Once the Forest Management Agreement is signed, the management plan is then implemented. Throughout this stage, close collaborative work between the government and the community groups is essential.

The role of the forestry services lies in supporting the community in the achievement of the Forest Management Plan objectives. There is a need to support the communities in the protection of the forest through the joint enforcement of the agreed rules and regulations. Continual monitoring of the performance of the community management groups and the effectiveness of the Forest Management Plan is undertaken throughout the implementation stage. Periodic reviews of the forest management activities are also conducted. The Forest Management Plans are reviewed and adjusted in accordance with the increasing knowledge and understanding gained during the implementation stage.

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Problems of the Urban Environment

Ammanuel Malifu

ABSTRACT.

In Ethiopia, urban life accounts for no more than 15 percent of the population. The only primal city we have is Addis Ababa, the capital of the nation, accommodating less than three million souls. Many of the residents of this city or the other towns are poor, mostly eking a precarious living to hold the soul and flesh together. They are short of almost everything that keeps life smoothly going and renders it pleasurable. Full employment is an unheard of luxury; social services, amenities, infrastructure, etc. are in perpetual short supply. As in most developing countries, environmental problems are rampant here: disease and pestilence, overcrowding and congestion, filth and stench, crime and unrest, hunger and nuisance, ignorance and forced leisure, early death and affliction are some of the conspicuous elements composing the panorama of urban life. The environmental undesirables are tall, depending upon the size and rate of the growth of each particular city, its income, geography, climate and institutions. Shortage of clean water, wastewater and garbage disposal and other sanitary services, pollution both indoors and outdoors, housing supply, employment and the like require immediate attention in which all the urban environmental stakeholders have to chip in their respective contributions if this sad state of affairs is to be dealt with effectively.

Introduction

In developing countries, urban centers often have huge populations languishing in poverty and facing the same urban social threats confronting urbanites in the developed regions, of which violence and drug abuse are good examples. Disparities among different income groups are often more extreme in cities of the developing world, entailing, among other things, problems to the urban poor that lead more or less similar lives with their rural brethren, for instance, lack of access to potable water, sanitation, and adequate housing, compounded by such disadvantages as overcrowding and exposure to industrial waste and

urban air pollution. Moreover, these cities, more often than not, deplete nearby areas of water and firewood, rendering them less capable of supporting rural populations and thus adding to the pressure on the rural population to migrate to urban centers.

Many environmental problems bedevil most cities in the developing world. For one, there is poverty, which is the hallmark of these cities. Air pollution already exceeds international health standards in many them. Sewage and industrial effluents are released into waterways with minimal or no treatment, thereby threatening human health and aquatic life. Some urban environmental problems, such as access to safe drinking water improve with economic growth, while others tend to worsen. Thus, in the absence of policy reform, stronger institutions, and enlightened political leadership, economic and population growth is bound to lead to a further deterioration of the physical as well as the social urban environment.

The Ethiopian urban scenario is very much underdeveloped by world standards; for instance, the total urban population was only a little over 3 million in 1975; 7.4 million in 1995 (out of a population of 55,053,000); and it is expected to reach 38 million (out of a population of 126,886,000) in 2025 (World Resource, 1996-97). In this regard, which of the three major societal activities—production, distribution/exchange or consumption—determines the state of urban life in Ethiopia is of some interest. By definition rural life in Ethiopia, which is mostly subsistence in its nature, rules out the second. As to which of the remaining two prevails in Ethiopian cities/towns is a point worth probing into in depth. But, cities being seats of bloated governments and their hangers-on, consumption appears to be the salient trait of urban economic activities. The fact that the highest proportion of the economically active population thrived in 1994 on service and sales occupations testifies to this reality (Annual Report on the Ethiopian Economy, 1999/2000). Whatever the case, urban life in this country is plagued with a plethora of environmental problems. The provision of adequate housing, employment, water supply and sanitation, and water resource, solid waste and air pollution management have, for some time now, been some of the environmental concerns begging urgent intervention.

The focus of this paper is urban environmental problems in Ethiopia, in general and in Addis Ababa in particular. In the following

pages attempts will be made to elucidate the state and dynamics of such urban environmental problems as poverty, water and sanitation services, waste disposal, pollution and congestion. The first section is devoted to describing, in general terms, the environmental problems of cities. The second section relates, however sketchily, the scenarios already developed with the realities of the Ethiopian urban scene. The last section discusses the welter of tasks awaiting execution if the existing state of affairs must be altered.

In Lieu Of Theory

The Urban Environment

Historically speaking, cities, have been centers from where economic and social development are planned. Thanks to industry and commerce, they have also been centers of wealth and power, usually accounting for a disproportionate share of the national wealth. Beside the economic gains they provide, urban centers offer both tangible and non-tangible benefits: they record higher income, improved health services, higher literacy rates, on the one hand, and they provide access to information, diversity, creativity and innovation on the other.

But urbanization has also brought in its wake all sorts of evil, both social and environmental, some of which are of staggering proportion, depending on particular circumstances. Urban environmental problems are known to defy easy categorization. However, the following two broad categories can be identified: those associated with poverty and those associated with economic growth, the two possibly finding themselves side by side within the same city.

Some of the worst environmental problems, in terms of human suffering, occur in the poorest cities of the developing world. But especially where population growth is rapid, it has been observed that local governments have not been able to provide for even the most basic needs of their citizenry. Consequently, the conditions in which the urban poor live are life threatening: lack of access to potable water, the simplest sanitary services, refuse collection and the like exact enormous tolls in terms of largely preventable deaths and diseases.

Environmental problems are also severe in those developing world cities experiencing rapid economic growth. While it is true that

economic growth brings needed revenues to cities, if proper safeguards are not put in place, however, it all too often transpires at the expense of environmental quality. In such cities across the world, domestic and industrial effluents are released into waterways, with minimal or no treatment, threatening both human health and aquatic life. Many of the urban poor live in squatter settlements where they are exposed both to the hazards emanating from economic growth, such as industrial emissions, and to those that poverty fosters.

Unemployment

One top-of-the-list problem in most cities of the developing world is unemployment, since the perpetually ailing formal economic sector is incapable of absorbing the enormous influx of workers, attributed, in part, to high urban growth resulting from rural-to-urban migration, to which one may add the natural growth of population within the cities themselves. A substantial number of the urban poor are, therefore, forced into informal jobs (production and exchange of goods and services outside of the formal market sector). In sub-Saharan Africa, for example, some 75 percent of the jobs are accounted for by this informal sector (World Resource, 1996-97).

The Ethiopian employment scenario is no different. The rapid urban population growth in some of the major towns and cities in the country, whether due to natural increase or urban migration, has bloated the so-called reserve army. In Addis Ababa, for instance, this figure is in the order of 400,000 and steadily increasing, to boot.¹

Urban Poverty and the Environment

The urbanization of poverty has implications, in more ways than one, for the quality of life as well as the urban environment itself. The urban poor, which find themselves at the receiving end of the butt of social transformations, are the biggest victims of urban environmental risks. They live in sub-standard housing built, for lack of better alternatives, upon marginal land (on flood plains, steep hillsides, dumpsites, in the proximity of pollution-emitting industrial facilities,

¹ In the Annual Report on the Ethiopian Economy, we read that in 1994 22 percent of the total economically active population was unemployed and that "the employment rate declined dramatically for specific age groups such as the 20-24 age group where the rate declined from 85 percent to 61 percent between 1984 and 1994."

etc.) and, to add to the bargain, they live overcrowded in a situation where communicable diseases thrive unchecked. Poor neighborhoods are characterized by want of such amenities as infrastructure services, clean water supply, sanitation facilities and refuse collection, which are, quite literally, a luxury to most of them.

Shunned by local governments either because of lack of funds or from the conviction that providing for them would be conferring legal status on what they consider squatter settlements, or both, the poor are left to their own devices, becoming, wittingly or not, agents of all sorts of environmental degradation. As subjects of environmental degradation, for instance, the lack of amenities and essential services force the poor into spoil and debase their own environment; for example, lack of adequate garbage collection services impel them toward disposing their waste wherever they find it convenient; similarly, the absence or lack of sanitary facilities force them to cleanse their bowels in open space, all of which are ultimately bring about disastrous consequences and the attending incalculable economic costs.

Issues of the Urban Environment

Cities, as big centers of human economic and social activities, consume natural resources from both near and distant sources, and in so doing, they generate waste that is to be disposed of both within and without their bounds. Moreover, environmental problems occur in a wide range of locations: households, workplaces, neighborhoods within cities, the wider region, and even the globe. The ensuing gamut of adverse social impacts, such as health problems, economic and other welfare losses, and the damage inflicted on the ecosystem are something to reckon with.

Factors Determining Problems of the Urban Environment

Environmental problems vary from region to region and from city to city, depending upon the size and rate of growth of the city, its income, geography, climate and institutional endowments. Income, for instance, as the expression of economic fortune, affects the environment in tandem with change in the wealth at the disposal of the city, following what is known as the 'environmental Kiznet's curve', according to which, as wealth grows, all sorts of environmental

degradation burgeon first and eventually subside. Of course, the income level involved in the changes cities undergo varies widely. As we shall see, in poor cities, but particularly in the poor neighborhoods, the environmental problems that figure as the most threatening are usually those closer to home: often smoky kitchens cause more air pollution than outdoor sources; uncollected waste in a neighborhood often inflicts more damage than the city dump; human excreta deposited in open places is often found to be the most malignant health culprit. Such and, other unsanitary conditions at home and in the neighborhood add up to being more of a threat than industrial pollution.

Natural features of a city – its geography, topography and climate – are also important determinants of the sort of environmental problems it has to live with or fend off. A city enclosed by mountains will have difficulty in dispersing pollutants, a good example in of which is Mexico City. Cities in the northern latitudes, such as London, are spared the ravages of mosquito more by virtue of their cold climate than, say, by the power of their wealth. There are people who contend that Addis Ababa, without its two annual rains and its cascading streams would have been as good as inhabitable in the face of the faulty sanitary and garbage services the city flaunts.

Costs of Urban Environmental Degradation

Besides the toll it takes on human health and natural resources, urban environmental degradation inflicts direct and indirect economic losses. The costs so incurred, however, are not always amenable to easy calculations. A loss of one workday, say, due to pollution-caused health problems is an economic cost. So also is ill-health not directly related to work, since in addition to the increased cost of treating the illnesses, the net result of such health problems is the reduction of productivity through lost workdays. The loss in aesthetic of a given area from damage to the landscape, or, for that matter, leisure time lost in a traffic jam incur economic losses. All in all, the impacts of environmental degradation on human health and depletion of the natural resource-base combine to undermine a city's economic productivity.

Lives and limbs lost and functional impairments sustained each year due to various forms of urban environmental degradation, whether in the homestead or at work, mostly defy monetary calculations. A good

case in point is the 1984 accident at the Union Carbide plant in Bophal, India, in which 2,988 perished and over 100,000 sustained various injuries, including reproductive ones that will affect subsequent generations. The loss due to the two explosions that occurred in Addis Ababa on the morrow of the Dergue's demise are fresh in our memory but do not lend themselves to monetary calculation. One thing that could be said about these accidents is that they could have been prevented had the various safeguards (policy, legislative, institutional, etc.) been in place.

II. The Urban Environmental Condition in Ethiopia

Urban environmental problems in this country are best expressed in terms of the 'brown agenda', (i.e. poverty, pollution, congestion, environmental hazards, etc.), which are much closer to home than the 'green agenda', which focuses on global concerns, such as ozone depletion, climate change and the loss of biological diversity. This, however, does not mean that the latter are not relevant to the environmental concerns of Ethiopia.

Urban Poverty

Historically, poverty was largely concentrated in rural areas. The steady migration of the bulk of the population from rural areas to urban centers has transformed poverty into an intractable urban phenomenon. According to the estimate of the World Bank, in 1988, approximately one quarter of the absolute poor in the developing world was living in urban areas. When it comes to Ethiopia, out of the 6.9 million urban residents, 4 million (58 percent) were poor and lived below the poverty line, earning an income of Birr 244 per month (Annual Report of the Ethiopian Economy, 1999/2000). The sort of quality of life these people lead is best demonstrated by the poor housing condition evident in Addis Ababa.

A 1997 report of the Addis Ababa City Administration (AACAA) tells us that the number of housing units available in the city at the time was only 350,000, out of which 112,000 were accommodating different establishments, public and private, and the remaining 238,000 were residential. Considering the demand for residential housing, which was 460,000, this shows us the alarming shortage of residential housing, something in the neighborhood of 222,000 units! The gloomy part of the

story is that 65% of the existing housing units are now over 25 years old, and one can discern the degree of dilapidation the city is wallowing in (AACA, 1997). Many of these units are non-storied buildings, and 70% of the residents live in them, with 2.57 rooms per housing unit and the average number of occupants per room standing at 2.1. The number of persons per bedroom was four, indicating the sort of housing density. Such accommodation provides a fertile ground for, among other things, the transmission of communicable diseases. In terms of building materials, the majority of the units (83.4%) are constructed with inferior material, such as wood and mud walls, with the bare earth for floor and corrugated iron sheets for roofing. More than 68% of the units do with traditional kitchens, while 26% lack separate cooking rooms. Some 40% of the population live in densely populated (>400/ha) areas of the city (CSA,1995).

Water and Sanitation

Lack of adequate water and sanitation services pose one of the greatest health threats in cities of the developing world. The size of the populations without adequate potable water supply near their homes is fairly large, if not the majority all the time. Of course, what constitutes an adequate amount of safe drinking water and sanitation services varies from country to country.

In Ethiopia, the picture is much grimmer than it appears at first sight. This is mainly attributed to the poor state of affairs pertaining to water resource management practices hitherto prevailing in the country. For instance, 97% of the fresh water received is lost to neighboring countries in the form of surface run-off alone, while the 3% remaining behind is subjected to inadequate use or misuse, or even abuse, including pollution. The degree of wastage of this rather scarce resource for instance can be gleaned from the table below.

Table 1. Existing Situation of Water Resource Development in Ethiopia

No.	Uses	Coverage
1	Water supply (Total)	17% (population)
	Rural	15% »
	Urban	31% »
	Livestock watering	Negligible
2	Sanitation (Total)	8% (population)
	Rural	1% »
	Urban	60% »
3	Irrigation	3% of potential
4	Hydropower	1.5% of potential
5	Aquatic Resources (fisheries)	<19% of potential
6	Inland Water Transport	Negligible

Besides, the predominant issue has been quantity rather than quality because a significant proportion of Ethiopians 'make do' without adequate supply of water. (It is estimated that, on the average, people travel 2 hours daily to fetch water from the nearest supply.) The table below clearly shows the sad state of water distribution, paradoxically, in one of the allegedly well-endowed regions in the country, namely, Southern Ethiopian Nations, Nationalities and Peoples Regional State.

Table 2 . Water Distribution in the Southern Nations, Nationalities and Peoples Regional State (% population)

#	Type of Source	Urban	Rural
1	Piped Water	55.5	4.6
2	Water from Protected Wells and Springs	15.5	10.9
3	Water from Unprotected Wells and Springs	13.3	31.7
4	Rivers, Lakes and Ponds	15.0	52.6

When it comes to Addis Ababa, more than 29.2% of the city's residents lack any kind of sanitary service, even the simplest pit latrine. Only 12 percent utilize private toilets and 54.3 percent make use of either communal or public [sic] toilets. 90 percent have no built-in bathing facility (Ammanuel, 1999). Many are, therefore, forced to open defecate on open land or in the courses of streams, in the process turning the various rivers crisscrossing the city into virtual open sewers. The grim morbidity and mortality record of Addis Ababa (the more so for other cities and towns in the country) is partly accounted for by this situation. It is to this inadequate access to both potable water and sanitation facilities and the ensuing exposure to feces that we owe the various intestinal diseases:

The dangerous excreta disposal practices appear to be the major cause of the high rate of intestinal diseases in Addis Ababa. . . . It has been established that infant mortality from diarrhea and enteritis in Addis Ababa is three to five times higher than that in the developed countries" (quoted in Gebre Amanuel, 1984).

Wastewater Disposal

The estimate of untreated sewage discharged directly into rivers, lakes and coastal waters in the developing world stands at 90 percent. The situation in Ethiopia is much worse, as no city in the country is blessed with a full wastewater collection and treatment facility, except perhaps Addis Ababa, which boasts a sewer line that is only 110 km long

(i.e. 3.7 percent of what the city needed in 1997) and a lone treatment facility designed to cater to a mere 200,000 users, As things stood in 1997, even this was not fully utilized. The grim picture of pollution resulting from the wastewater released directly into the existing watercourses by some of the industrial establishments in and around Addis Ababa can be gleaned from the seven tables under ANNEX 1.²

Indoor Air Pollution

Indoor air pollution, mostly from the burning of low-quality fuels, such as grain residues, charcoal and wood, is as good an urban problem as it is a rural one in the developing world. Many urban residents depend on these fuels for much of their energy needs, especially for cooking and heating. Women and children are particularly vulnerable to exposure to indoor pollution, as these are the groups likely to spend much of their time indoors, though they are less exposed to outdoor pollution. According to the world Bank (1992), indoor pollution is one of the four most critical global environmental problems, as it contributes to acute respiratory infections in young children and chronic lung diseases and cancer in adults (World Resource, 1996-97).

Air Pollution in Addis Ababa

There is a critical lack of quantitative data on air pollution in Addis Ababa because no comprehensive and systematic study has been conducted in that direction. This may be attributed to the fact that due attention has not been given to the environment, without which the environmental provision enshrined in the Constitution and the Environmental Policy of Ethiopia cannot be realized. The weakness shown in this respect owes its existence to:

1. reluctance to realize environmental commitments;³
2. institutional and legislative inadequacy;
3. lack of environmental monitoring and analytical capacity (in terms of manpower, equipment, etc.);
4. lack of an environmentally alert citizenry;

² Tables prepared from data generated by the Pollution Control Department, Environmental Protection Authority, 2000.

³ Consider the very small budget allocated for this purpose vis-a-vis the revenue earned from sanitary services by Sanitary Team, Health Bureau, Addis Ababa City Government in the table under Annex 2.

5. the almost perpetual lack of funds, etc.

Lack of adequate knowledge related to air pollution in Addis Ababa is likely to persist for at least a few more years, three years at least, as a project titled Ecologically Sustainable Industrial Development (ESID) is underway in EPA, designed, among other things, to inventory the state of all industrial pollution in the country. Even without such a project, however, the air pollution in Addis Ababa is glaringly visible. It finds expression in various ways both in the occupational and general environments. Just to throw some light on the gravity of the situation, the following observations seem in order.

Air Pollution in the General Environment

Stench

There are notorious establishments in Addis Ababa known for the bad smell they exude. The Municipal Abattoir (*keru*), Gullele Soap Factory, Edget Oil Mills, Ethiopian Pickling, and the Municipal Waste Dump are some of the establishments that figure prominent as sources of stench. The practice of open-air defecation and/or public urination and the careless disposal of waste in neighborhoods very much contribute to the ill smell of many sites in city.

Dust

Perhaps one of the nuisances well known to residents living in the southern parts of the city, apart from the stench from *keru*, is the dust that used to issue from the stack of the Addis Ababa Cement Factory. Until it stopped functioning, the factory had been spewing dust for some thirty odd years over a radius of no less than 2 km. Currently, the Municipal Quarry on the Sebeta Road is enjoying high media coverage as a result of the protest from the surrounding community on account of the excessive dust, blast, vibration, noise and rock fallout from its daily activities.

Glare and Noise

Metal workshops, which appear to have mushroomed overnight and unchecked all over town, are throwing glares from their welding machines and emitting excessive noise from their grinding wheels, heavy

hammers and circular saws they must inevitably employ. The worst thing about these establishments is the fact that they are usually found doing business next door to residential units. Even churches and mosques are contributing their fair share to noise pollution in the city from their blaring loud speakers. Music shops and cars tooting their horns are no less a menace.

Gases, Fumes and Vapors

Most of the air emissions from commercial and general industrial facilities originate from the fuel that is used for heating purposes or for generating steam used in processing products. There may also be particular emissions that generated by processing plants.

Industrial plants, electric utilities and even sanitary landfills in the city emit various pollutants in the form of gases, fumes or vapors. For instance, a study made by the National Meteorological Service Agency indicates that the amount of methane, a greenhouse gas, generated from the municipal waste dump in Addis Ababa in 1998 was 9.39Gg. The distilleries, wineries and breweries in the city release the CO₂ they generate in the course of fermentation directly into the surrounding atmosphere. The gas could have easily been turned into a by-product with an apparent sizable demand.

Air Pollution from Mobile Sources

Cars and other mobile vehicles are usually major contributors to air the pollution in towns. Monitoring service stations for the environmental quality of the fuel they use and for combustion efficiency of the vehicles is virtually unknown in Ethiopia. Lead is known to be particularly hazardous to human health, and yet, cars that still rely on leaded gasoline account for up to 95 percent of the airborne lead pollution in cities in developing countries, including Ethiopia. The total number of registered vehicles in 1995/96 in Addis Ababa was 140,000. These cars are not only of a different make and vintage, but they are of varying technologies. Consequently, their efficiency of burning fuel varies. In 1995, the total petroleum product consumed in Ethiopia was 865,000 tones (which was very low by international standards: for example, the per capita consumption for Ethiopia was 15 kg, while it was 107 kg for Kenya, 34 kg for Tanzania and 40 kg for Mozambique), of which 41 percent was consumed in Addis Ababa, of which, again, 69

percent went to the transport sector. By world standards, the pollution load from burning petroleum in Ethiopia is low, but by the country's own standards the share of pollution from this source is certainly significant (International Resource Group, 1998).

Air Pollution & Congestion

Congestion and sprawling settlement exacerbate air pollution, as both increase the consumption of additional fuel by vehicles. Besides, congestion figures as an environmental problem in its own right, since valuable time is wasted due to heavy traffic relative to the available roadway. The roads in Addis Ababa certainly leave much to be desired. in this and other regards. For instance, only a meager stretch of 400 km is paved and another 960 km is macadam, while the required stretch to make the city congestion-free is 4000 km of paved driveway. The road width suitable for the smooth flow of traffic is between 9 and 12 m, but only 52 percent of the roads measure up to this requirement (the average is between 6 and 8 m wide). Only 193 of the 400 km paved roadway is fitted with adequate drainage for storm water.

Air Pollution in the Occupational Environment

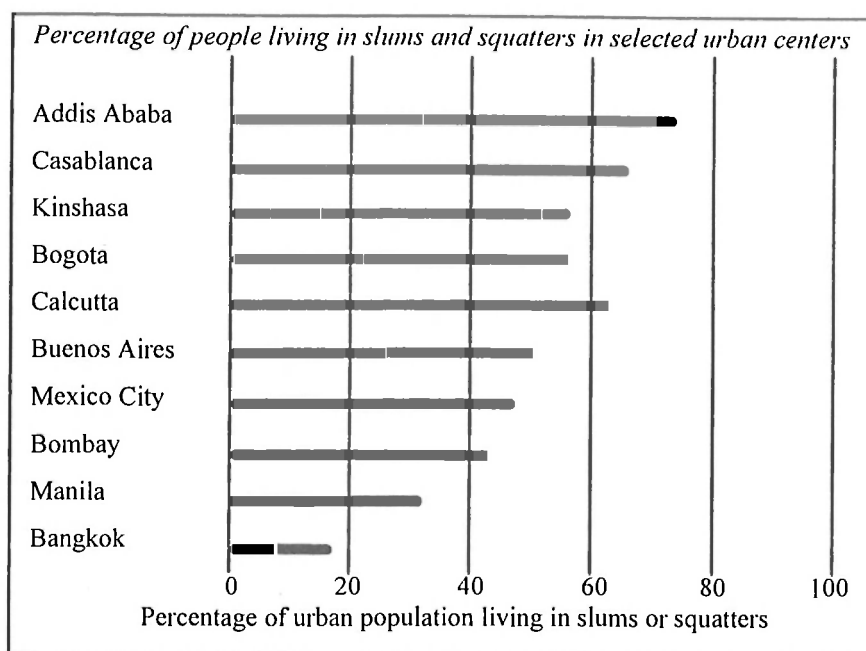
A large number (60 percent) of the industrial and commercial establishments in Ethiopia are located in Addis Ababa. Therefore, the likelihood of workers suffering from air pollutants in the working environment is bound to be the largest for the city. For instance, a study undertaken in 1995 on noise-induced hearing loss in five establishments in the city has established that a noise level exceeding 90dB(A), which leads to a high number of hearing losses, is not uncommon (Seife, 1995).

Solid and Hazardous Waste

Cities generate tremendous amounts of solid waste, and the amount increases with income. In cities of the developing world, an estimated 20-50 percent of the solid waste generated remains uncollected even though up to half of the local operational expenditures often go allegedly towards this end. Ethiopian cities are no exception to this. We shall look closely at the scenario in Addis Ababa, the nation's capital.

Generation and Collection

As it can be discerned from the chart below Addis Ababa is a jumble of squatter settlements (nearly 80 percent of the residents of Addis live in slums or squatter settlements), as the city was mostly built and expanded without the guiding or disciplining hand of effective town planning. Consequently, in low-income or squatter settlements, which occupy a substantial area of the city, garbage collection is often nonexistent or inefficient, either because these settlements fall outside of the official service perimeter or because trucks are unable to maneuver along narrow, unpaved streets, if and when such roadways are available.



Source: The Centre for Our Common Source

Of the total waste generated in the Addis Ababa, which comes to about 1,386m³ a day (2,165m³ according to the 1995 study of S. Gordon), the amount duly collected and disposed of by the municipal service was no more than 55% for 1996 (CERFE, 1997). Uncollected domestic waste is the most common cause of blocked urban drainage channels in the city, increasing, inter alia, the risk of flooding and vector-borne diseases, on top of eating up the expensive, if not precious, pavements.

Waste Disposal

UNEP defines disposal as “the discharge or deposit of waste into the environment, or the complete destruction of waste without residue.” The sort of waste disposal to be resorted to, sanitary landfill or incineration, is, in principle, governed by the characteristics of the waste generated. There are waste types, at least at the beginning, that must only be consigned to incineration and others to landfill; no one may be at liberty to switch from one to the other (of course, when properly regulated and adequately enforced), but this does not mean that the two are mutually exclusive.

Nothing of the sort exists in Ethiopia. For instance, no public or municipal incinerators are in place yet, and those owned privately are too badly improvised to deserve the name. The disposal facility at the service of the city is a municipal tip that is far from being a sanitary landfill proper. All the collected solid waste is indiscriminately relegated to this fenceless dump (such a dump is defined by UNEP (1998) as “an uncontrolled disposal site where no attention is given to safety or environmental factors”). Located in the western outskirts of the city, well outside of the city limit (13-km from the center of town) at the time of its commission over 30 years ago, currently, however, not only is it within the bounds of the city, but it is being constantly ‘encroached’ upon by settlements legally constituted. The site is some 25 ha in area, of which 10 ha have already been filled up by an estimated six million metric cube or two million tones of waste. It is expected to last another ten years. Although the site was never subjected to an Environmental Impact Assessment (EIA) process when first commissioned, an expansion seems to have been recommended by a consulting firm in preference to three other spots elsewhere in the city, and this time, too, without the aid of an EIA.

Spreading and compacting follow tipping. Bulldozers for the former, and compactors with steel studded wheels for the latter are the only equipment employed. All sorts of scavengers, in the form of both humans and other animals, including nocturnal ones, pry on the site. Smell or stench, smoke from spontaneous combustion, noise and dust from garbage trucks and various risks from quadruped scavengers (including hyenas) are some of the problems that members of the community in the dump’s vicinity complain about. Besides, the poor state of this disposal site is cause to a number of additional problems

affecting human health and the environment as a whole:

- the solid waste dumped is of a such heterogeneous composition that people that directly and frequently come into contact with it are vulnerable to health hazards. For instance, the high vulnerability to ‘occupational diseases’ faced by between 300 and 500 scavengers that daily tamper with the dump as well as that of the employees of the sanitary service cannot be ruled out;
- water pollution, both ground and surface, from leachate is bound to be rife, as both the waste composition disposed and the lack of leachate control due to the absence of proper design for the dump make this possible;
- air pollution from gaseous emissions, such as methane, and smoke are daily occurrences at the disposal site.

Hazardous Waste

Addis Ababa, being the sprawling metropolitan city that it is, is home to an unfairly large number of the country’s industrial and other establishments, which are randomly located in and around the city. All sorts of inputs are employed by these establishments to generate a wide variety of products/services and refuse resulting from the process. The latter come in different shapes and sizes. Tanneries and textile plants, for example, spew freely their hazardous effluent into the closest river, in the process rendering unclean the headwaters (Small and Great Akaki Rivers) of the most exploited river in the country, the Awash River. The streams coursing through Addis Ababa are, for the most part, literally dead, with BOD of zero (Desta, 2000). Hazardous solid wastes, likewise generated, ultimately find their way into the city’s municipal dump, if ever ‘properly’ disposed.

Hazardous waste, according to UNEP, is “any waste containing significant quantities of a substance which may present danger to the life or health of living organisms when released into the environment, or to the safety of humans or equipment in disposal plants if incorrectly handled.” These dangers are attributed to the toxic, carcinogenic, mutagenic or teratogenic characteristic of the waste as well as to flammability, chemical reactivity or other biologically damaging properties, including radioactivity. Solvents, paints, adhesives, corrosives, oily wastes, cyanide and other metal finishing chemicals, mercury-bearing materials, biocides, phenolics, other organics, metal-

bearing residues, inorganics and medical waste are some of the constituents deserving attention. The sort of disposal undertaken depends on the nature of the constituents rendering the particular waste hazardous: recycling, physical/chemical treatment (neutralization, precipitation/separation, or chemical detoxification), biological treatment, incineration, landfill and offshore disposal (ocean incineration or dumping, or export).

Except for a few articles in the Environmental policy (e.g., Art 3.8[h]) related to principles governing the disposal of hazardous waste, virtually nothing worthwhile and effective is being done in this regard, whether in Addis Ababa or elsewhere in the country.

III. Quo Vadis

Urban environmental degradation in Ethiopia can certainly be alleviated, and there is room for doing so. Perhaps the problem requiring the most firepower, as it were, by all stakeholders, severally or jointly, is the eradication of poverty. The development to be promoted to this end, however, must be so tailored that it makes possible the 'channeling of the so-called 'Environmental Kuznet's Curve'. Moreover, the various stakeholders, in keeping with their individual 'predilections', can undertake the following battery of activities:

Government

Both the federal and regional states have to take the right steps in the right direction in order to implement the pertinent constitutional and environmental policy stipulations; for instance:

- Strengthening the respective regulatory institutions, namely, EPA and the regional environmental bureaus (wherever the latter are already in place) in terms of manpower, facility, budget, etc.;
- Enacting and judiciously enforcing the appropriate environmental legislation (particularly, environmental standards).

NGOs

NGOs for their part may engage in the following activities:

- Undertake awareness-raising and research-financing for the control

and mitigation of urban environmental degradation;

- Lobby for the passing of environmental bills and standards; and,
- Pressurize government to implement environmental standards promulgated, etc.

Citizens

Private citizens, organized or unorganized, have to take the appropriate initiatives to protect themselves vigilantly from all types of environmental degradation, including voting for the party that best represents their environmental interest. They must pressurize their representatives in parliament and take court action against violators, say, as per the nuisance article of the Civil Code (Art. 1225).

Trade Unions

Unions have to take an active part in the protection of the safety, health and comfort of their members by:

- Organizing awareness-raising programs;
- Making sure that the working environment is free of pollution;
- Ensuring the supply and adequate use of both general and personal protective equipment;
- Suing violating firms whenever the need arises by invoking the labor law and such international instruments as Convention 155 of the ILO.

Others

Community-Based Organizations, entrepreneurs, and the academic community may chip in their share to ameliorate the situation.

ANNEX 1

Table 1: The Effluent Characteristics of Beverage Industries (mg/L)

Name of Establishment	SS	DS	BOD	COD	NO _x	SO _x	pH	PO _x
Addis Soft Drink	19.0	2885	581.5	1148	0	40.65	11.70	5.11
Awash Winery	1622.0	2923	112769	134608	9	40.85	7.46	16.00
Meta Abo Brewery	218.0	211	12169.5	19191.5	3.75	0	5.27	16.93
MoHA Soft Drinks	56.0	2196.5	407.5	1701.0	13.5	277.5	12.32	19.65
National Alcohol & Liquor Factory	862.5	1383.5	13550	17741.0	0.2	2.5	7.91	49.86
St. George Brewery	0	31	55(?)	96.5	1.05	5.95	6.64	2.05
Tanzanian/Egyptian Standards	NS/60	3000/2000	30/60	NS/100	50/50	NS/600	6.5-8.5 6.0-9.0	US/5.0
# of Substandard Establishments (6)	/3	0/3	All/All	/All	0/0	0/0	3/3	/5

Table 2: The Effluent Characteristics of Chemical Industries (mg/L)

Name of Establishment	SS	DS	BOD	COD	NO _x	SO _x	pH	PO _x
Addis Gas and Plastic	0	9087.5	13.50	81.0	1.6	12.95	8.27	0.55
Addis Tire	0	895.5	24.65	71.5	2.7	2646.25	8.89	12.96
Chora Gas and Chemical	26431.5	3720	85	788	0	8.87	10.1	2.9
Equatorial Paint	218.0	41.5	575.5	2675	0	312.5	8.31	0.28
Gullele Soap	72.0	89650	56781.5	105800	200	80	13.50	39.27
Nifas Silk Paint	358.0	165.5	228.5	2248	23.75	350	6.58	7.2
Kepi Soap	76.0	1990	1034(?)	3995	7	25(?)	9.01	29.78
Tanzanian/Egyptian Standards	NS/60	3000/2000	30/60	NS/100	50/50	NS/600	6.5-8.5 6.0-9.0	US/5.0
# of Substandard Establishments (7)	/5	3/3	5/5	/5	1	/1	4/3	/4

Table 3: The Effluent Characteristics of Metal Industries (mg/L)

Name of Establishment	SS	DS	BOD	COD	NO _x	SO _x	pH	PO _x
Addis Machine Tool	0	645.5	16.6	75.5	6.7	213	8.24	0.1
Akaki Spare Parts	0	411.5	11	27.5	7.65	25.95	6.75	0.28
Akaki Metal Products	0	3540	73	156	5.5	20.3	2.76	0.18
Ethiopia Metal Foundry	0	292	13	124	11.13	24.2	7.52	2.5
Kality Metal Products	62	304.5	165	435	7	87.8	8.64	3.15
United Abilities	0	100.5	3.65	12.4	1.2	0.83	7.08	0.36
Tanzanian/Egyptian Standards	NS/60	3000/2000	30/60	NS/100	50/50	NS/600	6.5-8.5 6.0-9.0	US/5.0
# of Substandard Establishments (6)	/1	1/1	2/2	/3	0	0	2/1	0/0

Table 4: The Effluent Characteristics of Textile Industries (mg/L)

Name of Establishment	SS	DS	BOD	COD	NO _x	SO _x	pH	PO _x
Akaki Textiles	106.0	567	259.5	375.5	25	57.85	9.07	4.76
Edget Yarn	0	207	81.5	180	5	29.8	10.27	2.26
Nefas Silk Trade	0	303	10	47	3.1	17.55	8.01	1.69
Tanzanian/Egyptian Standards	NS/60	3000/2000	30/60	NS/100	50/50	NS/600	6.5-8.5 6.0-9.0	US/5.0
# of Substandard Establishments (3)	/1	0/0	2/2	/2	0	0	2/2	/0

Table 5: The Effluent Characteristics of Various Industries (mg/L)

Name of Establishment	SS	DS	BOD	COD	NO ₃	SO ₄	pH	PO ₄
Bitana Printing Press	106.0	26632	2225	10984.5	0	67.30	8.15	14.25
Ethio Marble Industry	442.0	109	123.5	429.5	2.63	20.45	8.74	2.55
Artistic Printing Press	970.0	23088	771.6	2756.5	0	2745	8.61	0
Addis Ababa Abattoirs	136.5	363	814.5	3402	411.5	176.25	8.5	20.4
Addis Modjo Edible Oil	1359.0	385	23273.5	38341	30	519	8.43	51.75
Tanzanian/Egyptian Standards	NS/60	3000/2000	30/60	NS/100	50/50	NS/600	6.5-8.5 6.0-9.0	US/5.0
# of Substandard Establishments (5)	/All	2/2	All/All	/All	1/1	7/1	2.0	3

Table 6: The Effluent Characteristics of Some Tanneries (mg/L)

Name of Establishment	C ₁ ^{mg}	C ₂ ^{mg}	SS	DS	BOD	COD	SO ₄	NO ₃	pH	PO ₄
Addis Tannery	0.32	0.70	1044.5	4089.5	2428.5	5208	1520	113.75	9.30	30.08
Walia Tannery	0.20	0.51	487.7	17425	914	5440	1576.25	6.25	3.81	6.18
Blue Nile Tannery	0.06	0.44	1168	12850	1673.5	8460	959.5	5.91	8.27	17.19
Dire Tannery	0	0.42	518.78	11950	2782	23460	3276.5	0.03	5.96	17.39
Hafeda Tannery	0	0.38	518	13400	985.5	4324	247.38	6.85	7.73	8.11
Walia Tannery	0.02	0.80	737	5250	1644.5	5941	144.7	17.64	10.45	11.27
Tanzanian/Egyptian Standards	Total Chrome 0.0/1.0	US/60	3000/ 2000	30/60	US/ 100	NS/600	50/50	NS/600	6.5-8.5 6.0-9.0	NS/600
# of Substandard Establishments (6)	?	/All	All/All	All/All	/All	/4	1/1	5/4	4	All/All

Table 7: The Pollution Load on the Rivers Little & Great Akaki and Tributaries (mg/l)						
#	Sampling Point	BOD	DO	NH ₃	CI	
1	The bridge on the approach to Gellele Soap Factory	3.5	7.0	0.53	5	
2	The bridge close to the Building College	339	0.8	32.3	110	
3	The bridge on the approach to Zenebe Work Hospital	40	0.6	8.8	50	
4	The bridge near Fifth Police Station	535	0	63	83	
5	Bridge right at the Abattoir	444	0	71	85	
6	Near Behere Tsige Park	252	0	52.5	65	
7	Down stream of Kaliti Waste Water Treatment Plant	105	0	80.6	235	
8	Under Habte Giorgis Bridge	93	0.6	51.60	63	
9	Under the General Post Office	134	2	55	64	
10	The upper bridge near Zewditu Hospital	144	2	58.1	15	
11	Under Kechene Bridge	36	4.8	13.2	70	
12	The bridge at the French Embassy	11.0	6.6	0.6	57	
13	Misrak High School Area	63	3.7	38.7	45	
14	Urael Bridge	24	0.80	30.7	48	
15	Bole Bridge	60	0.60	32.3	47	
16	Near Legedadi Dam	5	7.7	0.6	2	
17	At the end of Bole Runway	32	1.0	21.3	35	
18	At Akaki Bridge	10	4.7	0.9	22	
19	Tanzanian/Egyptian Standards	30/60	US/US	0.5/0.3	US/US	
20	#of Substandard Sites	13/10	(?)	ALL/ALL	?	

ANNEX 2

Table 1: Revenue Sources of the Addis Ababa city Administration Sanitary Service(in Birr)

#	Year	Type of Revenue Source			Total Revenue Earning	Budget of the Sanitary Team	General Revenue of the City Government
1	1989/90	53,318	-	-	-	-	-
2	1990/91	168,841	-	-	-	-	-
3	1991/92	64,408	-	-	-	-	-
4	1992/93	256,195	-	-	-	-	-
5	1993/94	246,954	-	-	-	3,960,000	184,700,000
6	1994/95	306,664	-	-	-	4,070,000	262,700,000
7	1995/96	559,304	-	-	-	3,850,000	356,100,000
8	1996/97	379,108	3,355,973	-	-	4,940,000	463,400,000
9	1997/98	405,326	2,978,583	15,552,861	18,936,770	-	-

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Experiences of Selected NGOs In Natural Resources Management in Ethiopia

Ginjo Giya

1. Introduction

The paper focuses on the natural resources management (NRM) experiences of selected NGOs in Ethiopia.¹ The paper has five major parts. The first part is a general introduction. In the second part, an overview of natural resources management activities of NGOs in Ethiopia is presented. The third part describes the NRM experience of selected NGOs in Ethiopia. Part four discusses impacts and sustainability of those activities. Finally, conclusions and policy implications are drawn based on the overall discussion.

1.1. Statement of the Problem

Environmental resource concerns are critical for countries like Ethiopia. The reason is that there is a strong and direct link between the most basic needs of human beings, such as food and shelter, and natural resources in the least developed countries (Mitchel, 1991). Agriculture remains the basis for the sustenance of life among the vast majority of the Ethiopian people. In fact, the primary purpose of agricultural production is to provide an adequate, sustained food for the population and raw material supply for the industries. It is, therefore, the foundation of the social system and the overall economy in countries like Ethiopia. The basic setting for agricultural production is the natural resource base. This means, then, that the two systems (natural and socio-economic) are interrelated in a complex and dynamic way.

However, in recent decades, particularly after the 1950s, an increasing trend of degradation of local natural resources, such as farmland, soil, water, forest and pasture, has been witnessed in Ethiopia. Above all, soil erosion is becoming a serious problem. In the Ethiopian highlands, as roughly estimated, nearly one billion tons (a more recent

¹ The initial research from which this paper has been developed was undertaken under the aspics of Christian Relief and Development Association. I am grateful for the financial assistance of CRDA, and logistic support provided by Koisha Rural Development Project during the actual fieldwork.

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Managing Forests As Common Property : Collaborative Forest Management in Ethiopia

Ben Irwin

Why Should We Be Concerned About Property Systems, but Particularly About Common Property ?

Land tenure and property systems determine how access to land and other natural resources like forests and water is managed. In other words, who gets access to resources and who makes decisions concerning resources? Access to land and other resources is fundamental to rural people, who secure their livelihoods from these resources.

Important aspects of common property

- ❖ Common property systems include all community-based resource management systems.
- ❖ Common property systems assure access to important natural resources by defined groups of a community, often including the landless and other marginalized groups.
- ❖ Common property systems also fulfil important social functions, such as maintaining conflict resolution mechanisms.
- ❖ Common property systems can also assure conservation of natural resources and biodiversity.

Classical rural development approaches have for a long time condemned customary resource management systems (common property systems in particular) as being counter to development and unable to prevent (or even cause) resource degradation.

The alternatives to common property systems have been nationalization, on the one hand, and privatisation on the other. However, in certain situations these alternatives have not provided a solution to development problems, and in many cases, they have made them worse. Therefore, professionals are looking back to customary and other common property systems to resolve these problems. Customary systems, adapted to cope with the new pressures of present-day resource management, are being seen as legitimate and effective management alternatives for natural resource management.

Understanding Different Property Regimes and Their Associated Advantages and Disadvantages for Sustainable Resource Management

Looking at and defining what is meant by property regimes and the range of different property systems that exist, makes our understanding of each system and its implications for resource management clearer.

A classic example of where confusion exists over the definition of property regimes is the much talked about “Tragedy of the Commons” (Harden, 1968). This article is often quoted as proof that common property resource management is not only not sustainable but also uncontrollable and contributing to degradation. However, by analyzing what the author is discussing in his paper, we find out that he is referring to a property system where there are no management rules and resource users work independently of each other. Such a system is explicitly an ‘Open Access’ system.

Through the identification of advantages and disadvantages of the functioning of different property regimes we can begin to take informed decisions as to which system fits, or is most appropriate, to specific resource management scenarios.

What Is Meant By Property? Key Characteristics

Recent studies on property define property not as an object, such as land, but rather as a right to a flow of benefits that is only as secure as the observance of duties by all the beneficiaries to respect the conditions that protect the flow (SMCPR, 1999).

In other words, property means that someone has a *right* to something that is *recognised* by *law* and in *practice* and that all others have a *duty* to *respect* that *right*.

A property system means that *one party* has the *right* to *exclude others* who do not have rights to the resource in question.

Property systems also only occur when use of the resource by one party reduces the availability of the resource to another (e.g. it would not make sense for the sun to be property because one person’s

use of the sun does not reduce another person's access to it). This diminishing factor is known as *subtractability*.

So property is characterised by *subtractability* and *exclusion*.

A pasture, an irrigation system, fisheries, forests and wildlife can all be common property resources if they are managed communally. They can all be owned, managed and used individually (privatized) or managed by the state (nationalized).

Certain resources in certain situations may have characteristics that predispose them to be managed by an individual, a group or a government; there is no hard and fast rule. Decisions are made by governments and policy makers.

Defining Property Regimes: Different Kinds of Property Systems

There are four different kinds of property systems according to who has a right to the resource.

	Individual private property	Common property	State property	Open access
Claimant	Secure claim rests with an individual.	Individuals have claims on collective goods as members of a recognized group	Secure claim rests with the government, e.g. forest reserve, national park	Everybody and nobody has a claim

Open access: Each potential user has complete autonomy to use the resources, since no-one has the ability to keep any potential user out— in other words, it is not really a property regime as there are no duty bearers or right holders.

Advantages	Disadvantages
Short term access to all ?? No cost of management ??	Rapid resource depletion Resource access to the strongest No controls Conflicts No management, simply exploitation

Individual private property is probably the most straightforward system – owned and used by one individual who decides who can and cannot use the resource and how.

Advantages	Disadvantages
Management relatively simple – one decision maker	Exclusion of others – conflict
Potential for responsible management and investment	Management for individual vested interest
	Undermines traditional systems (CPRM)

State property: National government is formal authority on the management of natural resources through central regulatory policies and legal frameworks. Direct administration is a common way for governments to control use to address the problem of resource degradation.

Advantages	Disadvantages
Regulation / control	High cost to governments
Preserving resources for the common good	Difficult / Ineffective management (cannot lock up resources)
	Exclusion of local people – conflict
	Undermines traditional systems (CPRM)

Common property systems occur when use rights for a resource are controlled by an identifiable group and there exists rules defining who may use the resource and how and who may not use the resource.

A common property system is created when members of a defined group agree to limit their individual claims on a resource in the expectation that the other members of the group will do the same. Such a property system depends on rules regarding who may use the resource and how. The system also involves ways of stopping people cheating the system.

Common property resources are often use by the poorest in a community such as the landless.

Advantages	Disadvantages
Potential for responsible management and investment;	Past systems broken down;
Inclusive;	Pressure from modern land use – conflict
Equitable sharing;	Complex management systems
Access/opportunities to the poorest;	
Livelihood options.	

The Link Between Common and Private Property Regimes

In the above analysis many interesting similarities and differences can be drawn out and discussed to increase our understanding of the relationships and functions of different property regimes.

For the particular purpose of this paper I want to highlight particularly the link between Common Property and Private Ownership. As seen above, Common Property and Private Ownership share the same critical advantage of the potential for responsible management and investments in the resources for a return (although this advantage is often only recognised in Private Property regimes). In this way Common Property Regimes and Private ownership regimes can be seen as close to each other in terms of their function (Arnold, 1998). This fact is contrary to the common perception that Common Property regimes are close to Open Access regimes (uncontrolled use and environmental degradation). As we see from the analysis, Common Property regimes share none of the same advantages or disadvantages with Open Access property regimes.

The reason for this misperception is perhaps the fact that, when Common Property regimes have been disrupted, they are often replaced by Open Access systems. This has been the case with State intervention and the negative impact of state ownership in many countries. This transition has developed into an accepted association between the two systems.

Trends Towards Privatization: Implications of Privatizing Common Property

If common property resources are privatized, there is a risk of increasing inequality and disenfranchising the poor. Reducing access to resources has a highly negative impact on sustainable livelihood opportunities and serious economic implications, as more and more people become dependent on the state for welfare support. An obvious example of this is to be found in pastoralist areas; many people are dropping out of the system due to a number of factors, one of the key factors being resource base shrinkage due to land privatization (Helland, 1997).

Common property management is a viable alternative; it is complex, but it is equitable in that it offers people (regulated) access to resources that, at least traditionally, belong to them. Access to resources allows the opportunity for communities to pursue sustainable livelihoods (Hesse and Trench, 2000).

Principles Under Which Common Property Functions

The critical development question is: can Traditional Common Property regimes work in the present-day context of increasing resource conflict and competition ?

Functional common property regimes depend on the effectiveness of the system to control/to manage so as to ensure that all members and non-members respect the rules and regulations. Common property depends on members limiting/reducing the amount of resource that they are taking (Ostrom, 1998; Bromley and Cernea, 1989). Group members will only agree to do this if they know that others are also doing the same. If people are allowed to cheat the system, then there is no incentive for other members to respect the system and they will also cheat. If there are no rules controlling access, then the resource has become an open access resource.

Managing Forests as Common Property: Promoting Sustainable Resource Management Systems Through Stakeholder Collaboration - Collaborative Forest Management

Collaborative Forest Management (CFM) is used as a broad term to describe systems in which **communities** (forest users) and **government services** work together to manage forest resources. This management system aims to define the rights of forest use and ways of sharing management responsibilities, and divides forest benefits. The term CFM includes *Joint Forest Management*, *Participatory Forest Management* and other similar terms that are used to describe community-based forest management systems (BCFMP, 1999).

Rationale: Why CFM : Government Roles in NRM

The roles of governments are under re-consideration and evolving to fit the present-day context of increasing needs for sustainable resource utilization. In the face of difficult economic

conditions, governments are reassessing the workability of ambitious claims to provide universal services. Decentralisation of resource management is seen as cost-effective and also as a means to encourage greater levels of activity and participation in local resource management and economic development. There is more emphasis on the role of governments in providing a stable and enabling framework for economic and social development, while government intervention in productive sectors is questioned (SOS-Sahel, 1998).

In addition to this, governments have found themselves unable to enforce control over forest resource use. With no functional management system, forests have become open-access resources liable to over-exploitation.

The Opportunities of Traditional NRM Systems

It is widely recognized that governments, in asserting state ownership and control of natural forests, have undermined traditional common property regimes and resource management systems and disempowered local communities in terms of both resource ownership and responsible (controlled) resource use. Through state intervention, communities have been excluded from forest resources and any incursions were perceived as, and often were, destructive.

As these problems have become recognized, and confidence in state regulation has decreased, respect for the strengths of indigenous knowledge and traditional natural resource management systems has also been recognized. Forms of collaborative natural forest management have been pioneered in India, Nepal, South-east Asia and Latin America, and there is a growing body of experience in Africa (SOS Sahel, 1998).

A key challenge of the process is to put in place systems of resource management that are effective in today's context of increasing resource demand and land use competition and conflicts. It is important to recognize that, in practice, this dictates the need to modernize traditional resource management systems. Traditional resource management systems can be seen as the foundation on which to build new systems of forest management.

Stakeholder Analysis: Understanding Multi-users and Multi-uses

If some form of CFM is to be the solution to unsustainable resource use, it is essential to understand the stakeholders and user groups who could be involved in sustainable management, and also to identify groups who could potentially gain or lose from changes. Stakeholder analysis will also reveal risks of conflict between user groups and needs for conflict resolution systems.

Stakeholders include not only local communities but also distant users and all who have an interest in the forests. ODA (1996) defines stakeholders as any person, group, community or body who has something to gain or lose from changes in management of the forest resource. Primary stakeholders have rights; secondary stakeholders have interests. This appears problematic: deciding who has a 'right' to use a forest involves difficult value judgements at the outset. It seems more useful to define primary stakeholders as those who make direct use of forests, and secondary stakeholders as those who use it indirectly or are interested parties. Among the users we can further distinguish between those who depend on the forest and those who use it along with other sources of livelihood.

Direct Users

The largest groups of direct users are the agro-pastoralist villagers in and around the forest and pastoralists who make seasonal use of the forests as a grazing reserve. Two further groups of possible direct users are the ex-soldiers in Negele, and the urban poor in all forest adjacent towns. A further direct user group is the army.

Indirect Users

The main indirect user groups are urban. Forest product traders and shop-owners in Negele and Yavelo towns retail timber and forest products, such as charcoal.

Builders rely on juniper timber as a termite-resistant construction material. Restaurant owners and bakeries buy fuel wood and charcoal in relatively large quantities. Most urban households buy cooking fuel from producers who bring it from the forests and

woodlands. The MoA and other government departments themselves use juniper for buildings.

Interested Institutions

The MoA State Forest and Wildlife Conservation Department (the FD) is responsible for controlling, protecting and managing the forest resources on behalf of the Regional Government. The PA Committees are charged by the government with local-level land management. The Ethiopian Wildlife Conservation Organisation (EWCO) has the national mandate for conservation.

The Boran traditional institutions and leaders are at least as important as the PAs as parties with a long-term and serious interest in forest conservation.

Various NGOs have demonstrated interests in these forests. NCA/Mekane Yesus in Yavelo and Arero has supported seedling production, plantations and construction of forest roads.

The Italian agency COOPI and SCF/US has played a similar role in Negele. The Ethiopian Wildlife and Natural History Society is carrying out surveys of bird species in the Borana forests with international NGO partners (Birdlife International), clearly indicating the international and national interest in wildlife conservation in this area.

Summary of Stakeholder Analysis

From the above list it is clear that the stakeholders are diverse in ethnicity, rural/urban background, type of use or interest in the forest and degree of dependence upon it. Inevitably, they will have widely differing perceptions of the forest and views on how it should be managed. A number of important questions emerge.

Key questions of Stakeholder relations:

- ❖ Which groups would be party to collaborative management arrangements? Can the interests of different groups in fact be reconciled?
- ❖ How will conflicts be resolved?

- ❖ Will forest management agreements result in loss of livelihood for the most vulnerable groups?
- ❖ To what extent do any groups have traditional usage or management control over specific forest areas?
- ❖ Would existing institutions form appropriate management structures? Are they equitable and representative?
- ❖ How can the interests of minority groups be adequately protected?

How Is CFM Established as a Management System - How Do We Do It ?

To put systems of CFM in place is a complex and long-term task. The process should not be regarded as an instant fix to the problem of over-exploitation of forest resources. Success will take time, and it requires investment by both Government and Communities to learn, plan, develop, adapt, negotiate and share the responsibility for forest management. The promotion of any new system is a process of joint learning and adjustment that requires an experimental, learning-by-doing approach. It will take time to re-establish community-based management systems and to redevelop community roles and capacity. To establish CFM systems, we start with a basic concept of shared management of common property resources. During the process of establishment we develop the ideas within the concept as we learn about the actual management opportunities and constraints, the needs of different users, and the site-specific requirements of each forest site.

The Challenges of a New Approach

CFM is a new approach, particularly in the Ethiopian experience. As with any new approach, many forestry professionals view CFM with some suspicion and concern, mainly due to a lack of clear understanding of the processes being promoted. In addition, there is an uncertainty about the new roles that professionals and community members will take up. It is useful from the beginning to dispel the myth that the CFM process simply entails the handing over of forest resource control to local communities, leaving them to manage the resources in any manner they see fit. As stated above, CFM is a management partnership between local communities and government services. How this partnership works is explained below.

Examining the New Roles

CFM is an on going partnership between Government Forest Services and local communities. It is a working partnership in which each party is interdependent on the other. The new approach requires new activities and roles from both forestry professionals and forest users. The box below identifies these new roles and activities. The list of actions is not exhaustive and should be developed as both the forestry professionals and forest users develop and understand their roles through learning and experience.

New Roles for Forestry Professionals	New Roles for Forest Users/Communities
<ul style="list-style-type: none"> -investigators of local forest uses; -identifiers of local management systems; -facilitators of situation analysis; -moderators of different local interests and of conflict and competition; -negotiators of forest management rules and regulations; -monitors of CFM processes and of forest management agreements; -advisors to FUGs and silviculture experimenters; -facilitators of FUG to FUG extension and exchange; -trainers in community management; -analysts of forest management problems; -generators of new technologies; -providers of information to complement FUG knowledge; -documentors/analysts of methods of CFM. 	<ul style="list-style-type: none"> -forest resource managers and legitimate resource users; -forestry operations actors; -resolvers of conflict and competition; -implementors of forest management plans; -protectors and controllers of forest resources; -evaluators of new ideas and technologies; -silvicultural experimenters; -communicators of own knowledge and findings to others; -analysers of own situation; -selectors of tree species for nursery production and planting; -assessors of forest resources; -marketers of forest products;

The Core Concept of CFM

CFM refers to the legal empowerment of local communities to manage forest resources for, in the first instance, their sustained livelihoods (basic needs), and in the second instance, for economic return.

The process of CFM involves the legal transfer of resources (use rights and/or ownership rights of) from the government to communities. This transfer is enabled by, and dependent upon, a negotiated and documented Forest Management Agreement.

The Forest Management Agreement (FMA) clearly details:

- ◆ the negotiated and agreed roles and responsibilities of both parties;
- ◆ the negotiated and agreed rules and regulations for the sustainable management of the forest resource.

The FMA is a legally binding contract between a defined community-based institution (Forest User Group) and the Government (represented by the Forest Services).

The FMA is periodically reviewed in order to monitor the effectiveness of the management rules and regulations, in terms of achieving sustainable forest management, and to provide opportunities to adjust the management document in the event of new learning.

Benefit-sharing arrangements are also clearly stated in the FMA. In economic terms, Forest User Groups can only be expected to take on the role of forest managers if it is an economically viable opportunity. That is, the forest resources will give adequate economic return for the investment of labour and materials made.

The CFM Process

The process of promoting CFM systems can be divided into three distinct stages:

- ◆ the *Investigation* stage;
- ◆ the *Negotiation* stage;

- ◆ the *Implementation* stage.

The Investigation Stage

During this stage of the process, investigations are carried out into past and present forest uses, forest condition, and forest management practices. Information is gathered using a number of participatory forest research tools, such as participatory forest mapping, historical timelines and matrices, resource use impact assessment charts, semi-structured interviews and focused group discussions.

The objective of the investigation stage is to develop a clear understanding of the forest resources, who uses them, what they are used for, what the existing management rules and the local capacity and opportunities for community management are.

The Negotiation Stage

Using the information gathered in the first stage, forestry staff and communities work together to develop Forest Area Management Plans and sign Forest Management Agreements.

As stated above, these plans aim to clearly define the roles and responsibilities of each party (government and community), to set out the rules and regulations governing forest use (user rights/harvest levels), and to develop activity plans for forestry operations. Forest user group relations and benefit-sharing arrangements are negotiated at this stage.

To facilitate this stage, Participatory Forest Management and Land Use Planning activities are used in a joint planning process. Conflict and competition over forest resource uses need to be understood, addressed and resolved at this stage of the process.

The Implementation Stage

Once the Forest Management Agreement is signed, the management plan is then implemented. Throughout this stage, close collaborative work between the government and the community groups is essential.

The role of the forestry services lies in supporting the community in the achievement of the Forest Management Plan objectives. There is a need to support the communities in the protection of the forest through the joint enforcement of the agreed rules and regulations. Continual monitoring of the performance of the community management groups and the effectiveness of the Forest Management Plan is undertaken throughout the implementation stage. Periodic reviews of the forest management activities are also conducted. The Forest Management Plans are reviewed and adjusted in accordance with the increasing knowledge and understanding gained during the implementation stage.

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Problems of the Urban Environment

Ammanuel Malifu

ABSTRACT.

In Ethiopia, urban life accounts for no more than 15 percent of the population. The only primal city we have is Addis Ababa, the capital of the nation, accommodating less than three million souls. Many of the residents of this city or the other towns are poor, mostly eking a precarious living to hold the soul and flesh together. They are short of almost everything that keeps life smoothly going and renders it pleasurable. Full employment is an unheard of luxury; social services, amenities, infrastructure, etc. are in perpetual short supply. As in most developing countries, environmental problems are rampant here: disease and pestilence, overcrowding and congestion, filth and stench, crime and unrest, hunger and nuisance, ignorance and forced leisure, early death and affliction are some of the conspicuous elements composing the panorama of urban life. The environmental undesirables are tall, depending upon the size and rate of the growth of each particular city, its income, geography, climate and institutions. Shortage of clean water, wastewater and garbage disposal and other sanitary services, pollution both indoors and outdoors, housing supply, employment and the like require immediate attention in which all the urban environmental stakeholders have to chip in their respective contributions if this sad state of affairs is to be dealt with effectively.

Introduction

In developing countries, urban centers often have huge populations languishing in poverty and facing the same urban social threats confronting urbanites in the developed regions, of which violence and drug abuse are good examples. Disparities among different income groups are often more extreme in cities of the developing world, entailing, among other things, problems to the urban poor that lead more or less similar lives with their rural brethren, for instance, lack of access to potable water, sanitation, and adequate housing, compounded by such disadvantages as overcrowding and exposure to industrial waste and

urban air pollution. Moreover, these cities, more often than not, deplete nearby areas of water and firewood, rendering them less capable of supporting rural populations and thus adding to the pressure on the rural population to migrate to urban centers.

Many environmental problems bedevil most cities in the developing world. For one, there is poverty, which is the hallmark of these cities. Air pollution already exceeds international health standards in many them. Sewage and industrial effluents are released into waterways with minimal or no treatment, thereby threatening human health and aquatic life. Some urban environmental problems, such as access to safe drinking water improve with economic growth, while others tend to worsen. Thus, in the absence of policy reform, stronger institutions, and enlightened political leadership, economic and population growth is bound to lead to a further deterioration of the physical as well as the social urban environment.

The Ethiopian urban scenario is very much underdeveloped by world standards; for instance, the total urban population was only a little over 3 million in 1975; 7.4 million in 1995 (out of a population of 55,053,000); and it is expected to reach 38 million (out of a population of 126,886,000) in 2025 (World Resource, 1996-97). In this regard, which of the three major societal activities—production, distribution/exchange or consumption—determines the state of urban life in Ethiopia is of some interest. By definition rural life in Ethiopia, which is mostly subsistence in its nature, rules out the second. As to which of the remaining two prevails in Ethiopian cities/towns is a point worth probing into in depth. But, cities being seats of bloated governments and their hangers-on, consumption appears to be the salient trait of urban economic activities. The fact that the highest proportion of the economically active population thrived in 1994 on service and sales occupations testifies to this reality (Annual Report on the Ethiopian Economy, 1999/2000). Whatever the case, urban life in this country is plagued with a plethora of environmental problems. The provision of adequate housing, employment, water supply and sanitation, and water resource, solid waste and air pollution management have, for some time now, been some of the environmental concerns begging urgent intervention.

The focus of this paper is urban environmental problems in Ethiopia, in general and in Addis Ababa in particular. In the following

pages attempts will be made to elucidate the state and dynamics of such urban environmental problems as poverty, water and sanitation services, waste disposal, pollution and congestion. The first section is devoted to describing, in general terms, the environmental problems of cities. The second section relates, however sketchily, the scenarios already developed with the realities of the Ethiopian urban scene. The last section discusses the welter of tasks awaiting execution if the existing state of affairs must be altered.

In Lieu Of Theory

The Urban Environment

Historically speaking, cities, have been centers from where economic and social development are planned. Thanks to industry and commerce, they have also been centers of wealth and power, usually accounting for a disproportionate share of the national wealth. Beside the economic gains they provide, urban centers offer both tangible and non-tangible benefits: they record higher income, improved health services, higher literacy rates, on the one hand, and they provide access to information, diversity, creativity and innovation on the other.

But urbanization has also brought in its wake all sorts of evil, both social and environmental, some of which are of staggering proportion, depending on particular circumstances. Urban environmental problems are known to defy easy categorization. However, the following two broad categories can be identified: those associated with poverty and those associated with economic growth, the two possibly finding themselves side by side within the same city.

Some of the worst environmental problems, in terms of human suffering, occur in the poorest cities of the developing world. But especially where population growth is rapid, it has been observed that local governments have not been able to provide for even the most basic needs of their citizenry. Consequently, the conditions in which the urban poor live are life threatening: lack of access to potable water, the simplest sanitary services, refuse collection and the like exact enormous tolls in terms of largely preventable deaths and diseases.

Environmental problems are also severe in those developing world cities experiencing rapid economic growth. While it is true that

economic growth brings needed revenues to cities, if proper safeguards are not put in place, however, it all too often transpires at the expense of environmental quality. In such cities across the world, domestic and industrial effluents are released into waterways, with minimal or no treatment, threatening both human health and aquatic life. Many of the urban poor live in squatter settlements where they are exposed both to the hazards emanating from economic growth, such as industrial emissions, and to those that poverty fosters.

Unemployment

One top-of-the-list problem in most cities of the developing world is unemployment, since the perpetually ailing formal economic sector is incapable of absorbing the enormous influx of workers, attributed, in part, to high urban growth resulting from rural-to-urban migration, to which one may add the natural growth of population within the cities themselves. A substantial number of the urban poor are, therefore, forced into informal jobs (production and exchange of goods and services outside of the formal market sector). In sub-Saharan Africa, for example, some 75 percent of the jobs are accounted for by this informal sector (World Resource, 1996-97).

The Ethiopian employment scenario is no different. The rapid urban population growth in some of the major towns and cities in the country, whether due to natural increase or urban migration, has bloated the so-called reserve army. In Addis Ababa, for instance, this figure is in the order of 400,000 and steadily increasing, to boot.¹

Urban Poverty and the Environment

The urbanization of poverty has implications, in more ways than one, for the quality of life as well as the urban environment itself. The urban poor, which find themselves at the receiving end of the butt of social transformations, are the biggest victims of urban environmental risks. They live in sub-standard housing built, for lack of better alternatives, upon marginal land (on flood plains, steep hillsides, dumpsites, in the proximity of pollution-emitting industrial facilities,

¹ In the Annual Report on the Ethiopian Economy, we read that in 1994 22 percent of the total economically active population was unemployed and that "the employment rate declined dramatically for specific age groups such as the 20-24 age group where the rate declined from 85 percent to 61 percent between 1984 and 1994."

etc.) and, to add to the bargain, they live overcrowded in a situation where communicable diseases thrive unchecked. Poor neighborhoods are characterized by want of such amenities as infrastructure services, clean water supply, sanitation facilities and refuse collection, which are, quite literally, a luxury to most of them.

Shunned by local governments either because of lack of funds or from the conviction that providing for them would be conferring legal status on what they consider squatter settlements, or both, the poor are left to their own devices, becoming, wittingly or not, agents of all sorts of environmental degradation. As subjects of environmental degradation, for instance, the lack of amenities and essential services force the poor into spoil and debase their own environment; for example, lack of adequate garbage collection services impel them toward disposing their waste wherever they find it convenient; similarly, the absence or lack of sanitary facilities force them to cleanse their bowels in open space, all of which are ultimately bring about disastrous consequences and the attending incalculable economic costs.

Issues of the Urban Environment

Cities, as big centers of human economic and social activities, consume natural resources from both near and distant sources, and in so doing, they generate waste that is to be disposed of both within and without their bounds. Moreover, environmental problems occur in a wide range of locations: households, workplaces, neighborhoods within cities, the wider region, and even the globe. The ensuing gamut of adverse social impacts, such as health problems, economic and other welfare losses, and the damage inflicted on the ecosystem are something to reckon with.

Factors Determining Problems of the Urban Environment

Environmental problems vary from region to region and from city to city, depending upon the size and rate of growth of the city, its income, geography, climate and institutional endowments. Income, for instance, as the expression of economic fortune, affects the environment in tandem with change in the wealth at the disposal of the city, following what is known as the 'environmental Kiznet's curve', according to which, as wealth grows, all sorts of environmental

degradation burgeon first and eventually subside. Of course, the income level involved in the changes cities undergo varies widely. As we shall see, in poor cities, but particularly in the poor neighborhoods, the environmental problems that figure as the most threatening are usually those closer to home: often smoky kitchens cause more air pollution than outdoor sources; uncollected waste in a neighborhood often inflicts more damage than the city dump; human excreta deposited in open places is often found to be the most malignant health culprit. Such and, other unsanitary conditions at home and in the neighborhood add up to being more of a threat than industrial pollution.

Natural features of a city – its geography, topography and climate – are also important determinants of the sort of environmental problems it has to live with or fend off. A city enclosed by mountains will have difficulty in dispersing pollutants, a good example in of which is Mexico City. Cities in the northern latitudes, such as London, are spared the ravages of mosquito more by virtue of their cold climate than, say, by the power of their wealth. There are people who contend that Addis Ababa, without its two annual rains and its cascading streams would have been as good as inhabitable in the face of the faulty sanitary and garbage services the city flaunts.

Costs of Urban Environmental Degradation

Besides the toll it takes on human health and natural resources, urban environmental degradation inflicts direct and indirect economic losses. The costs so incurred, however, are not always amenable to easy calculations. A loss of one workday, say, due to pollution-caused health problems is an economic cost. So also is ill-health not directly related to work, since in addition to the increased cost of treating the illnesses, the net result of such health problems is the reduction of productivity through lost workdays. The loss in aesthetic of a given area from damage to the landscape, or, for that matter, leisure time lost in a traffic jam incur economic losses. All in all, the impacts of environmental degradation on human health and depletion of the natural resource-base combine to undermine a city's economic productivity.

Lives and limbs lost and functional impairments sustained each year due to various forms of urban environmental degradation, whether in the homestead or at work, mostly defy monetary calculations. A good

case in point is the 1984 accident at the Union Carbide plant in Bhopal, India, in which 2,988 perished and over 100,000 sustained various injuries, including reproductive ones that will affect subsequent generations. The loss due to the two explosions that occurred in Addis Ababa on the morrow of the Dergue's demise are fresh in our memory but do not lend themselves to monetary calculation. One thing that could be said about these accidents is that they could have been prevented had the various safeguards (policy, legislative, institutional, etc.) been in place.

II. The Urban Environmental Condition in Ethiopia

Urban environmental problems in this country are best expressed in terms of the 'brown agenda', (i.e. poverty, pollution, congestion, environmental hazards, etc.), which are much closer to home than the 'green agenda', which focuses on global concerns, such as ozone depletion, climate change and the loss of biological diversity. This, however, does not mean that the latter are not relevant to the environmental concerns of Ethiopia.

Urban Poverty

Historically, poverty was largely concentrated in rural areas. The steady migration of the bulk of the population from rural areas to urban centers has transformed poverty into an intractable urban phenomenon. According to the estimate of the World Bank, in 1988, approximately one quarter of the absolute poor in the developing world was living in urban areas. When it comes to Ethiopia, out of the 6.9 million urban residents, 4 million (58 percent) were poor and lived below the poverty line, earning an income of Birr 244 per month (Annual Report of the Ethiopian Economy, 1999/2000). The sort of quality of life these people lead is best demonstrated by the poor housing condition evident in Addis Ababa.

A 1997 report of the Addis Ababa City Administration (AACA) tells us that the number of housing units available in the city at the time was only 350,000, out of which 112,000 were accommodating different establishments, public and private, and the remaining 238,000 were residential. Considering the demand for residential housing, which was 460,000, this shows us the alarming shortage of residential housing, something in the neighborhood of 222,000 units! The gloomy part of the

story is that 65% of the existing housing units are now over 25 years old, and one can discern the degree of dilapidation the city is wallowing in (AACA, 1997). Many of these units are non-storied buildings, and 70% of the residents live in them, with 2.57 rooms per housing unit and the average number of occupants per room standing at 2.1. The number of persons per bedroom was four, indicating the sort of housing density. Such accommodation provides a fertile ground for, among other things, the transmission of communicable diseases. In terms of building materials, the majority of the units (83.4%) are constructed with inferior material, such as wood and mud walls, with the bare earth for floor and corrugated iron sheets for roofing. More than 68% of the units do with traditional kitchens, while 26% lack separate cooking rooms. Some 40% of the population live in densely populated (>400/ha) areas of the city (CSA,1995).

Water and Sanitation

Lack of adequate water and sanitation services pose one of the greatest health threats in cities of the developing world. The size of the populations without adequate potable water supply near their homes is fairly large, if not the majority all the time. Of course, what constitutes an adequate amount of safe drinking water and sanitation services varies from country to country.

In Ethiopia, the picture is much grimmer than it appears at first sight. This is mainly attributed to the poor state of affairs pertaining to water resource management practices hitherto prevailing in the country. For instance, 97% of the fresh water received is lost to neighboring countries in the form of surface run-off alone, while the 3% remaining behind is subjected to inadequate use or misuse, or even abuse, including pollution. The degree of wastage of this rather scarce resource for instance can be gleaned from the table below.

Table 1. Existing Situation of Water Resource Development in Ethiopia

No.	Uses	Coverage
1	Water supply (Total)	17% (population)
	Rural	15% »
	Urban	31% »
	Livestock watering	Negligible
2	Sanitation (Total)	8% (population)
	Rural	1% »
	Urban	60% »
3	Irrigation	3% of potential
4	Hydropower	1.5% of potential
5	Aquatic Resources (fisheries)	<19% of potential
6	Inland Water Transport	Negligible

Besides, the predominant issue has been quantity rather than quality because a significant proportion of Ethiopians ‘make do’ without adequate supply of water. (It is estimated that, on the average, people travel 2 hours daily to fetch water from the nearest supply.) The table below clearly shows the sad state of water distribution, paradoxically, in one of the allegedly well-endowed regions in the country, namely, Southern Ethiopian Nations, Nationalities and Peoples Regional State.

Table 2 . Water Distribution in the Southern Nations, Nationalities and Peoples Regional State (% population)

#	Type of Source	Urban	Rural
1	Piped Water	55.5	4.6
2	Water from Protected Wells and Springs	15.5	10.9
3	Water from Unprotected Wells and Springs	13.3	31.7
4	Rivers, Lakes and Ponds	15.0	52.6

When it comes to Addis Ababa, more than 29.2% of the city’s residents lack any kind of sanitary service, even the simplest pit latrine. Only 12 percent utilize private toilets and 54.3 percent make use of either communal or public [sic] toilets. 90 percent have no built-in bathing facility (Ammanuel, 1999). Many are, therefore, forced to open defecate on open land or in the courses of streams, in the process turning the various rivers crisscrossing the city into virtual open sewers. The grim morbidity and mortality record of Addis Ababa (the more so for other cities and towns in the country) is partly accounted for by this situation. It is to this inadequate access to both potable water and sanitation facilities and the ensuing exposure to feces that we owe the various intestinal diseases:

The dangerous excreta disposal practices appear to be the major cause of the high rate of intestinal diseases in Addis Ababa. . . . It has been established that infant mortality from diarrhea and enteritis in Addis Ababa is three to five times higher than that in the developed countries” (quoted in Gebre Amanuel, 1984).

Wastewater Disposal

The estimate of untreated sewage discharged directly into rivers, lakes and coastal waters in the developing world stands at 90 percent. The situation in Ethiopia is much worse, as no city in the country is blessed with a full wastewater collection and treatment facility, except perhaps Addis Ababa, which boasts a sewer line that is only 110 km long

(i.e. 3.7 percent of what the city needed in 1997) and a lone treatment facility designed to cater to a mere 200,000 users, As things stood in 1997, even this was not fully utilized. The grim picture of pollution resulting from the wastewater released directly into the existing watercourses by some of the industrial establishments in and around Addis Ababa can be gleaned from the seven tables under ANNEX 1.²

Indoor Air Pollution

Indoor air pollution, mostly from the burning of low-quality fuels, such as grain residues, charcoal and wood, is as good an urban problem as it is a rural one in the developing world. Many urban residents depend on these fuels for much of their energy needs, especially for cooking and heating. Women and children are particularly vulnerable to exposure to indoor pollution, as these are the groups likely to spend much of their time indoors, though they are less exposed to outdoor pollution. According to the world Bank (1992), indoor pollution is one of the four most critical global environmental problems, as it contributes to acute respiratory infections in young children and chronic lung diseases and cancer in adults (World Resource, 1996-97).

Air Pollution in Addis Ababa

There is a critical lack of quantitative data on air pollution in Addis Ababa because no comprehensive and systematic study has been conducted in that direction. This may be attributed to the fact that due attention has not been given to the environment, without which the environmental provision enshrined in the Constitution and the Environmental Policy of Ethiopia cannot be realized. The weakness shown in this respect owes its existence to:

1. reluctance to realize environmental commitments;³
2. institutional and legislative inadequacy;
3. lack of environmental monitoring and analytical capacity (in terms of manpower, equipment, etc.);
4. lack of an environmentally alert citizenry;

² Tables prepared from data generated by the Pollution Control Department, Environmental Protection Authority, 2000.

³ Consider the very small budget allocated for this purpose vis-a-vis the revenue earned from sanitary services by Sanitary Team, Health Bureau, Addis Ababa City Government in the table under Annex 2.

5. the almost perpetual lack of funds, etc.

Lack of adequate knowledge related to air pollution in Addis Ababa is likely to persist for at least a few more years, three years at least, as a project titled Ecologically Sustainable Industrial Development (ESID) is underway in EPA, designed, among other things, to inventory the state of all industrial pollution in the country. Even without such a project, however, the air pollution in Addis Ababa is glaringly visible. It finds expression in various ways both in the occupational and general environments. Just to throw some light on the gravity of the situation, the following observations seem in order.

Air Pollution in the General Environment

Stench

There are notorious establishments in Addis Ababa known for the bad smell they exude. The Municipal Abattoir (*kerā*), Gullele Soap Factory, Edget Oil Mills, Ethiopian Pickling, and the Municipal Waste Dump are some of the establishments that figure prominent as sources of stench. The practice of open-air defecation and/or public urination and the careless disposal of waste in neighborhoods very much contribute to the ill smell of many sites in city.

Dust

Perhaps one of the nuisances well known to residents living in the southern parts of the city, apart from the stench from *kerā*, is the dust that used to issue from the stack of the Addis Ababa Cement Factory. Until it stopped functioning, the factory had been spewing dust for some thirty odd years over a radius of no less than 2 km. Currently, the Municipal Quarry on the Sebeta Road is enjoying high media coverage as a result of the protest from the surrounding community on account of the excessive dust, blast, vibration, noise and rock fallout from its daily activities.

Glare and Noise

Metal workshops, which appear to have mushroomed overnight and unchecked all over town, are throwing glares from their welding machines and emitting excessive noise from their grinding wheels, heavy

hammers and circular saws they must inevitably employ. The worst thing about these establishments is the fact that they are usually found doing business next door to residential units. Even churches and mosques are contributing their fair share to noise pollution in the city from their blaring loud speakers. Music shops and cars tooting their horns are no less a menace.

Gases, Fumes and Vapors

Most of the air emissions from commercial and general industrial facilities originate from the fuel that is used for heating purposes or for generating steam used in processing products. There may also be particular emissions that generated by processing plants.

Industrial plants, electric utilities and even sanitary landfills in the city emit various pollutants in the form of gases, fumes or vapors. For instance, a study made by the National Meteorological Service Agency indicates that the amount of methane, a greenhouse gas, generated from the municipal waste dump in Addis Ababa in 1998 was 9.39Gg. The distilleries, wineries and breweries in the city release the CO₂ they generate in the course of fermentation directly into the surrounding atmosphere. The gas could have easily been turned into a by-product with an apparent sizable demand.

Air Pollution from Mobile Sources

Cars and other mobile vehicles are usually major contributors to air the pollution in towns. Monitoring service stations for the environmental quality of the fuel they use and for combustion efficiency of the vehicles is virtually unknown in Ethiopia. Lead is known to be particularly hazardous to human health, and yet, cars that still rely on leaded gasoline account for up to 95 percent of the airborne lead pollution in cities in developing countries, including Ethiopia. The total number of registered vehicles in 1995/96 in Addis Ababa was 140,000. These cars are not only of a different make and vintage, but they are of varying technologies. Consequently, their efficiency of burning fuel varies. In 1995, the total petroleum product consumed in Ethiopia was 865,000 tones (which was very low by international standards: for example, the per capita consumption for Ethiopia was 15 kg, while it was 107 kg for Kenya, 34 kg for Tanzania and 40 kg for Mozambique), of which 41 percent was consumed in Addis Ababa, of which, 69

percent went to the transport sector. By world standards, the pollution load from burning petroleum in Ethiopia is low, but by the country's own standards the share of pollution from this source is certainly significant (International Resource Group, 1998).

Air Pollution & Congestion

Congestion and sprawling settlement exacerbate air pollution, as both increase the consumption of additional fuel by vehicles. Besides, congestion figures as an environmental problem in its own right, since valuable time is wasted due to heavy traffic relative to the available roadway. The roads in Addis Ababa certainly leave much to be desired. in this and other regards. For instance, only a meager stretch of 400 km is paved and another 960 km is macadam, while the required stretch to make the city congestion-free is 4000 km of paved driveway. The road width suitable for the smooth flow of traffic is between 9 and 12 m, but only 52 percent of the roads measure up to this requirement (the average is between 6 and 8 m wide). Only 193 of the 400 km paved roadway is fitted with adequate drainage for storm water.

Air Pollution in the Occupational Environment

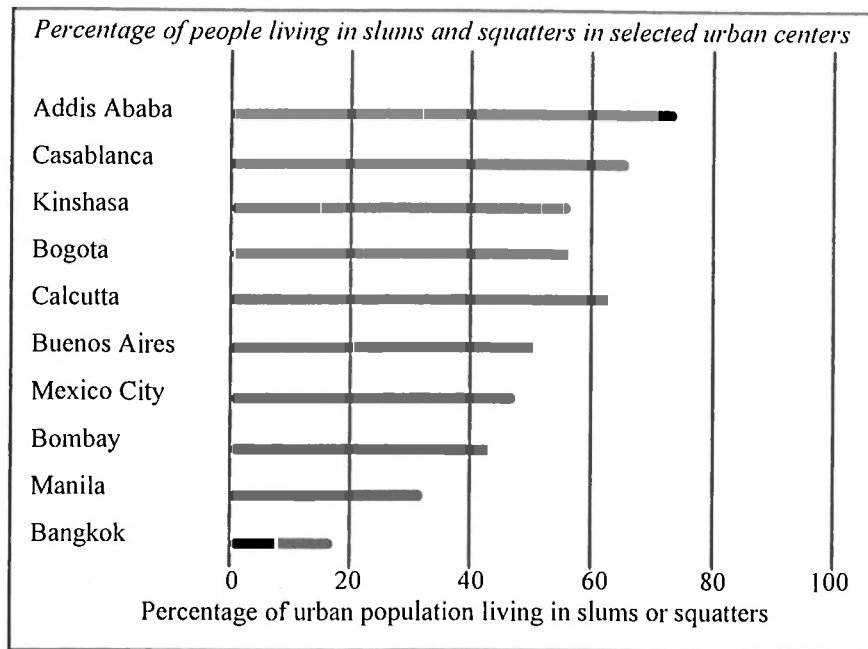
A large number (60 percent) of the industrial and commercial establishments in Ethiopia are located in Addis Ababa. Therefore, the likelihood of workers suffering from air pollutants in the working environment is bound to be the largest for the city. For instance, a study undertaken in 1995 on noise-induced hearing loss in five establishments in the city has established that a noise level exceeding 90dB(A), which leads to a high number of hearing losses, is not uncommon (Seife, 1995).

Solid and Hazardous Waste

Cities generate tremendous amounts of solid waste, and the amount increases with income. In cities of the developing world, an estimated 20-50 percent of the solid waste generated remains uncollected even though up to half of the local operational expenditures often go allegedly towards this end. Ethiopian cities are no exception to this. We shall look closely at the scenario in Addis Ababa, the nation's capital.

Generation and Collection

As it can be discerned from the chart below Addis Ababa is a jumble of squatter settlements (nearly 80 percent of the residents of Addis live in slums or squatter settlements), as the city was mostly built and expanded without the guiding or disciplining hand of effective town planning. Consequently, in low-income or squatter settlements, which occupy a substantial area of the city, garbage collection is often nonexistent or inefficient, either because these settlements fall outside of the official service perimeter or because trucks are unable to maneuver along narrow, unpaved streets, if and when such roadways are available.



Source: The Centre for Our Common Source

Of the total waste generated in the Addis Ababa, which comes to about 1,386m³ a day (2,165m³ according to the 1995 study of S. Gordon), the amount duly collected and disposed of by the municipal service was no more than 55% for 1996 (CERFE, 1997). Uncollected domestic waste is the most common cause of blocked urban drainage channels in the city, increasing, inter alia, the risk of flooding and vector-borne diseases, on top of eating up the expensive, if not precious, pavements.

Waste Disposal

UNEP defines disposal as “the discharge or deposit of waste into the environment, or the complete destruction of waste without residue.” The sort of waste disposal to be resorted to, sanitary landfill or incineration, is, in principle, governed by the characteristics of the waste generated. There are waste types, at least at the beginning, that must only be consigned to incineration and others to landfill; no one may be at liberty to switch from one to the other (of course, when properly regulated and adequately enforced), but this does not mean that the two are mutually exclusive.

Nothing of the sort exists in Ethiopia. For instance, no public or municipal incinerators are in place yet, and those owned privately are too badly improvised to deserve the name. The disposal facility at the service of the city is a municipal tip that is far from being a sanitary landfill proper. All the collected solid waste is indiscriminately relegated to this fenceless dump (such a dump is defined by UNEP (1998) as “an uncontrolled disposal site where no attention is given to safety or environmental factors”). Located in the western outskirts of the city, well outside of the city limit (13-km from the center of town) at the time of its commission over 30 years ago, currently, however, not only is it within the bounds of the city, but it is being constantly ‘encroached’ upon by settlements legally constituted. The site is some 25 ha in area, of which 10 ha have already been filled up by an estimated six million metric cube or two million tones of waste. It is expected to last another ten years. Although the site was never subjected to an Environmental Impact Assessment (EIA) process when first commissioned, an expansion seems to have been recommended by a consulting firm in preference to three other spots elsewhere in the city, and this time, too, without the aid of an EIA.

Spreading and compacting follow tipping. Bulldozers for the former, and compactors with steel studded wheels for the latter are the only equipment employed. All sorts of scavengers, in the form of both humans and other animals, including nocturnal ones, pry on the site. Smell or stench, smoke from spontaneous combustion, noise and dust from garbage trucks and various risks from quadruped scavengers (including hyenas) are some of the problems that members of the community in the dump’s vicinity complain about. Besides, the poor state of this disposal site is cause to a number of additional problems

affecting human health and the environment as a whole:

- the solid waste dumped is of a such heterogeneous composition that people that directly and frequently come into contact with it are vulnerable to health hazards. For instance, the high vulnerability to ‘occupational diseases’ faced by between 300 and 500 scavengers that daily tamper with the dump as well as that of the employees of the sanitary service cannot be ruled out;
- water pollution, both ground and surface, from leachate is bound to be rife, as both the waste composition disposed and the lack of leachate control due to the absence of proper design for the dump make this possible;
- air pollution from gaseous emissions, such as methane, and smoke are daily occurrences at the disposal site.

Hazardous Waste

Addis Ababa, being the sprawling metropolitan city that it is, is home to an unfairly large number of the country’s industrial and other establishments, which are randomly located in and around the city. All sorts of inputs are employed by these establishments to generate a wide variety of products/services and refuse resulting from the process. The latter come in different shapes and sizes. Tanneries and textile plants, for example, spew freely their hazardous effluent into the closest river, in the process rendering unclean the headwaters (Small and Great Akaki Rivers) of the most exploited river in the country, the Awash River Awash. The streams coursing through Addis Ababa are, for the most part, literally dead, with BOD of zero (Desta, 2000). Hazardous solid wastes, likewise generated, ultimately find their way into the city’s municipal dump, if ever ‘properly’ disposed.

Hazardous waste, according to UNEP, is “any waste containing significant quantities of a substance which may present danger to the life or health of living organisms when released into the environment, or to the safety of humans or equipment in disposal plants if incorrectly handled.” These dangers are attributed to the toxic, carcinogenic, mutagenic or teratogenic characteristic of the waste as well as to flammability, chemical reactivity or other biologically damaging properties, including radioactivity. Solvents, paints, adhesives, corrosives, oily wastes, cyanide and other metal finishing chemicals, mercury-bearing materials, biocides, phenolics, other organics, metal-

bearing residues, inorganics and medical waste are some of the constituents deserving attention. The sort of disposal undertaken depends on the nature of the constituents rendering the particular waste hazardous: recycling, physical/chemical treatment (neutralization, precipitation/separation, or chemical detoxification), biological treatment, incineration, landfill and offshore disposal (ocean incineration or dumping, or export).

Except for a few articles in the Environmental policy (e.g., Art 3.8[h]) related to principles governing the disposal of hazardous waste, virtually nothing worthwhile and effective is being done in this regard, whether in Addis Ababa or elsewhere in the country.

III. Quo Vadis

Urban environmental degradation in Ethiopia can certainly be alleviated, and there is room for doing so. Perhaps the problem requiring the most firepower, as it were, by all stakeholders, severally or jointly, is the eradication of poverty. The development to be promoted to this end, however, must be so tailored that it makes possible the 'channeling of the so-called 'Environmental Kuznet's Curve'. Moreover, the various stakeholders, in keeping with their individual 'predilections', can undertake the following battery of activities:

Government

Both the federal and regional states have to take the right steps in the right direction in order to implement the pertinent constitutional and environmental policy stipulations; for instance:

- Strengthening the respective regulatory institutions, namely, EPA and the regional environmental bureaus (wherever the latter are already in place) in terms of manpower, facility, budget, etc.;
- Enacting and judiciously enforcing the appropriate environmental legislation (particularly, environmental standards).

NGOs

NGOs for their part may engage in the following activities:

- Undertake awareness-raising and research-financing for the control

- and mitigation of urban environmental degradation;
- Lobby for the passing of environmental bills and standards; and,
 - Pressurize government to implement environmental standards promulgated, etc.

Citizens

Private citizens, organized or unorganized, have to take the appropriate initiatives to protect themselves vigilantly from all types of environmental degradation, including voting for the party that best represents their environmental interest. They must pressurize their representatives in parliament and take court action against violators, say, as per the nuisance article of the Civil Code (Art. 1225).

Trade Unions

Unions have to take an active part in the protection of the safety, health and comfort of their members by:

- Organizing awareness-raising programs;
- Making sure that the working environment is free of pollution;
- Ensuring the supply and adequate use of both general and personal protective equipment;
- Suing violating firms whenever the need arises by invoking the labor law and such international instruments as Convention 155 of the ILO.

Others

Community-Based Organizations, entrepreneurs, and the academic community may chip in their share to ameliorate the situation.

ANNEX 1

Table 1: The Effluent Characteristics of Beverage Industries (mg/L)

Name of Establishment	SS	DS	BOD	COD	NO _x	SO _x	pH	PO _x
Addis Soft Drink	19.0	2885	581.5	1148	0	40.65	11.70	5.11
Awash Winery	1622.0	2923	112769	134608	9	40.85	7.46	16.00
Meta Abo Brewery	218.0	211	12169.5	19191.5	3.75	0	5.27	16.93
MoHA Soft Drinks	56.0	2196.5	407.5	1701.0	13.5	277.5	12.32	19.65
National Alcohol & Liquor Factory	862.5	1383.5	13550	17741.0	0.2	2.5	7.91	49.86
St. George Brewery	0	31	55.(?)	96.5	1.05	5.95	6.64	2.05
Tanzanian/Egyptian Standards	NS/60	3000/2000	30/60	NS/100	50/50	NS/600	6.5-8.5 6.0-9.0	US/5.0
# of Substandard Establishments (6)	/3	0/3	All/All	/All	0/0	0/0	3/3	/5

Table 2: The Effluent Characteristics of Chemical Industries (mg/L)

Name of Establishment	SS	DS	BOD	COD	NO _x	SO _x	pH	PO _x
Addis Gas and Plastic	0	9087.5	13.50	81.0	1.6	12.95	8.27	0.55
Addis Tire	0	895.5	24.65	71.5	2.7	2646.25	8.89	12.96
Chora Gas and Chemical	26431.5	3720	85	788	0	8.87	10.1	2.9
Equatorial Paint	218.0	41.5	575.5	2675	0	312.5	8.31	0.28
Gullele Soap	72.0	89650	56781.5	105800	200	80	13.50	39.27
Nifas Silk Paint	358.0	165.5	228.5	2248	23.75	350	6.58	7.2
Kepi Soap	76.0	1990	1034(?)	3995	7	25 (?)	9.01	29.78
Tanzanian/Egyptian Standards	NS/60	3000/2000	30/60	NS/100	50/50	NS/600	6.5-8.5 6.0-9.0	US/5.0
# of Substandard Establishments (7)	/5	3/3	5/5	/5	1	/1	4/3	/4

Table 3: The Effluent Characteristics of Metal Industries (mg/L)

Name of Establishment	SS	DS	BOD	COD	NO _x	SO _x	pH	PO _x
Addis Machine Tool	0	645.5	16.6	75.5	6.7	213	8.24	0.1
Akaki Spare Parts	0	411.5	11	27.5	7.65	25.95	6.75	0.28
Akaki Metal Products	0	3540	73	156	5.5	20.3	2.76	0.18
Ethiopia Metal Foundry	0	292	13	124	11.13	24.2	7.52	2.5
Kality Metal Products	62	304.5	165	435	7	87.8	8.64	3.15
United Abilities	0	100.5	3.65	12.4	1.2	0.83	7.08	0.36
Tanzanian/Egyptian Standards	NS/60	3000/2000	30/60	NS/100	50/50	NS/600	6.5-8.5 6.0-9.0	US/5.0
# of Substandard Establishments (6)	/1	1/1	2/2	/3	0	0	2/1	0/0

Table 4: The Effluent Characteristics of Textile Industries (mg/L)

Name of Establishment	SS	DS	BOD	COD	NO _x	SO _x	pH	PO _x
Akaki Textiles	106.0	567	259.5	375.5	25	57.85	9.07	4.76
Edget Yarn	0	207	81.5	180	5	29.8	10.27	2.26
Nefas Silk Trade	0	303	10	47	3.1	17.55	8.01	1.69
Tanzanian/Egyptian Standards	NS/60	3000/2000	30/60	NS/100	50/50	NS/600	6.5-8.5 6.0-9.0	US/5.0
# of Substandard Establishments (3)	/1	0/0	2/2	/2	0	0	2/2	/0

Table 5: The Effluent Characteristics of Various Industries (mg/L)

Name of Establishment	SS	DS	BOD	COD	NO ₃	SO ₄	pH	PO ₄
Birana Printing Press	106.0	26632	2225	10984.5	0	67.30	8.15	14.25
Ethio Marble Industry	442.0	109	123.5	429.5	2.63	20.45	8.74	2.55
Artistic Printing Press	970.0	23088	7716	2756.5	0	2745	8.64	0
Addis Ababa Abattoirs	136.5	363	814.5	3402	4115	176.25	8.5	20.4
Addis Modjo Edible Oil	1359.0	385	23273.5	38341	30	519	8.43	51.75
Tanzanian/Egyptian Standards	NS/60	3000/2000	30/60	NS/100	50/50	NS/600	6.5-8.5 6.0-9.0	US/5.0
# of Substandard Establishments (5)	/All	2/2	All/All	/All	1/1	/1	2/0	7/3

Table 6: The Effluent Characteristics of Some Tanneries (mg/L)

Name of Establishment	Cr ⁺⁶	Cr ⁺³	SS	DS	BOD	COD	SO ₄	NO ₃	pH	PO ₄
Addis Tannery	0.32	0.70	1044.5	4089.5	2428.5	5208	1520	113.75	9.30	30.08
Walia Tannery	0.20	0.54	487(7)	17425	914	5440	1576.25	6.25	3.81	6.18
Blue Nile Tannery	0.06	0.44	1168	12850	1673.5	8460	959.5	5.91	8.27	17.19
Dire Tannery	0	0.42	518.78	11950	2782	23460	3276.5	0.03	5.96	17.39
Hafeda Tannery	0	0.38	578	13400	985.5	4324	247.38	6.85	7.73	8.11
Walia Tannery	0.02	0.80	739	5250	1644.5	5941	144.7	17.64	10.45	11.27
Tanzanian/Egyptian Standards	Total Chrome 0.0/1.0	?	US/60 2000	3000/ 2000	30/60	US/ 100	NS/600	50/50	6.5-8.5 6.0-9.0	NS/600
# of Substandard Establishments (6)			/All	All/All	All/All	/All	/4	1/1	5/4	4

Table 7: The Pollution Load on the Rivers Little & Great Akaki and Tributaries (mg/l)						
#	Sampling Point	BOD	DO	NH ₃	CI	
1	The bridge on the approach to Guellete Soap Factory	3.5	7.0	0.53		5
2	The bridge close to the Building College	339	0.8	32.3		110
3	The bridge on the approach to Zenebe Work Hospital	40	0.6	8.8		50
4	The bridge near Fifth Police Station	535	0	63		83
5	Bridge right at the Abattoir	444	0	71		85
6	Near Behere Tsige Park	252	0	52.5		65
7	Down stream of Kaliti Waste Water Treatment Plant	105	0	80.6		235
8	Under Habte Georgis Bridge	93	0.6	51.60		63
9	Under the General Post Office	134	2	55		64
10	The upper bridge near Zewditu Hospital	144	2	58.1		15
11	Under Kechene Bridge	36	4.8	13.2		70
12	The bridge at the French Embassy	11.0	6.6	0.6		57
13	Misrak High School Area	63	3.7	38.7		45
14	Urael Bridge	24	0.80	30.7		48
15	Bole Bridge	60	0.60	32.3		47
16	Near Legedadi Dam	5	7.7	0.6		2
17	At the of end of Bole Runway	32	1.0	21.3		35
18	At Akaki Bridge	10	4.7	0.9		22
19	Tanzanian/Egyptian Standards		US/US	0.5/0.3		US/US
20	#of Substandard Sites	13/10	(?)	ALL/ALL		?

ANNEX 2

Table 1: Revenue Sources of the Addis Ababa city Administration Sanitary Service(in Birr)

#	Year	Type of Revenue Source			Total Revenue Earning	Budget of the Sanitary Team	General Revenue of the City Government
1	1989/90	53,318	-	-	-	-	-
2	1990/91	168,841	-	-	-	-	-
3	1991/92	64,408	-	-	-	-	-
4	1992/93	256,195	-	-	-	-	-
5	1993/94	246,954	-	-	-	3,960,000	184,700,000
6	1994/95	306,664	-	-	-	4,070,000	262,700,000
7	1995/96	559,304	-	-	-	3,850,000	356,100,000
8	1996/97	379,108	3,355,973	-	-	4,940,000	463,400,000
9	1997/98	405,326	2,978,583	15,552,861	18,936,770	-	-

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Experiences of Selected NGOs In Natural Resources Management in Ethiopia

Ginjo Giya

1. Introduction

The paper focuses on the natural resources management (NRM) experiences of selected NGOs in Ethiopia.¹ The paper has five major parts. The first part is a general introduction. In the second part, an overview of natural resources management activities of NGOs in Ethiopia is presented. The third part describes the NRM experience of selected NGOs in Ethiopia. Part four discusses impacts and sustainability of those activities. Finally, conclusions and policy implications are drawn based on the overall discussion.

1.1. Statement of the Problem

Environmental resource concerns are critical for countries like Ethiopia. The reason is that there is a strong and direct link between the most basic needs of human beings, such as food and shelter, and natural resources in the least developed countries (Mitchel, 1991). Agriculture remains the basis for the sustenance of life among the vast majority of the Ethiopian people. In fact, the primary purpose of agricultural production is to provide an adequate, sustained food for the population and raw material supply for the industries. It is, therefore, the foundation of the social system and the overall economy in countries like Ethiopia. The basic setting for agricultural production is the natural resource base. This means, then, that the two systems (natural and socio-economic) are interrelated in a complex and dynamic way.

However, in recent decades, particularly after the 1950s, an increasing trend of degradation of local natural resources, such as farmland, soil, water, forest and pasture, has been witnessed in Ethiopia. Above all, soil erosion is becoming a serious problem. In the Ethiopian highlands, as roughly estimated, nearly one billion tons (a more recent

¹ The initial research from which this paper has been developed was undertaken under the auspices of Christian Relief and Development Association. I am grateful for the financial assistance of CRDA, and logistic support provided by Koisha Rural Development Project during the actual fieldwork.

estimate puts it at 1.9 billion tons of soil is lost each year (Tegegne, 1994 as cited in Teferi, 1999). This is primarily due to human activities, particularly over-grazing, over-cultivation, and deforestation for various purposes. Deforestation presents a major problem in Ethiopia, since it is one of the main causes of the prevailing land degradation (via facilitating soil erosion). For instance, due to lack of viable, reliable, and cheaper and affordable alternative sources of household fuel, such as liquid petroleum gas (LPG), the demand for fuel wood has risen from 89% in 1991 to 94.8% in 1999 of the total national energy consumption. Though data are lacking, it is assumed that the deterioration of both man-made and natural water flows and storage areas is the main cause for frequent drought in dry seasons and flooding in wet seasons (Teferi, 1999).

Although it does not contribute much to the problem of rural land degradation, there are signs of urban environmental degradation (pollution) in some of the major urban centers, such as Addis Ababa and its environs. In general, in Ethiopia, the combination of economic stagnation and demographic growth have caused serious environmental problems.

Although national authorities have lately reacted to environmental problems by initiating huge donor-supported conservation programs (Million, 1996), one cannot avoid the conclusion that the intervention on the part of the public sector has not produced the expected results in the field of natural resources management. The shortcomings were mainly due to the fact that the conservation approaches have not always been carried out in co-operation with the private sector, NGOs and civil society at large. In fact, the attention was given to socio-cultural factors of the local people has been little.

On the other hand, since the beginning of 1990s, non-governmental organizations particularly focusing on environmental issues have started to emerge. Among such NGOs some have focused on quite a number of environmental activities, including environmental education, soil and water conservation, afforestation, land use planning, and seeking solutions to urban environmental problems.

In the Ethiopian context, NGOs are classified on the basis of their core as to whether they can be categorized as development agents or relief-oriented actors, or if they are to be constituted as combining

both functions. Development-oriented NGOs are involved in diverse areas of natural and human resource development, such as agriculture, health and infrastructure, etc., while the others focus on relief-oriented activities (TGE, 1993). However, in this paper the term ‘NGOs’ is particularly used in relation to those organizations, as distinct from government bodies, that undertake long-term development activities, including NRM.

In Ethiopia, though the recognition of NGOs as stakeholders in NRM is a very recent phenomenon (within the framework of the Conservation Strategy of Ethiopia), they have been involved at different levels and in different scales. Such NGOs have been employing different approaches and strategies in the implementation of their environmental management projects. However, no comparative study has been done regarding how such approaches have been working at the grassroots level. Besides, the debate about their involvement remains sparsely documented and it is little understood. Such an issue may not have mattered when NGOs were only minor actors in development. But, recently it has assumed greater significance in the light of both the growing desire within the sector to scale up its involvement and the increasing expectations among donors that NGOs have a contribution to make to ‘sustainable’ natural resources management. Hence, the following questions make up the core of this paper: How do the approaches of NGOs differ from those of the government? How do NRM strategies of NGOs differ from each other? Which approach has worked at the grassroots level? For how long would the benefits /achievements of such interventions be sustained?

In order to help answer these questions, the following NGOs have been considered in the study. Table 1 shows the projects and activities in which the selected NGOs:

Table 1: Description of selected projects

Partner Agent	Project	Project Period	Nature of Project	Major Environmental Problems
Action Aid Ethiopia	Dolcha: 150 kms South of Addis Ababa in Guraue Zone	1988-1998	Integrated	- soil erosion - deforestation - water shortage
CPAR	Jarso: 180 kms NW. of Addis Ababa in North Shoa Zone	1996-2003	Environmental/ Agricultural	- soil erosion - deforestation - water shortage
SOS-Sahel	Koisha: 430 kms south of Addis Ababa, North Omo Zone	1992-1998	Environmental/ Agricultural	- soil erosion - deforestation - water shortage
World Vision Ethiopia	400 kms south of Addis Ababa, Alaba Tambaro Zone	1987-1998	Integrated	- soil erosion - deforestation - water shortage

Source: various sources

2. NGOs and Natural Resource Management in Ethiopia

There is no clear and well-documented source on when and how NGOs emerged on the Ethiopian scene. As Constantinos and Haddas (1997, as cited in Ginjo, 2000a) state, the late 1940s and 1950s were the years when NGOs began to make way into Ethiopia. Nonetheless, until famines and droughts of the 1970s and 1980s, the number of NGOs in Ethiopia was small. Besides, most, or all, concerned themselves with religious education and welfare activities. It was not after the 1984/85 drought that most of the then existing international NGOs like World Vision International Ethiopia, CARE Ethiopia, Concern Ethiopia, and Food for the Hungry International started to link the famine and drought conditions to natural resource degradation.

Thus, at the beginning of the 1990s NGOs shifted their attention from relief to rehabilitation and, later, to community-based development programs. Diversified environmental components, such as reforestation, soil and water conservation became part of their integrated rural development programs.

Nowadays, the number of NGOs integrating NRM components into their interventions is increasing. They range from small, local co-operatives or village-development groups to national organizations or coalitions of NGOs to large international NGOs based in developed countries. Based on Christian Relief and Development Association (CRDA) and Federal Disaster Prevention and Preparedness Commission (DPPC) database, as indicated in Ginjo (2000a), the number of NGOs undertaking conservation programs reached 69 (nearly 25%) of the total NGOs (295) in the country. Such NGOs vary in terms of objectives, institutional capabilities and technical expertise, scale and mode of operation, and funding. Moreover, they are different in planning approaches, and few NGOs are engaged solely in NRM activities.

In fact, NGOs can play good roles in NRM, at least for the following reasons, from theoretical perspective (Ginjo, 2000a):

- NGOs are in a position with the ground, expertise experience, and overall resources they have, to provide technical support and human resource (Lee, 1994);
- NGOs have special talent in integrating environmental issues with other aspects of community life, such as creating awareness,

poverty reduction, and emancipation of rural women from too heavy work load, which reduces the amount of women's time required for getting involved in environmental projects (Jasnaof, 1997);

- Many governments in Sub-Sahara Africa are under economic crisis brought about by the World Bank and IMF-initiated Structural Adjustment Programs (SAP). Hence, they need NGOs as partners in development activities (Van de Breemer, 1995);
- Both multilateral and bilateral donors choose to give their donation through NGO channels. For instance, USAID has increasingly chosen to work with the NGO sector in Latin America rather than with the public sector.

3. NRM Experiences of Selected NGOs in Ethiopia

As indicated elsewhere in this paper, NRM experiences of NGOs in Ethiopia vary from each other. Some were/are directly implementing NRM projects themselves. Others are addressing environmental issues through government structures. The NRM experiences of NGOs indicated in the introductory part of this paper is this section's topic. The issues that will be briefly discussed include: environmental management components of the projects, intervention sites (private land vis-à-vis communal or both), targeting mechanisms, NRM technologies introduced, incentives provided, types of local organizations approached, technical training and awareness creation provided, and networking with stakeholders. Finally achievements, impacts and sustainability issues will be raised.

3.1. Environmental Management Components

Environmental resources are highly integrated and interwoven by nature. This, therefore, means that the organizations involved in NRM should consider such links as exist among the renewable natural resources, especially forest, soil, and water resources.

The project documents of NGOs considered have shown that all the projects have afforestation and soil and water conservation components in their intervention. All the projects have afforestation /reforestation interventions, mainly on communal lands, but only CPAR has inclinations towards encouraging agro-forestry, as indicated in terminal evaluation report (1999). All projects are also encouraging land

rehabilitation through earthen works and other biological conservation measures. As for water harvesting and improvement, the projects have been mainly occupied with spring/well improvement, which has increased access to potable water supply in their respective areas. On the other hand, only little or no effort has been made to conserve water through the improvement of traditional irrigation schemes or the introduction of micro-dams, which would have enabled farmers even more to use their lands alternatively. CPAR has started to improve the traditional irrigation schemes, but with very little success. World Vision has constructed irrigation dams, but it is beyond the technical and resource capacity of the beneficiaries. The best strategy, however, is the construction of micro-dams that will increase the night-storage capacity of the intermittent springs/streams. However, that should be carried out with a proper mitigation strategy, so that the micro-dams would not encourage other environmental problems. All of the project areas are food-deficit even after the long period of intervention through the projects. Hence, the development and upgrading of irrigation schemes in these areas is vital if structural food security is to be attained in the long-term. In general the projects should try to treat the renewable resources (forest, soil and water) in an integrated manner.

3.2. Rehabilitation Approaches

There is a need for having a clear concept/approach with regard to the type of the rehabilitation/conservation measures suitable for the resource-degraded areas. That means treating private lands or communal lands, or both catchments, vis-à-vis treating only delimited administrative units.

In this regard, at one time or another, all of the projects have followed a pattern of treating private/commercial land or both sites. But, with the exception of SOS-Sahel (whose improvement came later), the rest lacked a clear concept/approach. For instance, World Vision, at its onset, followed an approach of treating delimited administrative units both on private and communal lands. Later, however, it shifted its emphasis to communal land afforestation. Action Aid was also working on communal and private lands, similarly operating on delimited administrative units. CPAR's approach, on the other hand, seems inclined towards 'catchment-based integrated' resource management approach. However, SOS-Sahel had followed Participatory Land Use Planning (PLUP) from 1992 to 1995. Since 1996, however, the project

introduced Farmer-Led Integrated Watershed Management (FLIWSM) approach. The reason for the change in approach was to minimize the effect of concentrated sediment load from upper streams to middle and lower streams. During the survey farmers openly appreciated the practical advantage of this latter approach.

Lack of such a concept resulted in carrying out soil and water conservation (SWC) measures on the steep slopes that were damaged easily by run-off from the highlands. If, for instance, open lands, land fallow lands and grazing lands are not treated, that will constitute a threat to private land conservation measures. Although it is difficult to prescribe similar approaches for projects working in different areas, projects should clearly define their approaches. Indeed catchment-based integrated watershed management approach has proved successful (Koisha) and is getting popular in other parts of the world -- India, for instance (Ahluwalia, 1997). The acceptable justification for this approach is that it enables projects to control and effectively manage the movement of surface waters, since each catchment is an independent unit with respect to its surface hydrology, which has implications both for support services and community collaboration.

3.3. Targeting Principles

Careful targeting could be one of the strategies for the success of conservation measures. The projects considered in this paper follow different principles of targeting, broadly classified into two categories.

In the first instance, SOS-Sahel Ethiopia and CPAR follow almost similar strategies. In both cases willingness, interest and risk are the criteria used to target beneficiaries for private land conservation activities. There is a slight difference in that SOS-Sahel later shifted its strategy to targeting those farmers who organize themselves on catchment basis.

In the second instance, World Vision and Action Aid follow targeting the poorest of the poor as a guiding principle. In the case of World Vision only the landless and high school dropouts were given chances to be involved in FFW (Terminals Evaluation, 1997). Similarly Action Aid targeted the poorest households on CFW basis in both private and communal land conservation activities (Terminal Evaluation Report, 1999).

However, the motive of beneficiaries in joining local natural resources rehabilitation programs should go beyond the short-term gains of food commodities (grain and oil). Otherwise, the whole effort of soil and water conservation would become futile when the payment in the form of handout comes to an end.

Therefore, before targeting the beneficiaries for conservation projects there has to be a mechanism to cross-check their motives. It appears that Action Aid and World Vision need to re-examine their targeting principles. As much as the objective conditions permit, resource contribution by the target population, either individually or collectively, should be considered before targeting communities.

3.4. NRM Technologies

Reilly (1992) states that projects should not impose exogenous models, but they should rather rely on indigenous NRM practices and knowledge. It is also a fact that maintaining local practices and values in isolation from modern development process may not be possible or necessary. The incorporation of community values relating to natural resources management, among others, might provide a basis for sound project designs and sustainable development.

In light of this, the projects considered in this paper, with the exception of those of World Vision, have integrated structural and biological measures and other practices. Other practices include forage development and intensification through chemical fertilizers. The promotion of family planning services and labor, time and energy saving technologies (wood stove) were part of NRM technology dissemination (CPAR).

But the common problem in relation to NRM technology selection by all projects is that almost all are exogenous to the local communities they aim to benefit. Many, if not most, of both the structural and biological measures introduced by the projects have origins that are external to the local people. Besides, in some cases, such as World Vision, the tree species selected were dominated by eucalyptus, which is unfriendly to the environment and which yields little agro-forestry practice. In other cases, there was a mismatch

between tree species and the site (local environment), as in the case of Koisha.

In general, projects should record and catalogue locally useful and proven NRM knowledge/practices. They should first look to alternative NRM practices locally instead of imposing new models. Therefore, testing and modification of the promising measures is more convincing, because such a strategy would ensure quick implementation and adoption, easy co-operation of farmers, and sustainability of the interventions. Besides, in areas where population pressure is cited as a cause for resource degradation (e.g. Koisha), promotion of family-planning services should be an integral part of NRM technology dissemination.

3.5. Incentives

Soil and water conservation measures were successfully implemented when associated with short-term benefits/incentives. Incentives can increase participation in land rehabilitation and can be used as negotiation tools to enhance the target groups. Direct incentives include payment in cash or in kind and providing FFW/CFW. Indirect incentives include soft credits, provision of hand tools and equipment, seeds and seedlings, etc. (Laban, 1995).

All the projects considered in this paper provide incentives in one form or another. SOS-Sahel provides hand tools and equipment, seeds and seedlings, and grass strips on subsidy for private land conservation sites. But CPAR's incentive measure for private land conservation was limited to the provision of seedlings, while both CPAR and SOS-Sahel provide CFW for communal land conservation activities. Farmers did not complain about working without direct incentives (CFW) on their own private lands, as in Koisha (Ginjo, 2000b), whereas farmers were openly requesting CFW to engage in activities on their private gardens in Were Jarso (Shibru, 2000).

On the other hand, Action Aid and World Vision provide FFW/CFW for the implementation of conservation measures on both private and communal lands. They also provide other incentives like seedlings. However, as indicated in terminal evaluation reports for Action Aid (Dalocha, 1999) and for World Vision (Omosheleko, 1997), farmers were destroying functional structures to get food commodities

by rebuilding them. Farmers were also encouraged to work more on communal lands rather than on individual holdings. In such cases, it seems that farmers' acceptance of conservation works was basically based on the temporal benefits they would get from conservation measures.

In fact, nobody denies that incentives facilitate the implementation of conservation measures. However, farmers should not be provided with direct incentives, such as CFW/FFW, for activities directly of benefit to them, like private land conservation. But it is hard to justify carrying out conservation activities on common lands without direct incentives, given the ownership right in Ethiopia.

3.6. Grassroots Organizations Approach

In many parts of the world, community-based organizations (CBOs) have proven themselves as effective extension agents. Community-based organizations, as indicated by Reilly (1992), can serve as experimental sites for public program initiatives and have a proven ability to efficiently disseminate successful experiences at low cost through their own networks. Thus, the recognition of CBOs is an important area for successful NRM.

In this regard some NGOs considered in this study use existing CBOs, while others use formal local institutions. SOS-Sahel uses the *idir* in micro-watersheds, where all the inhabitants are members of a single *idir* group. Where micro-watersheds have more than one *idir* groups, new water-shed management committees are formed. This approach has been found effective, as the activities are organized on a neighborhood basis and linked to formal local institutions, such as *kebele* associations (KAs). CPAR has also organized specialized committees (land use committees). But it has been functioning for negotiating benefit issues that concern the community, such CFW payments on communal land conservation, selection of trainees, etc. The problem is that such newly created committees may not continue to be active after the phaseout of the projects.

On the other hand, Action Aid and World Vision mobilize whole PAs as a conservation working unit; as their major emphasis is on communal land conservation. But the problem with PAs is that they are too highly centralized to make their mobilization easy. At the same

time, the PAs are highly liable to change, as they influenced by government policies.

Hence, recognizing indigenous social organizations as significant development vehicles should be a priority consideration, instead of forming new ones. This is because they are well synchronized and also accustomed to changing externalities. However, they must be upgraded to be suitably applicable to new problem-solving technologies and organizational structures.

3.7. Technical Training and Awareness Creation

According to William and Anton (1992), cited in Ginjo (2000a and b), each beneficiary farmer should be able to handle NRM technologies by himself/herself. There are, however, contradictory views regarding the importance of technical training/awareness creation for better natural resources management. The pessimistic argument in this regard is how the ecology of those traditional people remained stable since the conservationists began to preach their technical fix (Bekalu, 1994; Daniel, 1999, cited in Ginjo, 2000a and b). Those who stand on the optimistic side ascribe the widespread environmental degradation and the subsequent failure of those projects to combat desertification and natural resources degradation to the lack of training/absence of supplemental environmental education given to the target communities (Dalkoh, 1993, cited in Ginjo, 2000b).

In this regard, all the projects have organized short-term sensitization workshops for stakeholders. But in case of World Vision and Action Aid, access to training was limited to the technical staff *woreda* offices of agriculture (WOA). They did not provide technical training to the direct beneficiaries. On the other hand, CPAR's and SOS-Sahel's efforts seem promising. CPAR provided training (more in the nature of awareness creation) to both farmers and selected technical staff of line ministries. But the problem is that farmers were not provided with training in handling NRM technologies. That was probably the main reason for constructing soil bunds with equal depth and width on all slope levels (see Terminal Evaluation Report, 1999). In contrast, SOS-Sahel's efforts seem the most promising. The project has trained 16 development agents (DAs) and other technical staff of the WOA in different techniques of soil and water conservation and local level participatory planning approaches. 30 farmers' representatives (3-5 from

each of the watershed management program areas) were trained in basic soil and water conservation techniques, soil fertility management practices and other watershed management techniques. The group was also taken to Konso area for 5 days, where the traditional soil and water conservation (SWC) has proved successful. Furthermore, the 'catchment leaders' were provided with operational manuals.

Thus better training of and awareness creation among beneficiary farmers have highly contributed to the successful watershed management efforts of SOS-Sahel. It was observed during field trips that farmers were maintaining and stabilizing conservation structures independently. The other thing to be appreciated is that the communal consecration guards were protecting the structures, although there were some complaints (see Ginjo, 2000b for details).

3.8. Creating Off-farm Employment Opportunities

Economic returns from conservation activities are long-term in nature, whereas the poor always look for short-term benefits to support their life. This leads them to manipulating the environment in search of other economic and social benefits. Poor people often destroy their own environment, not because they are ignorant, but because they have to survive (Shibru, 2000). Therefore, no line can be drawn between economic development and environmental opportunities.

The projects followed similar procedures of employment generation schemes (EGS) through infrastructure improvement involving the marginalized sections of the communities. Women's groups credit scheme also served the same purpose, except in the case of World Vision. However, an excellent approach in this regard was the one initiated by CPAR. The project created much interest among the farming communities by having them organize themselves for such activities as handicrafts, mining (incense and gypsum), bee production and petty trading in order to earn additional off-farm income. Only incense production as a source of income generation has not been encouraging.

However, care must be taken that additional off-farm opportunities will not divert farmers from their main agricultural activities. Activities related to rural infrastructure improvement through CFW basis should be limited to agriculturally-slack periods. In addition to marginalized sections of the communities, the self-help schemes

should also target those households undertaking conservation measures, because such a strategy could help attract those households who are reluctant to join local conservation groups.

3.9. Networking with Stakeholders

The roles, duties and responsibilities of partners (stakeholders) need to be clearly specified throughout a project's life span. All the necessary attempts should be made to make the programs as participatory as possible, whereby all the stakeholders play active roles in the initiation, formulation, implementation and monitoring of projects over the years. Implementation plans should clearly indicate 'who does what and when' (Shibru, 2000).

3.9.1 Collaboration with Communities

The degree of community participation in the projects under discussion ranges from ad-hoc-needs identification to resource contribution to the management of program activities. In all projects, community participation, especially in the planning process, was effected via few representatives. But the problem is that the wishes and aspirations of such groups may not represent opinions of the farming communities at large. For instance, SOS-Sahel has faced challenges at its early stage. There were conflicts between the technical interest of the project and the interest of farmers during the implementation of structural conservation measures. The farmers were unhappy with many structures that put land out of production. The problem was later solved with better participation of the farmers. Even the farmers became active in managing/protecting the off-farm conservation structure (see Ginjo, 2000a for details). In other cases, the local people were destroying functional structures for the purpose of getting additional farmland and food ration (Omosheleko, Dalocha). Little or no effort was made to protect off-farm conservation structures (Terminal Evaluation Reports, Omosheleko 1997, Dalocha 1999).

Thus, little trust-building to get community collaboration was done by the different projects, with exception of SOS-Sahel (Koisha) followed by CPAR. Lack of community participation was the major reason for the under-achievement of conservation movements initiated by the Ethiopian government in the 1970s and 1980s (Belay, 1992a; Bekalu, 1994, cited in Ginjo, 2000a). Hence giving more emphasis to

the participation of small-holder farmers is necessary to reverse the process of natural resource degradation and to establish sustainable patterns of land use. Involving all farmers in all cycles of the project might be impossible and unrealistic, given the circumstances under which the programs operate. But when local resource users are able to make their views known, can influence the decision-making process, and feel that their interests are sufficiently represented, they are more likely to conform to the resource management regulations and practices after projects have phased out. However, participation of beneficiaries is not a panacea for the entire problem facing natural resource management projects.

3.9.2. Collaboration with Government Organizations (GOs)

Collaboration between the government at all levels and NGOs can generate important lessons for development efforts in general. Government bodies should thus participate in program identification, implementation, monitoring and evaluation efforts as major partners. GOs play an active role in the provision and clarification of both regional and sectoral policies. The same bodies also should get prepared to take over the completed projects and to sustain the benefits expected thereby over many years.

There was little or no co-operation between NGOs and line ministries on sector-specific issues, including NRM, during the *dergue* regime. According to Tegegne (1994), nobody knew what NGOs were doing in the country until the general guideline for NGO operation was outlined in 1993 by DPPC.

Nowadays, it appears that there is a strong partnership between the projects and local government agencies, especially *woreda* offices of agriculture (WOA) in the respective areas, as indicated in terminal evaluation reports. This does not mean that there is no mistrust and/or antagonism. For instance, the line ministries by and large considered themselves outsiders in Dalocha (see Terminal Evaluation Report, 1999). At the same time, nobody can deny that the government did adequately involve NGOs in the planning and implementation of NRM policies and programs. However, the initiation of the Conservation Strategy of Ethiopia (CSE) seems promising, because it has identified sectoral, cross-sectoral and policy implementation areas where NGOs could be involved.

3.9.3. Collaborations Among NGOs

NGOs implementing related projects should collaborate among each other for a number of reasons (Abay, 2000, cited in Ginjo 2000a and b):

- they can benefit from experience-sharing exercises;
- they can co-plan their activities so that the knowledge and experience of one could be incorporated in the plans and complementary activities of another;
- they can co-organize training programs, sharing resources and expenses;
- they can promote networking among themselves, whereby information on environmental activities can be disseminated.

However, so far, with the exception of SOS-Sahel, collaboration among NGOs has not gone beyond inter-cross visits. A number of NGOs, including CPAR, have visited SOS-Sahel's field experience in Koisha. But SOS-Sahel has a strong link with FARM AFRICA in research and experience-sharing (Ginjo, 2000b). CPAR for itself has currently started to work with Land Use Planning Oromiya (LUPO) project. However, little evidence exists on Action Aid and World Vision with regard to their collaboration with each other and with other NGOs.

Therefore, for the reasons mentioned above and more, it is recommended that NGOs work closely with each other. In fact, NGOs may have different visions and missions. But the overall goal should be to halt the accelerated natural resources degradation of the country.

4. Achievements, Impacts and Sustainability

4.1. Achievements and Impacts

The available data does not permit any evaluation of the results or impacts of the projects, because, as most of the ongoing projects considered in this study, with the exception of the one at Koisha, entered their respective localities to address the short-term relief needs of the communities. Thus the absence of baseline data is the common problem of the projects. The difficulty in measuring the achievements/impacts of the projects is that whether the improvement brought about is due to conservation efforts or not. But from terminal evaluations based on

interviews and group discussions, farmers have claimed that there has been increase in productivity attributable to conservation efforts. On the other hand, there are no figures to support the claim, but there is reason to argue that the claim could be supported, since it is likely that the conservation efforts improved water availability for plants and minimized flood hazards on both private and communal lands, and that biological measures added to the fertility of the soil, etc. More specifically, the projects have achieved success in one or more of the following:

- increased crop yield per/ha, as reported by farmers (Koisha, Jarso, Dalocha);
- increased soil fertility, as reported by farmers (Koisha);
- the land under forest has been expanded (Koisha, Dalocha, Jarso, Omosheleko);
- the problem of erosion hazards has been minimized, as reported by farmers (Koisha, Dalocha, Jarso);
- beneficiary farmers developed a high level of interest in private land conservation activities (Koisha);
- access to potable water has increased (Koisha, Jarso, Dalocha);
- traditional irrigation schemes have been developed and improved (Jarso).

In fact, the Ethiopian Forestry Action Program (EFAP, 1999a: 29) stated the achievements of NGOs as follows:

NGOs have played a major part in drought relief operations with a degree of success, including soil and water conservation and afforestation. They have strong local contacts . . . promoting community participation in local level land use planning, soil and water conservation, and community forestry will take time and NGOs could have a major facilitating role to play in keeping with these changes.

However, there are also indications of unintended negative impacts. The project activities have been largely wedded to FFW/CFW concepts, as their programs have often grown out of earlier relief efforts, with the exception of SOS-Sahel. For instance, there are clear signs of the development of a dependency syndrome. In Dalocha and Omosheleko, results obtained from terminal evaluations have shown that farmers were destroying conservation structures in order to get additional food rations. In other cases, as in Were Jarso, farmers openly requested food aid even

to work on their own gardens (Shibru, 2000). In Koisha, in a few areas where there was communal land conservation, farmers required CFW for further conservation work in anticipation of food commodities. Another negative effect was that the beneficiaries undermined the indigenous conservation practices. For instance, in Koisha, farmers interviewed rated traditional drainage ditches useless as compared to soil bunds introduced by the project (Ginjo, 2000b).

4.2. Sustainability

The achievements so far attained by the projects indicated that NRM intervention should go beyond the active project period. But the questions that might arise are: To what extent could the achievements of such project interventions be sustained? Would the beneficiaries make conservation part of their intrinsic values of traditional agricultural practices or life support system?

According to Stockman (1997:177, cited in Ginjo, 2000 a and b), sustainability is “the continuation of the innovations of a project by target populations without external assistance for a long period of time.” The Sustainability of projects can be better determined after a long period of time has elapsed since the termination of external assistance, but it can also be forecast by analyzing the existence of some pre-conditions for it to happen.

Farmers interviewed during terminal evaluations as well as field surveys have indicated interest in continuing NRM interventions after the phaseout of the projects. However, sustainability needs multi-faceted achievements in terms of technical capacity, institutional stability, resource supplies, etc.

Therefore, in most cases, the issue of sustainability seems to be in need of reconsideration in the following areas:

- Farmers or their representatives were not provided with proper training in the handling of NRM technologies, with the exception of those in Koisha. The need for all sorts of training cannot be over-emphasized. Technical skills are necessary for the maintenance of conservation structures, water schemes, irrigation schemes, etc., as they will enable the communities to replicate and/or maintain the schemes by themselves and properly manage the completed

conservation structures and water points, with little outside assistance.

- There is inadequate linkage between the newly created SWC committees and other formal local organizations, such as PAs, line ministries and other stakeholders, with exception of Koisha. In Dalocha and Omosheleko such specific committees were totally non-existent. Much remains to be done to make such organizations viable and lasting.
- The partnership between the projects and the line ministries, which are supposed to provide technical back up after the project phaseout, was not found to be promising. For instance, in Dalocha, the line ministries considered themselves by and large outsiders. In Koisha, the WOA did not provide backup services after the withdrawal of the project in some project areas (Milke and Woisha Catchments).
- No institutional arrangements were put into effect to protect/ manage the off-farm structures, with exception of Koisha. Even in Koisha, the communal conservation site guards, who were supposed to take care of communal conservation activities, were complaining about working without direct incentives, though they have been doing their job to date.
- Resource constraints (tools, equipment, and seedlings) were the major threats to farmers in some cases. Farmers interviewed in Koisha indicated that they were left with no supply of tools and equipment necessary for earthen work as well as seedlings, all due to the absence of private nurseries. Besides, in Omosheleko, the individual nurseries initiated have not been encouraging so far.
- All the structural and afforestation technologies introduced by the projects were dominated by exotic species and externally-introduced technologies. Most probably, while farmers observe certain defects in SWC technologies, instead of correcting the defects, they might opt for the destruction of the technologies themselves.

5. Conclusions and Policy Suggestions

Ethiopia is one of the Sub-Saharan African countries where deforestation, degradation of the soil and impoverishment of both ground and surface water largely impedes socio-economic development. Since the famine and drought of 1970s and 1980s, NGOs and development agencies seem to have recognized the relation between resource degradation, hardship and human suffering in Ethiopia.

The NGOs covered in this paper, with exception of SOS-Sahel, have suffered from lack of clear NRM 'approaches/concepts. Although SOS-Sahel's catchment-based watershed management approach seems promising, it still needs to reconsider some socio-economic aspects during planning, as discussed elsewhere. CPAR is also inclining towards catchment-based integrated approach, but its approach suffers from lack of focus. The interventions of Action Aid and World Vision need comprehensive improvement in most areas, as discussed in this paper.

To attain desirable impacts and ensure the sustainability of such NGOs interventions in the area of NRM, it is necessary to follow an 'integrated' approach. Integrated approach, in this case, means at least five things. First, NGOs should not only seek technical/biological solutions to natural resource degradation, but they should also be able to address the issue of other life-supporting systems to be made available for the rural poor. Second, the interconnection among renewable resources should be taken into account while treating. Third, NGOs should also integrate their 'modern' NRM technologies with indigenous NRM technologies. Fourth, both private and communal lands should not be seen in isolation, as the strength of conservation work on one reinforces the other. Finally, NGOs should also network with other partners, such as CBOs, GOs, and among themselves.

In general, the NRM interventions of NGOs look better than government interventions in the past for a number of reasons. First, NGOs are integrating NRM technologies (structural, biological and others) and knowledge (modern and indigenous) on a limited scale, as opposed to governments' use of structurally dominant and imported technologies in the past, and present-day use of uniform technologies (commercial seeds, chemical fertilizers) throughout the country. Little consideration has been given to the complementary nature of conservation and intensification in government interventions. Second, there is a better awareness creation and capacity-building sensibility among NGOs. Third, there is better participation of local people where NGOs are involved, as opposed to the top-down approach of the government, etc. For instance, *woreda*, zonal and regional officials in SNNPR cited the achievements of SOS-Sahel as "a successful performance." Thus, SOS-Sahel now plans to disseminate its catchment-based watershed management practices to four other *woredas* in SNNPR through government structures. Therefore, such NGO experiences can serve as good pilot-projects to be scaled up by concerned line ministries

and they can also be imitated by NGOs that suffer from clear NRM concepts.

The following, then, are some of the major issues to be considered in relation to NGO intervention to rehabilitate and conserve the natural resource base of the country:

- there is a need to identify the key problem (root cause) of natural resource degradation in the respective areas through baseline survey. It has positive implication for defining the broader planning approach;
- carefully identify the indigenous NRM strategies and try to integrate the successful and proven ones into 'modern' intervention of the projects;
- avoid direct incentives in the form of CFW/FFW for conservation activities and, instead, provide direct benefits to the local people, like private land conservation. Care must be taken that local people do not come to regard the incentives as either employment opportunities or negotiation tools for putting conservation measures. But the provision of CFW for improvement of local infrastructures is appreciable;
- use the existing CBOs, such as *idirs*, instead of building new ones. Because, such grassroots organizations are highly synchronized with changing local situations and can not easily dissolve;
- provision of complementary 'packages' of inputs, such as hand tools and equipment, which may be unaffordable and out of reach of farmers, whose effect may bring positive impacts on a given NRM intervention needs to be considered;
- integrate short-term life-support systems for the rural poor (off-farm employment opportunities) with the long-term NRM activities or other activities in the broader rural development programs;
- create a conducive environment for constructive collaboration of communities, GOs and NGOs to develop successful approaches that might lead to sustainable patterns of land use;
- conduct applied research on the approaches and strategies employed. For that matter, create conditions for an open, ongoing dialogue and more and better information exchange;
- attention must be given to training issues, especially to the training of illiterate and old-age groups, who should be trained in the handling of NRM technologies;

- the Federal and Regional governments should involve NGOs not only in NRM policy implementation but also in policy formulations, the reason being that NGOs can bring a 'grassroots' perspective to government policy making, policy advocacy and institutional reforms to support local efforts to establish sustainable pattern of land use.

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Environmental Protection and Mass Communication in Ethiopia

Lacke Mariam Demessie

Introduction

This paper attempts, first, to present, as briefly as possible, the history of mass communication in Ethiopia. Second, it tries to critically assess the existing mass media as exhaustively as possible although there have been impediments in accessing information from government bureaus, NGOs and even academic institutions. The assessment relates, in particular, to the media's coverage of environmental issues. At the end the paper draws some conclusions and offers recommendations.

Mass Communication and Environmental Awareness in Ethiopia

It would serve the purpose of this paper best if I started with a definition of 'mass communication' to clear the way for the understanding the subject under discussion.

I chose 'mass communication', instead of mass media, because the term embraces a wide variety of means of communication. For the purpose at hand, the term refers to those means of communication currently used around the world: newspapers and magazines, radio, television, and, now, the Internet. This approach will provide us with broader opportunity for discussion, debate, identification of problems, and help us recommend a range of possible means of communicating ideas, messages, and Information, particularly as they relate to creating environmental awareness.

Mass Communication in Ethiopia: A Brief History

The Press

If we left aside such traditional means of transmitting information to the public as the *negarit*, our logical starting point for discussing the history of mass communication in Ethiopia would be the introduction of the printing press in the last part of the 19th century.

Although printing was introduced, primarily by missionaries for the purpose of disseminating the scriptures and other religious works, as early as the reign of Emperor Tewodros II, it was the late Emperor Haile Selassie who, in 1921 (when he was still the regent to Empress Zewditu), used his own personal funds to purchase the first printing equipment for what is now the Berhanena Selam Printing Press.¹ The press, then known as Teferi Makonnen Printing Press, and which had only five skilled workers, was established on what is now the campus of Addis Ababa University. It had only 12 cases of Amharic and French type characters at its disposal. Often, Ras Tefari Makonnen himself assisted in the proofreading of materials.²

Radio

In September 1935, on the eve of the Italian invasion of Ethiopia, a successful radio transmission was tested from the Ministry of Posts, Telegraph and Telephone Station on Akaki Road. Following the tests a series of Broadcasts was organized.³

Regular programming began on September 7, 1935. Concerts by the Ethiopian Military Band, traditional Ethiopian music and news broadcasts were carried. His Imperial Majesty's first appeal to the world for assistance against the imminent fascist invasion was broadcast on September 13.⁴

When Italy invaded the country, to prevent the use of the station by the invaders, Ethiopian militia wrecked the installations immediately before the arrival of Italian fascist troops in Addis Ababa.⁵

After liberation, it was not until 1955 that professional studio equipment was installed on the premises of the Ministry of Information. At the same time public address systems were installed in central squares in Asmara, Gondar, Dessie, Debre Markos, Dire Dawa, Harar, Jimma, Nekemté, Assela, Yiraglem and Mekele.

¹ Ministry of Information, *History of Mass Communication in Ethiopia*.

² *Ibid.*

³ *Ibid.*

⁴ *Ibid.*

⁵ *Ibid.*

The purpose of this equipment was to receive the transmission from Addis Ababa and re-broadcast it in public squares in each town. Similar equipment was also installed in various parts of Addis Ababa. In 1957 Gore and Jijiga were added to the list. The equipment installed included one radio receiver, a record player, a high power audio amplifier and several horn loudspeakers.⁶

The second Radio Station, Radio Voice of the Gospel, was owned and operated by the Lutheran World Federation. It was established in 1963. The content of its program was 30% evangelical and 70% informational and cultural. It was later confiscated by the Derg regime in 1977.

Meanwhile, Radio Ethiopia established one radio station each in Harar and Asmara. The Ministry of Education has eleven 1Kw MW Radio transmitting stations in different parts of the country, which canvass 88% of Ethiopia's land mass. These stations are used exclusively for broadcasting educational. The programs include formal and non-formal education, teachers' education, and educational and entertaining weekend programs.

Since the coming of EPRDF to power in 1991 radio stations have been built in Bahir Dar, Metu, and Mekele.

The number of languages used for broadcasting has increased over the years. The following chart shows the number of languages in which Radio Ethiopia broadcasts its programs and the years in which the languages started being used

#	Language	Year Started
1	Amharic	1936
2	English	1936
3	French	1941
4	Arabic	1941
5	Somali	1954
6	Kiswahili	1962
7	Tigrinya	1968
8	Oromifa	1973
9	Afarigna	1974
10	Harari	1993
11	Añuwak	1995
12	Nuer	1995

Source: *Radio Ethiopia Magazine*, May 2000 (Amharic).

⁶ *Ibid.* Radio Ethiopia has started an FM broadcast as of May 2000.

Private Radio Stations

There is only Radio Fana owned privately but affiliated to the EPRDF in Addis Ababa.

Television

Ethiopia is one of the earliest countries to introduce TV in Third World countries. This new innovation in mass communication in Ethiopia was inaugurated on November 2, 1964, when His Imperial Majesty appeared before the camera in the nation's first televised broadcast on the 33rd anniversary of his coronation.⁷

Educational Television was introduced in October 1965 at the Ethiopian TV station. During the day, school programs were beamed to supplement instruction by teachers.

Color TV was introduced on the tenth anniversary of the Marxist Military regime, and the service was extended to all towns that had microwave link. 47% of the country is covered by TV programs broadcast in Amharic, Oromifa, Tigrigna, and English. Educational programs are also provided for junior high school students.⁸

Internet

Internet was introduced in Ethiopia in 1997, much later than in many African countries, because of the reluctance of EPRDF to liberalize telecommunications services, which are still government-owned.

A Critical Assessment of the Existing Mass Communication in Ethiopia

The Press

According to the World Communication survey made by UNESCO in 1975, Ethiopia had 3 dailies, 2 non-dailies, 2 copies per 1000 people. But in the developed countries the number of copies per

⁷ Ministry of Information, *Loc.Cit.*, p.25.

⁸ Ministry of Education, 1989.

thousand people ranges from 200 to 500. At that time there were 10 African countries with a circulation of 20 copies per 1000 people. The situation in Ethiopia is even worse now, where only one out of every one thousand people reads newspapers. The newspaper reading public numbers no more than 500,000 (0.8%) out of a population of 63 million.

Government Press

The government press prints *Addis Zemen*, the Amharic daily, which has a circulation of 30,000 and is mainly consumed by government offices. *The Ethiopian Herald*, an English daily with a circulation of 6,000 and *Berisa*, an Oromifa weekly are the other two government papers.

Do the papers create environmental awareness?

Let alone create environmental awareness, the journalists and the editors themselves have no clue about what environment is.

Almost all government institutions have Information and Public Relations Offices. Some publish quarterly magazines and others publish yearly magazines. But the contents of the magazines do not deal with subject matters related to what the institutions do. Instead they are filled with speeches and pictures of either the ministers, vice ministers or commissioners. In some government offices the Information Officers do not even know their roles except, perhaps, carrying the briefcases of their bosses and organizing cocktails.

The sad truth is that even the Environmental Protection Authority (EPA) itself does not have a proper information and communications system in place. We are now living in a cyber age, but Ethiopia is still in the 'medieval period' when it comes to getting information from government beaurocracy.

The Private Press

The private press in Ethiopia did not develop the way it did in the West. In the history of American Journalism, for instance, we observe that the tabloids were the foundation of the specialized magazines, which started appearing very late. But in Ethiopia the free press did not start until as late as 1992, when about 90 magazines

mushroomed all over the capital. Most of the magazines concentrated on politics, the economy, culture, and religion, while some even ventured in pornography.

When the police started confiscating magazines, printing cost went high, and some journalist got arrested, numerous magazines disappeared. Among the pioneers, only *Tobia* magazine has survived so far. Late starters like the *Reporter*, *Efoyta*, *Et'op*, and *Goh* are in circulation. With the closure of most of the other magazines the tabloids started mushrooming. There are some 40 tabloids that come out weekly--six in English and the rest of them in Amharic. Some magazines started appearing in Oromifa (which now uses the Latin script) in 1993, but they either died out or turned to championing the Oromo cause in Amharic (e.g. *Urji* and *Seyfe Nebelbal*).

Circulation and Distribution

During the 'romantic' days of the free and independent press, private magazines and tabloids were distributed all over Ethiopia, the exception being Tigray region. Some even found their way to Asmara. Magazines like *Ruh* and *Tobia* had at one point reached sixty thousand copies per issue and were distributed all over the world to Ethiopians in the Diaspora. *Ruh* had a few issues of a North American version published in Washington, DC.

The private magazines and tabloids were banned in some regions in 1994. Since then the circulation of the private press has been limited to Addis Ababa, Debre Zeit, Nazereth, Shasemene and Dire Dawa. Interestingly enough, with the introduction of the Internet, some of the private papers and magazines are posted on the World Wide Website by some interested groups of Ethiopians living abroad.

Do the private magazines cover environmental issues?

The private press mainly covers politics, business and sports. The private press mainly deals with news that sells, which means sexy (with the broader meaning of 'appealing'). Why? The answer lies in what Stalin Walker, the editor of the *New York Herald Tribune* in the thirties said about the fee press: "News is mainly based on 3Ws: women, wampum and wrong doings." If a private press produces a magazine or

tabloid which specializes on environmental issues the likelihood of its making money or thriving is almost nil.

But Northern NGOs such as PANOS, have been producing environmental features and distributing them free of charge to the media in the South.

PANOS has been approaching the private press since 1993 to buy a column or a page. This is a good strategy because: (a) the private press is more read than the government press; (b) the unique practice of vendors making more money by renting the tabloids rather than by selling them allows for a wider circulation, whereby one tabloid is read by more than ten people. The practice itself makes for a good mass communicator. PANOS has bought a couple of pages in *Tomar* in which environmental features appear weekly.

Akerma, the first specialized environmental magazine, is distributed through Mega's bookstore chains. It comes out every three months.

Radio

Radio is the most important means of mass communication in countries like Ethiopia, which have a high rate of illiteracy, poor transport infrastructure and rugged topography. The Radio infrastructure canvasses 88% of Ethiopia, particularly the Educational Mass Media (EMM), which has 11 rebroadcasting stations.

Government radio language services are dictated by politics rather than by population size and development (see Table on p. 181). However, the educational mass media has a more geographically-oriented distribution and includes more ethnic groups based on population size. Historically, during the reign of Emperor Haile Selassie, following Addis Ababa, the first rebroadcasting station was set up in Wolayta.

The State Radio

Radio Ethiopia has a great potential for reaching the rural population. But the fact that it is centrally located makes it ineffective for broadcasting environmental education or awareness creation, since

Ethiopia has diverse ecological zones, even within the same *woreda*. Secondly, there is diversity of languages. Up to 80 languages are said to be spoken by the rural people who are supposed to be the receivers of packaged messages on environment. Just like the other media, Radio Ethiopia does not have an environmental program, save for programs on science and technology, health, and agriculture targeted to non-specific audiences.

Educational Mass Media – (EMM) Radio

The Educational Mass Media in Ethiopia has regular education support programs for schools and adult education. Until the coming of EPRDF to power, all programs were produced at the main studio in Addis Ababa and sent to the rebroadcasting stations throughout the country. But under the current ethnically-federated system, the Elementary School Radio Education (ESRE) has been decentralized. Even though the idea of decentralization is not bad, as it brings teaching closer to home to the various ethnic groups, how well they are functioning is not known because no information has been made available to me.

Rural Radio Forum (RRF)

With regard to adult education, there was one interesting program initiated through the joint production of an Adult Education (AE) package by Wolayta Agricultural Development Unit (WADU), Agri-service Ethiopia (an NGO) and the EMM. That was Rural Radio Forum (RRF).

I was the Information and Rural Communication Head 1977-81. Let me elaborate how RRF worked. WADU prepares a 15-20-minute radio program, say, on soil and water conservation, sanitation, etc. Then it is translated into Wolaytigna, recorded at the main studio and, then, re-broadcast by the transmitter in Wolayta. WADU's Extension Agents, who were trained as program designers, organized peasant farmers into groups at listening-centers utilizing radios donated by Agri-Service. The farmers listened to the programs and discussed the issues raised. Farmers then gave their comments (feedback), which came to WADU. Based on the comments gathered a new package was produced utilizing the indigenous knowledge of the people and clarifying messages not understood. *It was a two-way participatory communication.*

RRF started in Wolayta in 1973. In Wolayta alone there were 47 listening-centers. It later spread to Arsi and Bale, broadcasting programs in Oromifa, via Arsi Rural Development Unit (ARDU), formerly Chilalo Agricultural Development Unit (CADU) to Bale, and via the Agarfa Institute to Harar and Ambo, and the number of listening-centers kept on growing. (These models were so admired that I was personally invited by FAO to explain how they could work for other Third World countries, but the invitation fell through because the bureaucracy wouldn't allow me to go.)

It was with great dismay that I read the evaluation report of EMM that, by 1982, there were only 3 listening-centers left in Wolayta. This is exactly the year WADU was dismantled by MoA, certainly not to the liking of the World Bank which rated it one of the most successful projects in Africa.

Radio Receivers

Even though radio is the best means to reach the majority of the rural population, the number of people who own transistor radios in Ethiopia is dismally low. In 26 African countries, there are less than 50 receivers per 1000; however, in Ethiopia and Zaire, two of the most populated countries, there are less than 10.⁹ There are alternatives to tackle this problem, which I will mention in the recommendations section. Unless we address the scarcity of radio sets, which the rural poor cannot afford, talking about mass communication and education becomes a futile exercise.

Television

The Ethiopian TV claims to reach 47% of the country. But the station does not have regular environmental programs. The journalists and editors do not have a clear understanding of environmental issues. But they show imported environmental documentaries now and then. Sadly enough, the environmental NGO (African Network for Development) that was supporting them is about to transfer its headquarters to Bamako because it couldn't get re-registered.

⁹ *World Communication*, UNESCO.

EMM-TV

The EMM-TV has educational support programs on the National TV during working hours. Even though MoE has started an Environmental Education (EE) program for schools, whether or not it has put it on TV is not known. However, EMM has so far produced films titled "Our Environment," "Trees," "AIDS" and "Water".

TV Sets

TV sets are luxury items in Ethiopia. Only a small percentage of urban dwellers can afford them. Besides it is only the big towns that have electricity. It is estimated that there are one million TV sets in Ethiopia,¹⁰ that is, one TV set for 63 people. But with all the limitations, there are ways to make them more available to the urban poor and the student population. (See Conclusion & Recommendations.)

Film

Cinema was introduced in Ethiopia a century ago during the reign of Menelik. Then, it was soundless motion pictures that were shown. Because the technology was new and appeared strange, the clergy, who were suspicious of the contrivance, dubbed the first cinema hall "*Saitan Bet*" (the devil's house). The expansion of cinema halls was quite impressive during the reign of Emperor Haile Selassie I. There were private movie houses in various towns.

There were also chains of United States Information Service (USIS) libraries in various towns of Ethiopia that showed documentary movies of educational nature, particularly in science, technology, sanitation, etc. There were chains of Young Men's Christian Association (YMCA) in various towns, numbering about 30, that used to show educational documentary films as one of their programs both to develop the minds of the youth and for entertainment. The Ministry of "Hizbawi Nuro Edget," now known as Ministry of Labor and Social Affairs (MoLSA), had a mobile-film unit with numerous American vehicles mounted with film projectors. They used to show the rural people films on agricultural extension and health in the evenings on hanging mobile screens.

¹⁰ ETV.

With the coming of the Derg to power all these movie structures were either confiscated or shut down. Movies from the West, including the educational and scientific ones, were banned. Censorship became even tighter than during the days of the monarchy, all in the name of an ill-understood Marxist ideology. All the equipment bought or donated was either demolished or lay rotting in the stores of some ministries.

Film outlets, capacity and attendance¹¹

Cinemas	Fixed 30
Total seating capacity	26,138
Seats per 1000 people	1
Total annual attendance	9,540,370
Annual visits per capita	0.4

Video Films

Video Films have mushroomed in Ethiopia, particularly in the past decade. But the video cassettes are all imported from the West. There are *clandestine* video houses that show the youth pornographic movies, to the consternation of many a parent and with disastrous effects.

Internet

In 1897, the then ruler of Ethiopia king Menelik, called up Ras Makonnen, the father of the late Emperor Haile Selassie, from Addis Ababa on the telephone, a sign, one would have thought, of great things to come. But a 100 years going on, Ethiopia is home to only 150,000 telephone sets serving a population of 58 million - a low "teledensity" of one for 3,730 people. Like so many other developing countries, Ethiopia has been and still is struggling to catch up with the Information Age.

In all of Ethiopia, there are just 1,300 Internet subscribers, who are all based in the capital, Addis Ababa, and even these are mostly embassies and businesses. Government institutions rank low in terms of Internet use. As to other important groups, such as university teachers,

¹¹ *World Communication*, p.57.

"it is out of the question," says the country's Telecommunications Minister, Abdul Mejid Hussein, because "they cannot afford it."

"In most countries, of course, teachers and researchers were among the first users of the Internet. But in Ethiopia a university lecturer earns the equivalent of \$150 a month. To get hooked to the information super highway, he or she will have to shell out \$95 plus a minimum service charge of \$300 a year. For purely economic reasons (there are others, like unfamiliarity with computers, which can lead to technophobia), the Internet's supposed development opportunities are still a distant dream, as is the case in other poor countries.¹²

That is the gloomy part. But Information Technology is one of the answers to sustainable development. Ethiopia is lagging behind in this regard mainly for policy reasons. If the telecommunications system were liberalized, Ethiopia could join the Information Revolution and leapfrog in development. As K. Y. Amoako puts it, "No Single factor has as much capacity to wrench Africa out of poverty and underdevelopment as information technology (IT), but only if we seize the moment."¹³

We are now living in an era of information and knowledge. As Amoako puts it:

The information revolution and the extraordinary increase in the spread of knowledge have given the new era [a different look and dimension]. Developed and developing countries are putting in place policies and plans to transform their economies into information and knowledge economies (IKEs).

Information and communication technologies (ICT) offer less developed agricultural countries the opportunity to leapfrog into the industrial age and transform their economies into high value-added information economies that can compete in the global market place with advanced economies. Because of the portable nature and relatively low cost of these technologies, African countries are well placed to take advantage of them. African Countries, which constitute the bulk of the world's least developed nations (LOC), are at risk of being further marginalized if they fail to embrace these technologies to transform their economies.¹⁴

¹² Laeke Mariam Demessie, Reports for PANOS, January 1998.

¹³ K.Y. Amoako, *Perspectives on Africa's Development*, p.126.

¹⁴ *Ibid.*, p.106

Technologies that can bring empowering information to isolated communities, for instance, global mobile Low Earth Orbit (LEO) satellite systems, which will greatly cut communication costs in rural areas, fiber-optic cables for telecommunication and solar power supplies either already exist or are on the verge being introduced. Community tele-centers and tele-cottages have been set up in several counties to enable those who are technologically unfamiliar to access information and CT, using simple interfaces, touch-screen- and voice-based systems in local languages.¹⁵

What Ethiopia needs to do to introduce IT for rural development shall be discussed in the concluding section of this paper.

The Role of NGOs in the Creation of Environmental Awareness

There are 33 NGOs whose main objective is to create environmental awareness in Ethiopia (*Environmental Management in Ethiopia: An Overview*, 1999, p. 93). All these NGOs try to create environmental awareness through *interpersonal communication*. There is nothing wrong with that. It shows that they are doing practical conservation work and field demonstrations. But the question is whether or not they have information officers, organized information to be delivered, Internet connectivity, and networking. Even if they do, they do not have proactive and organized information office and systems.

The only three NGOs that are engaged in Mass Communication are Agri-Service Ethiopia (ASE), which produces teaching materials and provides farmers via radio sets; PANOS, which produces and distributes feature articles to the media; and ENDA Ethiopia, which has started publishing *Akerma*, a quarterly magazine. (See conclusion on how NGOs can build better information systems.)

The State of Environmental Awareness in Ethiopia

Perception of "Environment"

Let alone the society at large, even the very people engaged in various scientific disciplines dealing with the environment do not have a

¹⁵ *Ibid.*

holistic approach for understanding environmental issues. They master their particular skills but do not see the interaction and the interrelation among the different components of environmental issues. This is due to the late arrival of environmental education on the Ethiopian scene. This claim may sound exaggerated, but I have repeatedly come across articles written by people without a thorough understanding of the scientific meaning of the term "environment". Hence I would like to digress briefly to insert, at least, a working definition at this point. Environment is: "a. the complex of climatic, edaphic, and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival; b. the aggregate of social and cultural conditions that influence the life of the individual or community."¹⁶

The confusion in the understanding of "environment" exists globally as well:

Some of the supposed lines of conflict have only been able to develop in the context of the United Nations Convention on Economic Diversification (UNCED) process on the basis of different understandings of 'environment'. This environment also embraces global economic relations, deficiencies of democracy within nations and internationally and debt problems. Many members of industrialized countries are puzzled by this complex perspective. Here, after many years of conceptual confusion in the media, science and politics, the environment is normally equated with ecology or with nature, the concept blends with ideas of a harmony to be found in natural surroundings - places, which in densely populated Europe or Japan, virtually disappeared many years ago and only the environment is what is around us. It comprises a whole range of natural, biological, physical and man-made or socio-cultural and economic systems."¹⁷

Major Environmental Problems in Ethiopia

As it has been highlighted by an ECO-Consult document, *Environmental Management in Ethiopia: An Overview*, the major environmental problems in Ethiopia include the following:

- There is serious deforestation caused by expansion of agricultural land, utilization of forests as sources for fuelwood and construction

¹⁶ *Webster's Dictionary*

¹⁷ In the Aftermath of the Earth Summit 1993, p.18.

material with little replacement. As a result, there is serious loss of biodiversity as well as vegetation cover;

- Land degradation (soil erosion, nutrient depletion) is the major environmental problem occurring mainly in the highlands. Contributing factors include torrential rainfall, loss of vegetation cover and the disruption of the nutrient cycle (as a result of burning dung and crop residues). There is limited land degradation due to salinity and water logging in areas of irrigated agriculture;
- The most important source of water degradation is soil erosion. There is limited pollution by agricultural chemicals around large-scale farms. There is considerable pollution in urban centers, especially in Addis Ababa, where most of the industries dump their waste directly into streams;
- Urban centers have very few sanitation facilities, and rural areas, where 85% of the population live, have no sanitation facilities at all. In Addis Ababa (the capital city), about one million people have no toilet facilities, and most of the available facilities are shared. Defecation in the open is a common practice in rural as well as urban centers;
- The machinery and other equipment used in factories are old; technologies are obsolete and spare parts are hard to come by; hence their energy utilization is poor and are major causes of pollution;
- The major source of energy is biomass energy, made up of fuelwood, charcoal, dung and crop residues, from which biomass energy pollutants (e.g. CO₂, CH₄) are produced. Biomass will continue to be the major source of energy for some time to come;
- Protected areas are encroached upon by communities living around them; these communities see no personal benefit from these resources; the pressure is normally increased during social upheavals.¹⁸

Indigenous Knowledge

Environmental Awareness in Rural Ethiopia

I try to address this issue with fear, because I have not come across any literature that has studied the indigenous knowledge of the Ethiopian peasant farmers and pastoralists. But I can say with confidence that the extension program approach in Ethiopia has been

¹⁸ *ECO Consult*, 1994.

top-down for years, and that it depended on imported Western text-book knowledge rather than building on the given indigenous knowledge. Exceptions to this are, of course, researchers like Dr. Melaku Worede and the Biodiversity Institute (formerly the Gene Bank), which is his own creation and the first of its kind in Africa.

My own field observation in Wolayta and Konso has shown to me that the local people have a store of knowledge about the conservation and protection of the environment upon which their livelihood and survival depend. Though my observation is limited to these two localities, I could say the same for other parts of Ethiopia with some degree of certainty. The existence of usable indigenous knowledge elsewhere in Africa could be summarized by the following citation:

For countless centuries African people maintained a living balance with their natural environment and resources on which they depended. Their way of life demanded from them an intimate, organic relation to nature, characterized by a high degree of sensitivity to and respect for the working of natural ecosystems, an almost sacred limit to exploitation and sense of duty to conservation. Control- and taboo-systems functioned as awareness and penal codes of individual and collective green behavior.¹⁹

Unless one addresses this issue properly an environmental-awareness program transmitted through whatever media would be dealing with the symptoms of environmental degradation rather than the root causes.

At any rate, an environmental-awareness package has to be designed based on the recognition and understanding of the existing indigenous knowledge and tradition rather than assuming that the peasants don't know. It has to be a two-way process. We may end up learning more from them than what we give them. Any such program has to make sure that indigenous knowledge is incorporated into its package and used side by side with what modern technology offers by way of conserving and protecting the environment.

¹⁹ In the Aftermath of the Earth Summit, Responsible Global Action for the 21st Century - Comments and Documents, 1993, p.101.

Environmental Education in Ethiopia: A Critical Assessment

Environmental education came onto the scene only in the early 1970s:

Since its formal inception in 1970 at a conference organized by IUCN (The World Conservation Union), when the first working definition was proposed, environmental education has been gaining respect among both government and NGOs world wide.²⁰

Environmental Education project of Ethiopia was started in Wollo Region in 1985. This was after the severe drought of 1984, and the project was initiated from an urgent need to raise the people's awareness and understanding of the region's repeated drought and famine situation. Since 1985 there has been an Environmental Education project of Ethiopia headed by an Environmental Education (EE) coordinating committee at the Ministry of Education.²¹

At this stage MoE is in the stage of integrating EE in the school curriculum.

NGOs and Environmental Education

As mentioned earlier, there are 33 Environmental NGOs who have as one of their objectives "creating environmental awareness." I shall not go into the particulars of their activities, but a simple observation I made is that they are only known in their project areas or to a small fraction of the Ethiopian community. Let alone for a layman, it was very difficult for a journalist like myself to locate them and find out about their activities. I will, therefore, move to the issue of access to information.

Access to Information

If a journalist goes to any of the Ministries, the Information Officers there have no Information to provide. They wouldn't even dare

²⁰ Shibrú Tedla, "National Activities in Environmental Education with Emphasis on the Non-formal Sector," 1995

²¹ TAL Shibrú Tedla

arrange an interview with the appropriate experts such as they may have, let alone a Minister. It took me one month and half to make a package on Malaria. I will deal with this issue in detail later. As a UNESCO document puts it:

Communication is a basic individual right, as well as a collective one required by all communities and nations. Freedom of information, more specifically the right to seek, receive and impart information, is a fundamental human right; indeed, a prerequisite for many others.²²

The 1992 Press Law of Ethiopia grants access to information as a right. But the reality is very different. Journalists in Ethiopia do not have free access to NGO information, let alone to the Government's. When press conferences and meetings are organized by associations like the Biological Society or an NGO only government journalists are invited.

Environmental NGOs do not even have connectivity among themselves, let alone via World-Wide Website. For Mass Communication to play an effective role, the availability of organized information and free access to information are a prerequisite. To write about malaria or water pollution I had to invest one month on collection of material for each subject, and the materials I obtained are through the good will of the people concerned rather than as a matter of right. Even the academic institutions are reluctant to give scientific information to journalists. One can download tons of material on any subject from the Internet. But there is hardly anything on Ethiopia, and, locally, almost all doors are locked. Where they are open the Information they have is not organized. The responsible staff do not even know what is available within their archives.

Conclusion and Recommendations

As I have tried to indicate in this paper, in Ethiopia there exists a wide range of tools of communication, from the oldest traditional mode to the latest satellite system, with varying degrees. All these means of communication can be utilized to create environmental awareness, which could mean a question of life and death to us all as well as the destruction of the planet itself. But all actors need to combine their

²² *Many Voices, One World* (UNESCO), p.253.

efforts to put the available facilities to effective use. All the actors involved, whether individuals, communities, groups, schools, universities, clubs, policy makers, NGOs, government authorities, the private sector, etc., need to be environmentally-conscious.

In order to develop an integrated environmental awareness package as well as packages for specific ecological zones or communities, there should be an environmental forum, database, and experts as sources of information to be supplied to Mass Communicators. The various means of communication tools, such as low-cost community radios, TV, video, etc., should be considered.

Traditional Communication Methods

Traditional and existing *interpersonal communication* methods in each Ethiopian community can be surveyed and used to create environmental awareness. For example, among the nomadic populations people have their own way of transmitting news and information. For instance, whatever happens in one corner of Afar land reaches the other corner physically in a day or two. The following are some of the traditional or communal venues of communication:

- Market places are where information is exchanged;
- *Tej bet*, *tela bet*, and coffee ceremonies or *chat* or *qat* sessions are places and occasions where people exchange information;
- Traditional meetings, such as *idir* or *iqub* make good occasions to impart information;
- Places of worship - Churches, Mosques and others; even such practices or beliefs such as *gizzet* or *adbar*, however unscientific they appear to us, could be used for creating environmental awareness, particularly with regard to the uncontrolled cutting of trees or abusing of water resources;
- Using traditional institutions, such as *sera*, *gada* of elders, etc. Elders are very effective and listened to; if they embrace environmental law; then the rest of the society can follow them;
- Traditional cooperative associations like *debo*, *jege*, etc. can be utilized in effective conservation endeavor, since they are voluntary rather than authoritarian like *Kebele* associations;
- Traditional holidays, such *Meskal*, *Timket*, *Arefa*, *Erecha*, etc., at which people congregate in large numbers, could be used as occasions to distribute leaflets, posters, T-shirts aimed at

campaigning for the importance and necessity of environmental protection.

Radio

PANOS supports community radio systems in several African countries. The community radio movement has been successful in many developing countries. They are low-cost radio stations owned by the community for purposes of community development. They have a participatory approach, and members of the community are involved in the production of the programs. The programs utilize local tradition, folklore, and other indigenous cultures and modes of communication. Following such initiatives, similar programs could be started or developed in Ethiopia. For instance:

- Radio-listening centers can be installed in the cities as well as in the smaller towns through the utilization of megaphones;
- In the rural areas Rural Radio Forums can be reinvigorated by NGOs, government and donors;
- Community Radios - Ethiopia can join the community radio movement;
- The business community can produce low-cost hand-operated radios, which do not need dry batteries, and which are not affordable and accessible to the rural poor;
- The business community can think of producing low-cost transistor radios;

Schools

There are Mini-Media in Ethiopian high schools. Teachers and students can produce environmental programs, along with entertainment, and increase the environmental awareness of students during recess time.

TV

Simply by mounting TV towers in various *kebeles*, schools, public gathering places and in the open fields for those with no access to TV, environmental educational programs can be shown. At the same time, enough emphasis should be given to training TV journalists on environmental concerns and, once that is done, local documentary video-films can be produced showing, through concrete examples, the gravity

of the problem and the importance and necessity of environmental protection.

Movies or Film Shows

NGOs, the government, and the private sector can regenerate the movie business by building more cinemas or organizing mobile film units, which could be used to disseminate knowledge about the environment and the need for its protection.

Video shows

NGOs and environmental clubs can create chains of video-show centers to show documentary films on environment. In addition, both the government and NGOs can consider setting up a mobile video-film units by means of which they can conduct video shows on environment.

The Press

The circulation of private tabloids ranges from 2,000 to 25,000, depending on the political climate of the country. If they can survive the recent hike in printing cost, the private press can be a good vehicle for the creation and development of *environmental awareness*. However, the journalists need to be given continuous training both in the profession as well as the different aspects of environmental issues. Environmental NGOs and donors should subsidize the environmental pages.

Any restriction as may exist on the distribution of the private press by any one or various regional states is something to be seriously considered. Alongside this, the following points need to be taken into account:

- Rural newspapers need to be considered. Wall newspapers can be posted in places where people gather - market places, service cooperatives, *kebeles*, places of worship, etc;
- Environmental NGOs can prepare teaching materials and buy a page on the private newspapers;
- Environmental NGOs can pool their sources together and produce newspapers. As Lenin said, the newspaper is a collective

propagandist, agitator and organizer. If it serves to save the environment, why not use it?

- There are a number of amateur journalist clubs all over Ethiopia. They can be supported by NGOs with regard to training on both the environment and journalism, and they can be made to produce local articles.

Internet

I suggest that the government, the private sector, and donors look into bringing this technology to the service of the rural poor to create environmental awareness, distance education, information and agricultural development.

The Ethio-Sudanese NOHA Samora of World Space has launched a satellite and is broadcasting to Africa. The Ministry of Education's Mass Media Center has received 10,000 radio sets that can be hooked to computers, and they are expected to be active soon.²³ Hence environmental awareness and education, if packaged properly, can be delivered through this channel. The other good news is that Ethiopians have developed Ethiopic software already for use on the Internet. The only thing remaining is standardization, which they are working on ("BBC Online Ancient Alphabet goes Cyber," by Laeke Mariam Demessie, January 2000). In this regard, the following points need consideration:

- Digital satellite radio receivers developed by WORLD SPACE can be utilized to bring environmental awareness to rural communities;
- Tele-centers, cyber-cafes, tele-cottages, etc. are the future direction via which information can reach extension agents, health workers, teachers, and students who can be used as agents of environmental awareness. NGOs, the government, and the private sector can help develop this sector;

Libraries

Public libraries or reading centers are neglected in Ethiopia. Building public libraries or reading centers should be a priority concern

²³ Interview with the Ministry of Education, EMM, August, 2000

for all those who want to expand knowledge on environmental awareness.

Training on Environment

To begin with, the authorities themselves need training on environmental awareness. Then, there are the professionals, employees of the various institutions - both government and non-government - and officials at local and regional levels.

The EMM Radio could be a good Mass Communicator for environmental awareness, provided programs are properly packaged so as to be participatory, particularly where the target communities are organized.

Principle 18 of the *Rio Declaration on Environment and Development* states:

Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment, which is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in the decision-making process. States shall facilitate and encourage public awareness and participation by making information widely available.

Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.²⁴

As my critical assessment of the media and environmental coverage has attempted to show, there is lack of awareness and understanding among the people in the media themselves. Therefore, training on the various environmental issues as well as in journalism itself is imperative.

It is when the communicators themselves are aware that they can play a role in creating environmental awareness. However, awareness

²⁴ In the Aftermath of the Earth Summit, 1993

creation should be at all levels of the society. Because environmental education is not a subject to learn and teach, it is something one must live.

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Lem, the Environment and Development Society of Ethiopia: the Society's Contribution to Environment and Development

Mogues Worku

Introduction

Lem, the Environment and Development Society of Ethiopia (Lem Ethiopia) is a citizens' movement on environment and sustainable development. It was established in March 1992. It was founded by 28 professionals from different disciplines related to environment and development. The highest decision-making body is the General Assembly, which holds its meetings annually. The Assembly elects the Board of Directors mandated with the task of following up whether the strategies designed by the General Assembly are properly implemented or not.

Vision and Mission

Lem Ethiopia envisions *an Ethiopia whose environment is adequately and sustainably managed so as to ensure the livelihood security of present and future generations*. The Society's mission is *to act as an agent of change and to contribute to sustainable development through the conscious and deliberate actions of Ethiopian citizens*.

Objectives

To attain its mission the Society has the following fundamental objectives:

- ◆ Contribute to the development of awareness among the public with regard to the interrelationship between population, natural resources, environment and development;
- ◆ Contribute to the working out of an integrated environmental management policy in Ethiopia;
- ◆ Support grassroots development activities;
- ◆ Participate in the conservation and development of natural resources;

- ◆ Contribute to the sensitization of communities and individuals about the principles of environment and development;
- ◆ Contribute towards the global effort to create and maintain a healthy environment and a better world.

Activities

In order to fulfil the above objectives, the Society has made considerable efforts in collaboration with GOs and NGOs (both local and international) in capacity-building, with special consideration given to the development of environmental awareness and the provision of environmental education. Accordingly, more than 350 School Environmental Education and Protection Clubs (SEEPC) have been established in all high schools and some elementary schools throughout the country. The efforts made so far have resulted in the creation of a smooth relationship and confidence among all groups who have a stake in environment and development. These have been realized through:

- ◆ Establishment and strengthening of SEEPCs in high schools, Teacher Training Institutes (TTI) and some elementary schools;
- ◆ Establishment of Farmers' Environmental Groups (FEG);
- ◆ Creation of different fora on natural resource conservation and sustainable use of the resources; on policy/legislation issues; on traditional resource conservation practices; on food security; and on women and sustainable development;
- ◆ Community mobilization that has helped initiate urban sanitation;
- ◆ Launching of small-scale farmer-based rural development projects;
- ◆ Publications, such as quarterly newsletters, brochures, posters.

Outputs

Today, the SEEPCs so far established, although not sufficient, have helped integrate environmental education into formal curricula, to which society at large makes significant contribution. Relatively speaking, these clubs act as environmental advocates at the grassroots level, working through pupil-family relationship.

Impact

In most parts of the country, the concern shown by communities about natural resource degradation has been improving from time to time. People are showing high interest in discussing issues of environment and development. In some places, people's awareness about the environment has led towards meaningful actions. The participation of people in environment and development is improving from time to time. In fact, it appears that nothing impresses the majority of the people as much as issues of environment and development.

Problems and Constraints

Compared to previous years, there is now a conducive situation to engage in environment and development issues. The existence of an environmental policy in the country is important in and of itself, as it is an indication of the government's concern and of the leading role it intends to play, though not to the extent expected. There are still serious challenges to the efforts being made to improve the environment and move on towards sustainable development. The following are the major problems and constraints facing the society, NGOs and other civil organizations involved in environment and development:

- ◆ Lack of continuity of environment and development programs, projects, and activities due to resource constraint;
- ◆ Lack of awareness at different levels in prioritizing environment as seen against the prevailing rate of depletion;
- ◆ Policy constraint related to natural resource conservation and sustainable utilization of the available resources;
- ◆ Donor fatigue and policy change together with the changing local political situation;
- ◆ Lack of strong networking among different stakeholders involved in environment and development.

Conclusion

Environmental advocacy, in its modern sense, is a recent concept in Ethiopia; it is, therefore, in its infancy. A few NGOs and/or civil societies/groups have shown concern and are involved in environmental projects and activities. But such a serious problem as environmental depletion requires the involvement of the wider

community. Even the capacity of the existing NGOs is too limited to enable them fulfil their objectives. Consumers are not organized such that they could choose and consume environmentally-friendly products. The overall experience of the country in environmental governance is very little.

Given the alarming rate at which the country's natural resources are undergoing depletion, there is a crucial need for a strong and co-ordinated environmental policy. No less crucial is the need to emphasize the importance of developing the awareness of the public at large and educating the young generation about environment in schools and at all levels. Such an effort can help create a fertile ground for the enhancement of the public's role and participation in environmental advocacy. To achieve all this, the commitment of GOs and NGOs and the co-ordination of their projects is also very essential.

Environmental Advocacy: The Experience of Forum for Environment

Asferachew Abate

The following brief presentation focuses on the experience of Forum for Environment with regard to Environmental Advocacy (EA).

Before I go directly into explaining the experience of the Forum, I would like to define the phrase 'environmental advocacy'. As you might know, the word 'advocacy' can be defined in a number of ways; however, it was a nightmare trying to find a single definition of EA in almost all the literature referred to in the course of writing this paper. This indicates to us that EA is in quite an early stage of development as a discipline in its own. Therefore, an attempt was made to adopt one of the definitions of advocacy to EA. For the purpose of this presentation EA defined is as:

A process of social transformation aimed at shaping the direction of public participation, policies, programs and projects to bring sustainable development.

How is it possible to bring about social transformation?

Social transformation can be brought about by carrying out *organized* and *systematic* activities to influence the public and policy makers. The ultimate goal of EA is to change policies that affect the life of the general public. It is, therefore, important to note the following:

- EA is a process and can take a long time. This is especially true when it comes to policy change (for example, changing the land tenure policy of Ethiopia, despite the advocacy work being carried out for its change);
- EA is a team effort - successful EA requires a range of skills, including research, communication, project management and policy formulation;
- EA involves considerable time and resources.

Actors of EA

EA can be done by GOs, NGOs, and CBOs and others.

Forms the Activities in EA Can Take

The activities in EA can take various forms, some of which are the following:

- Informing the public on critical environmental problems, the causes of the problems, the impact they can have on the public's livelihood, and the mechanisms to alleviate the problems;
- Conducting/carrying out research to find out the causes and effects of environmental problems;
- Carrying out/implementing projects to demonstrate how to solve major environmental problems.

What are the requirements to carry out effective EA?

As stated above, GOs and Civil Societies can do EA. In order to make these organizations more effective, the following criteria need to be met:

Legitimation: Refers to what the EA organization is representing. This has a crucial effect on gaining the support of the public and those holding the power. It involves recognition and legal registration of the organization.

Credibility: Refers to how much the organization can be trusted, what its reputation among the public and other actors is, and its ability to attract allies. It also refers to the link the organization has with its constituency and its accountability to that constituency.

Accountability: Refers to the means through which the organization reports to a recognized authority or authorities and is held responsible for its actions. As a general rule, all those serving the general public - GOs, NGOs, Civil Society and CBOs - should be accountable to the public.

Power: Refers to the ability of the organization in conducting its advocacy work to bring a relatively rapid change. Power can emerge from credibility and legitimacy. It can also arise from a strong capital (money), the support it gets from the general public and its ability to motivate the public into action in a sustainable way.

Examples of Environmental Advocacy Groups: Green Peace, Friends of the Earth, etc.

What are the basic tools for carrying out effective EA?

- Strategic Planning: EA organizations should have a vision and a plan to achieve their objectives: e.g. annual plans;
- Policy research, analysis and contribution to the policy formulation: Are there gaps in the policy? What are the obstacles to implementing the policy? Also it is necessary to support the policy with legislation;
- Constituency Education: This refers to creating awareness among members of the EA organizations and providing education on issues of environmental concern;
- Coalition Building, Networking: working together with similar interest groups;
- Lobbying: identifying policy gaps and lobbying policy makers and planners to fill the gaps;
- Media Relation: media plays a significant role in disseminating information, and there is a need to work with media people;
- Electronic Networking: Website, E-mail.

What is the current status of EA in Ethiopia?

There are a number of GOs and NGOs working towards EA in Ethiopia. The Environmental Policy of Ethiopia has identified 11 sectoral and 11 cross-sectoral environmental issues that should be addressed in order to bring about sustainable development. The GOs and NGOs implementing these sectoral and cross-sectoral issues have been indicated in the document "Institutional Responsibilities For the Implementation of the Environmental Policy of Ethiopia," compiled by Gedion Asfaw in 1998. The various organizations working on environmental management in Ethiopia are also mentioned in the

document “Environmental Management in Ethiopia: An Overview,” compiled by ECO-Consult in 1999.

I think it would be appropriate to inform readers that the idea that EA works with a clear aim of influencing the public and policy makers to bring a genuine sustainable development is still in its infancy in Ethiopia.

Of the infant environmental advocacy groups, I would like to share with you the experience of the **Forum for Environment**.

Establishment

The Forum for Environment was established in May 1997, immediately after the approval of the EPE. The EPE was approved by the Council of Ministers in April 1997. Over 100 people drawn from NGOs, GOs, the media, donors and others attended the founding meeting of the Forum.

Objective

The main objective of the Forum is to advocate the causes of the environment. The specifics of the objective are as follows:

- Organizing public meetings on topical environmental issues;
- Publishing an Environmental Magazine;
- Establishing a network of people and organizations working on the environment;
- Establishing Environmental Groups to work on pressing environmental issues.

Organizational Structure

The work of the Forum is coordinated by a 12-member steering committee drawn from GOs (EPB), NGOs, the scientific community and the donor community.

Legal Status

The forum is in the process of being legally registered with the Ministry of Justice.

Funding

The Forum gets its funding through financial support from the Royal Netherlands Embassy, the personal commitment of the Steering Committee members, and logistical support from ENDA and ISD.

Achievements

Over 3 years have elapsed since the Forum was established. Since then the following major activities were accomplished in order to achieve the objectives of the Forum.

A. Public Meetings on Environmental Issues:

1. EPE;
2. Sustainable Agriculture: Rhetoric or Reality;
3. Biodiversity;
4. Urban Waste Management and Urban Agriculture;
5. Sustainable Soils;
6. Climatic Changes;
7. Solar Water Disinfection;
8. Keeping Our Water Clean;
9. Environmental Impact Assessment: What Can It do?;
10. Pesticides and Alternatives in Ethiopia;
11. Participation and Development: Theory and Practice;
12. Growing Indigenous Trees: Prospects and Problems;
13. Environment and Religion.

B. Publishing and Distributing A Magazine on Environment and Development

The principal objectives of the magazine are two:

- to create awareness about, and provide greater knowledge on, environmental issues in Ethiopia and the ways and means to tackle them;
- to circulate information on the activities of the Forum and the environmental initiatives taken in the country.

The magazine is also used as a means of raising public issues in presentations and discussions at public meetings.

The magazine is published 3 times a year, mainly in Amharic, but with 2/3 of the articles in English. The main targets of the magazine are policy makers and planners, extension workers, community development workers, teachers and health workers.

So far four issues of the magazine have been published, with financial support obtained from the Royal Netherlands Embassy and the technical support offered by ENDA and ISD.

Thematic Issues Covered in the Magazine

Issue No. 1: covers topics on major environmental problems in Ethiopia, climatic changes, fuel wood consumption and environment.

Issue No. 2: Climatic Changes.

Issue No. 3: Conservation of Water Resources.

Issue No. 4: Conservation of Forest Resources.

C. Interest Groups

The interest groups, namely, Urban Waste and Urban Agriculture (UWUA) and Safe Environment Group (SEG), are now active. For example, SEG is currently organizing an awareness-creation workshop on the harmful impacts of obsolete pesticides in Ethiopia. As you might have heard, Ethiopia is heavily contaminated with obsolete pesticides - 1300-1500 tones of pesticides - and contaminated containers, buildings and soils in 420 different stores all over the country.

D. Networking

Networking currently involves only exchange of information among individuals on environmental issues. We hope this will be strengthened in the future when the Forum gets legal recognition.

E. Resource Center

Two institutions are putting together their documents on environment-related issues as an initial step towards the establishment of a resource center on environment

F. Public Debate On Critical Issues

Together with the Heinrich Boll Foundation's Regional Office for the Horn of Africa, the Forum organized a half-day public debate on Sustainable Energy. This event was organized to commemorate Earth Day 2000, which was also celebrated in over 180 countries with a variety of events.

What were the topics covered in the public debate?

More than a hundred participants took part in the debate, in which the following three papers were presented:

- “Environmental Impacts of Household Energy Use”
- “Promotional Strategy of Improved Stoves Dissemination: Approach of GTZ-HEPNR Project”
- “The Role of the Private Sector in Alternative Energy Supply for Household Use”

The public debate was accompanied by an exhibition aimed at demonstrating the available forms of alternative energy in Ethiopia - solar and wind Energy.

What should we do to make environmental advocacy in Ethiopia more efficient?

First of all we need a paradigm shift in our perception of the environment both at individual and organizational levels. We always tend to talk about the seriousness of environmental problems in Ethiopia, but most of the time we fail to be part of the solution to the problem. I think we need to stop thinking only about problems and play our respective roles to bring about solutions. A typical example is the problem of deforestation. We are all familiar with the fact that Ethiopia's forests are being depleted at an alarming rate. We also mention the seriousness of the problem in the project proposals we write and in workshops that we conduct. But when it comes to taking a practical action, such as, for example, planting trees in our surroundings or parks, only few of us are willing to do so.

We also have to think in terms of the ‘common good’ rather than individual interest. We should think of not only protecting our own

individual environment but protecting the wider environment that we share with others as well (whether local, regional, national or global).

We have to believe we can make a difference at an individual level; that is, we have to understand that ‘what-is-the-use?’ attitude is detrimental to change and, thus, to any advocacy work that might be carried out at higher levels.

In addition to the paradigm shift, there is also a need to:

- establish a strong networking among the various institutions working on the environment;
- conduct research to understand the root causes of environmental problems and to explore solutions to the problems;
- enhance the capacity of EA organizations so that they would involve themselves in:
 - Developing position papers on environmental issues;
 - Providing examples of good practices;
 - Pointing at cultural limitations;
 - Collaborating in legal issues, research and training.

Environment and Development in Ethiopia A Symposium

GHION HOTEL, Friday & Saturday 15-16 September 2000

Schedule

Friday 15 September

Morning Session

9:00 - 9:30	Registration
9:30 - 10:00	Welcoming Address Opening Address by: H. E. Ato Girma Birru Minister of Economic Development & Co-operation
10:00 - 10:20	Coffee Break
10:20 - 10:35	Biodiversity and Food Security in Ethiopia <i>Dr. Melaku Worede</i> <i>Distinguished Scientist &</i> <i>Biodiversity Specialist</i>
10:35 - 11:00	General Discussion
11:00 - 11:25	Assessment of Ethiopia's Environmental Policy <i>Ato Gideon Asfaw</i> <i>Conservation Strategy of</i> <i>Ethiopia</i>
11:25 - 11:50	Sustainable Development Indicators and Environmental Policy <i>Ato Getachew Adem, MEDAC</i>

11:25 - 12:35	General Discussion
12:35 - 1:45	Lunch
<i>Afternoon Session</i>	
1:45 - 2:10	Indigenous Conservation Practices <i>Ato Million Alemayehu</i> <i>North Shewa Zone Agricultural</i> <i>Office</i>
2:10 - 2:35	Gender and Environmental Management <i>Wzo. Bogalech Alemu</i> <i>Head of Women's Affairs</i> <i>Department, MoA</i>
2:35 - 3:20	General Discussion
3:20 - 3:40	Coffee Break
3:40 - 4:05	Who is Managing the Commons? <i>Dr. Eyasu Elias</i> <i>SOS-Sahel</i>
4:05 - 4:30	Collaborative Forest Management in Ethiopia <i>Mr. Ben Irwin</i> <i>SOS-Sahel</i>
4:30 - 5:15	General Discussion
5:30 -	RECEPTION
Saturday 16 September	
<i>Morning Session</i>	
9:00 - 9:25	Problems of Urban Environment <i>Amanuel Malifu</i> <i>Env. Protection Authority</i>

9:25 - 10:00

General Discussion

10:00 - 10:20

Coffee Break

10:20 - 10:45

NGOs & Natural Resource
Conservation

Ato Ginjo Giya

Addis Ababa University

10:45 - 11:10

Mass Communication and
Environmental Awareness

Ato Laeke Mariam Demessie

Environmental Journalist

11:10 - 11:35

Environmental Advocacy
Groups

12:30 - 1:30

Lunch

END OF SYMPOSIUM

Afternoon Session

1:30 - 2:30

FSS Business Session

Ermias Habte
FHIK
Addis Ababa, Ethiopia

Eshetu Bekele
Addis Ababa University
Addis Ababa, Ethiopia

Esubalew Zegeye
Press
Addis Ababa, Ethiopia

Etalem Mengistu
Consultant
Addis Ababa, Ethiopia

Eyasu Elias
Addis Ababa University
Addis Ababa, Ethiopia

Fanaye Amsalu
RLDS
Addis Ababa, Ethiopia

Fiona Flintan
WWF International
Addis Ababa, Ethiopia

Gabeyehu Kumsa
Eth. Educ. Consultants
Addis Ababa, Ethiopia

Gebru Mersha
Addis Ababa University
Addis Ababa, Ethiopia

Gedion Asfaw
SCSE/EPA
Addis Ababa, Ethiopia

Getachew Adem
MEDaC
Addis Ababa, Ethiopia

Ginjo Giya
Addis Ababa University
Addis Ababa, Ethiopia

Girma Birru
MEDaC
Addis Ababa, Ethiopia

Girma Hailu
UNDP
Addis Ababa, Ethiopia

Habtamu Mengistie
Addis Ababa University
Addis Ababa, Ethiopia

Habtamu Wondimu
Addis Ababa University
Addis Ababa, Ethiopia

Hanna Abate
MPO (Wmen's Aff.)
Addis Ababa, Ethiopia

Heinz Freyer
DED
Addis Ababa, Ethiopia

Ian Campbell
MEDaC
Addis Ababa, Ethiopia

Jemal Wabe
ETV
Addis Ababa, Ethiopia

Kassahun Berhanu
Addis Ababa University
Addis Ababa, Ethiopia

Kebbede Friesenbet
ETEC
Addis Ababa, Ethiopia

Kebede Asrat
CRDA
Addis Ababa, Ethiopia

Kesso Morke
Or. Agr.
Addis Ababa, Ethiopia

Kirubel Hailu
ISD
Addis Ababa, Ethiopia

Konjit Fekade
Forum for Social Studies
Addis Ababa, Ethiopia

Laeke Mariam Demessie
BBC/PANOS
Addis Ababa, Ethiopia

Medhin Zewdu
IBCR
Addis Ababa, Ethiopia

Meheret Ayenew
Addis Ababa University
Addis Ababa, Ethiopia

Melaku Tegegn
PANOS
Addis Ababa, Ethiopia

Melaku Worede
Private
Addis Ababa, Ethiopia

Melessaw Shanko
MGP, Ltd.
Addis Ababa, Ethiopia

Meron Berhane
Music, Youth & Env.
Addis Ababa, Ethiopia

Mezgebu Abegaz
EARO
Addis Ababa, Ethiopia

Million Alemayehu
Dept. of Agriculture
Northern Shewa Zone

Mogues Worku
Lem Ethiopia
Addis Ababa, Ethiopia

Original W. Giorgis
EWLA
Addis Ababa, Ethiopia

Osman Ali
Eth. Chamb. of Comm.
Addis Ababa, Ethiopia

Paulos Chanie
Addis Ababa University
Addis Ababa, Ethiopia

Regassa Feyisa
BDU
Addis Ababa, Ethiopia

Samuel Lijalem
CRDA
Addis Ababa, Ethiopia

Selamawit Wube
Eletawi Addis
Addis Ababa, Ethiopia

Senayit Seyoum
Private
Addis Ababa, Ethiopia

Seyoum Kebede
MEDaC
Addis Ababa, Ethiopia

Shiferaw Bekele
Addis Ababa University
Addis Ababa, Ethiopia

Shiferaw Jamo
FSS Board Member
Addis Ababa, Ethiopia

Solomon Abate
Agri Service
Addis Ababa, Ethiopia

Solomon Mulugeta
Addis Ababa University
Addis Ababa, Ethiopia

Somia Zekaria
CSA
Addis Ababa, Ethiopia

Tadesse Berissa
Addis Ababa University
Addis Ababa, Ethiopia

Tadesse Zenebe
Press
Addis Ababa, Ethiopia

Tafari Wossen
WAAG
Addis Ababa, Ethiopia

Tarekegn Ambelu
Press
Addis Ababa, Ethiopia

Tasew Lema
ETV
Addis Ababa, Ethiopia

Taye Belachew
AKPAC
Addis Ababa, Ethiopia

Tegegne G. Egziabher
Addis Ababa University
Addis Ababa, Ethiopia

Teketel Abebe
Addis Ababa University
Addis Ababa, Ethiopia

Tekka Gebru
UNICEF
Addis Ababa, Ethiopia

Teshome Tadesse
BOPED
SNNPR

Tewedaj Kebede
The Reporter
Addis Ababa, Ethiopia

Tewolde B. G. Egziabher
EPA
Addis Ababa, Ethiopia

Theodros Arega
ETV
Addis Ababa, Ethiopia

Workineh Kelbessa
Addis Ababa University
Addis Ababa, Ethiopia

Worku Ayele
EPU/MEDaC
Addis Ababa, Ethiopia

Worku Damena
EPA
Addis Ababa, Ethiopia

Yared Amare
Addis Ababa University
Addis Ababa, Ethiopia

Yeraswork Admassie
FSS/AAU
Addis Ababa, Ethiopia

Yigremew Adal
Addis Ababa University
Addis Ababa, Ethiopia

Yigzaw Ayalew
EPA
Addis Ababa, Ethiopia

Yirgalem Assegid
Farm Africa
Addis Ababa, Ethiopia

Yohannes Habtu
Forum for Social Studies
Addis Ababa, Ethiopia

Yohannes Ruphael
Addis Tribune
Addis Ababa, Ethiopia

Yonas Admassu
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Addis Ababa, Ethiopia

Zemedede Asfaw
Addis Ababa University
Addis Ababa, Ethiopia

Zemedu Worku
Forum for Social Studies
Addis Ababa, Ethiopia

Zenebe Woder
Press
Addis Ababa, Ethiopia

Zenebework Tadesse
Forum for Social Studies
Addis Ababa, Ethiopia

Zereai Fekede
Gasha Info.
Addis Ababa, Ethiopia

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Medrek (Quarterly since 1998. English and Amharic).

FSS Discussion Papers

- No. 1. *Water Resource Development in Ethiopia: Issues of Sustainability and Participation*. Dessalegn Rahmato. June 1999.
- No. 2. *The City of Addis Ababa: Policy Options for the Governance and Management of a City with Multiple Identity*. Meheret Ayenew. December 1999.
- No. 3. *Listening to the Poor: A Study Based on Selected Rural and Urban Sites in Ethiopia*. Aklilu Kidanu and Dessalegn Rahmato. May 2000.
- No. 4. *Small-Scale Irrigation and Household Food Security: A Case Study from Central Ethiopia*. Fuad Adem. February 2001.

FSS Monograph Series

- No. 1. *Survey of the Private Press in Ethiopia: 1991-1999*. Shimelis Bonsa. 2000.
- No. 2. *Environmental Change and State Policy in Ethiopia: Lessons from Past Experience*. Dessalegn Rahmato. 2001.

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1. *Issues in Rural Development. Proceedings of the Inaugural Workshop of the Forum for Social Studies, 18 September 1998*. Edited by Zenebework Tadesse. 2000.
2. *Development and Public Access to Information in Ethiopia*. Edited by Zenebework Tadesse. 2000.
3. *Environment and Development in Ethiopia*. Edited by Zenebework Tadesse. 2000.