

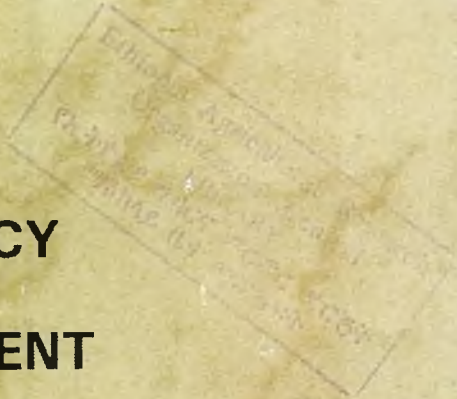
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FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA



THE CONSERVATION STRATEGY OF ETHIOPIA  
VOLUME II

FEDERAL POLICY  
ON  
THE ENVIRONMENT



Environmental Protection Authority  
in Collaboration with  
Ministry of Economic Development  
and Cooperation  
Addis Ababa  
April 1997



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## VOLUME II

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## PREFACE

The Environmental Policy of Ethiopia (EPE) was approved on 2 April 1997. This was the highest point in the rugged vista of events that happened during the implementation of the Conservation Strategy of Ethiopia (CSE) Project. This implementation started in 1989, and constantly adapted its workings to the fast folding and unfolding political panorama, including the bang and calm of the end of the civil war and its tortuous aftermaths. The unsettled situation at the time of the Project's implementation meant that its plans were often outdated by events. But it also meant that new opportunities for having its impact felt were always arising. This made it possible for the CSE to influence developments and try out some of its ideas whilst still being formulated.

In spite of the unsettled time, the CSE was formulated through a truly participatory process. Sample communities from all over the country generated ideas and facts used in the CSE policy and strategy formulation process. Technical, administrative, policy and decision making actors at all levels of government participated in formulating and reviewing the CSE documents. The regions have reviewed the CSE process and are currently formulating their respective conservation strategies. A national conference involving all the Ethiopian stakeholders that could be identified, and invited representatives of some neighbouring countries, international organizations in Ethiopia and some also from abroad, as well as embassies in Addis Ababa, reviewed the CSE documents.

It has been my privilege to lead the CSE Project right from the start of its implementation, and thus also the formulation of the EPE. It is my good fortune to be charged with overseeing the implementation of the EPE, using the other CSE documents as a means of doing so. I feel that we have made progress. This progress was possible because of the dedication of the many colleagues who worked with me. Space would not allow me to name them all.

Many institutions also played a critical role in implementing the CSE Project. I would like to mention, in particular, Ministries of Economic Development and Cooperation, what was Natural Resources Development and Environmental Protection, Agriculture and the World Conservation Union as personified by Mr. Peter Sutcliffe. The EPE would not have acquired its present level of relevance if the Regional Governments had not been very supportive of the implementation of the CSE Project.

Several governments and international organizations have helped financially in the implementation of the CSE Project, including the United Nations Sudano-Sahelian Organization (UNSO), Norway, the United Kingdom and Sweden.

The Ethiopian society is largely agrarian. Much of Ethiopia is threatened by serious degradation because the demand made on the land and the care given to it do not match. Ethiopia also has high potential for industrialization. It has already started to industrialize, and to be polluted. Industrialization and agriculture make great demands on the environment. These demands must be met without being allowed to destroy the environment.

Therefore, Implementing the EPE should make care for the environment match the demand put on it so that it stays functionally intact. If not, the EPE must be revised to enable this to happen. In fact, we must continually revise the EPE to ensure that there is no long lasting and damaging mismatch. Otherwise, there will be a mismatch also between our respective lives and our common life support system, and our lives will stop being possible.

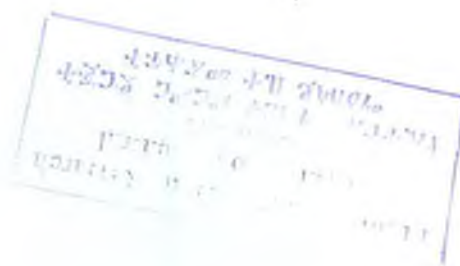
But we have to continue living; this is not negotiable. I, therefore, call upon my colleagues, my country women and my country men to identify their respective roles in making the EPE appropriate for life, and to faithfully play those roles and improve their, and every body's, chances of going on living a life that nature and physiology dictate.

Tewolde Berhan G. Egziabher  
General Manager  
Environmental Protection Authority  
and  
National Project Coordinator

## ACRONYMS

ADLI	Agricultural Development-Led Industrialization
CITES	Convention on International Trade in Endangered Species
CSE	Conservation Strategy of Ethiopia
EFAP	Ethiopian Forestry Action Programme
EIA	Environmental Impact Assessment
EPA	Environmental Protection Authority
EPC	Environmental Protection Council
EVDSA	Ethiopian Valleys Development Studies Authority
FDRE	Federal Democratic Republic of Ethiopia
GDP	Gross Domestic Product
GIS	Geographical Information System
GWH	Gigawatt-hours
IMF	International Monetary Fund
NGO	Non-Governmental Organization
NNI	Net National Income
NNP	Net National Product
PFP	Policy Framework Paper
SLUP	Strategic Land Use Planning
WID	Women in Development
MoWR	Ministry of Water Resources

NOTE: The word "national" in all CSE documents is retained where it pertains to previous policies which have used it in their titles. It has also been retained in cases where changing it will not reflect appropriate accepted usage - eg. "National Economy" or "National Accounting". In all other cases the word "national" has been deleted or replaced by the words "federal" or "country- wide".



## CHAPTER I

### INTRODUCTION AND BACKGROUND

#### 1.1 INTRODUCTION TO THE CONSERVATION STRATEGY OF ETHIOPIA

1. The Conservation Strategy of Ethiopia (CSE) takes a holistic view of natural, human-made and cultural resources, and their use and abuse. It seeks to integrate into a coherent whole existing and future federal and regional government planning in all sectors that impinge on the environment, including agriculture, forestry, wildlife, fisheries, soils, water, minerals, energy, urban planning and cultural heritage conservation.

2. A sound partnership has been sought between planners, decision makers and the Ethiopian people to manage Ethiopia's natural resources for the Ethiopian people and their children. Most sections, groups and classes of people have been consulted and have participated in the formulation of this strategy.

3. The policy-making phase encompassed broad ranging discussions and a full debate at both federal and regional levels in order to arrive at a consensus. The process was launched by the Government in May 1990 at a conference held in Addis Ababa. The conference provided an opportunity for issues to be considered at all levels. Representatives from every Government department attended, together with delegates from the business community, United Nations, and donor and NGO agencies. Experts from many fields provided their powers of analysis.

4. The conference was followed by the creation of task forces and regional workshops and a deeper analysis of the issues raised. The regional and zonal task forces took the action into the countryside through a series of field visits and grassroots level consultations. In this way regional and community needs and priorities have been effectively addressed.

5. The Conservation Strategy of Ethiopia will be implemented by the Government of Ethiopia through a coordinated investment programme. A complete review of legislation that may affect conservation is in progress. Laws will be modified or enacted to support the process of conservation without hindering development.



6. This is an umbrella strategy which considers all sectors of human activity and enhances the capacity and effectiveness of existing and subsequent strategies. In this respect, the CSE will play an important role in coordinating sectoral strategies.

7. The CSE recognizes the very low standard of living of the majority of the people of Ethiopia and thus their minimal ability to invest in activities that do not yield quick returns. It is, therefore, realistic and works towards enhancing their ability and will to invest in conservation.

## 1.2 INTEGRATING ENVIRONMENT WITH DEVELOPMENT

8. Development is essential for every country if it is to improve the quality of life and to satisfy the needs of each person. However, a short-term view can destroy the very long-term development a country sets out to achieve. But given the chronic poverty which pervades in Ethiopia and the urgent need to achieve rapid economic growth, does pursuing a sustainable environmental policy involve sacrificing economic growth and the alleviation of poverty?

9. Any country can maximize economic growth over a very short term by depleting non-renewable resources, by harvesting more than the sustainable yield of its renewable resources (e.g. forests) and by disposing of wastes into ecosystems that cannot assimilate them and thus by degrading its soil, aquatic, and atmospheric resources. However, basing economic growth on such a policy would be like building a house on shifting sand. Already the country's chronic poor live in the worst urban environments, occupy and work the marginally productive land, have least access to clean water and fuelwood, and are most at risk of starvation. Pursuing a policy of environmentally unsustainable economic growth would thus only exacerbate the living conditions of today's poor and bequeath to future generations an impaired natural resource base and an environment in which it would be impossible to live.

10. Therefore, given the high degree of dependence that Ethiopia has to place on its natural resources and environment in order to achieve economic and social development and regarding the magnitude of the processes of environmental degradation, there is a clear and urgent need to integrate environmental protection and sustainable natural resource management with development policies, strategies and their implementation. Environmental concerns cut across all sectors and levels of development and thus a policy framework for sustainable environmental management must be comprehensive

in scope and scale. This is not to say it becomes the "national economic development policy" but rather that it should provide a solid and firm foundation for ensuring that the country's economic and social development will be sustainable.

11. A sustainable development incorporates three necessary and complementary elements: environmental sustainability, social sustainability and economic sustainability. Development planning has hitherto mostly concentrated on economic systems, to a much smaller extent on social systems and hardly at all on environmental systems. Similarly environmental planning has mostly concentrated on environmental systems, to a much lesser extent on social systems and hardly at all on economic systems. These have resulted in the unsustainability of attempts at economic development and the economic untenability of efforts at environmental management carried out hitherto as well as virtual disregard of social development. The policy presented here seeks to integrate the three systems on an equal footing into a framework for sustainable development.

12. Agriculture has been identified as the lead growth sector in the country's Agricultural Development-Led Industrialization (ADLI) Strategy. This strategy depends on sustainable agricultural development. Sustainability in agricultural development depends on the sustainable development, use and management of the country's natural resources and environment. The strategies presented in this Policy are thus of vital importance in achieving a successful implementation of the national economic development strategy.

### **1.3 THE IMPACTS OF POPULATION, POVERTY, GOVERNMENT POLICIES AND THE LACK OF PEOPLES' EMPOWERMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL MANAGEMENT**

#### **1.3.1 Linkages and Relationships**

13. The detailed linkages between population and poverty, the role of government, the empowerment of people and the sustainability of management of natural resources and the environment are extremely complex. However, a number of discernible strands can be recognized. Poverty is characterized by a lack of access to resources and goods such as land and clean water for the satisfaction of basic needs, and to health and educational services. These linkages have quantitative and qualitative characteristics. Thus although a person has access to land it may be insufficient in extent and quality. Herein often lies the connection between unsustainable use and

management of natural resources and poverty, although the relationships are not absolute.

14. Poverty and access to basic resources have close and complex relationships with the degree of individual and community empowerment to use and manage those resources and the environment. This complex area of relationships includes such issues as the role of government in environmental management and the effectiveness of policy framework and the degree to which it actively intervenes in and regulates environmental management. Included in this complex set of issues are security of resource access and tenure rights, local democracy, resource management institutions and participatory development.

15. Finally, population growth in the context of increasingly scarce natural resources provides the destabilizing factor in the dynamics of resource use and management systems, access to resources and the satisfaction of basic needs and thus maintains or worsens poverty. Also involved are the spatial relationships between population, natural resource endowment and changing resource use and management systems.

### **1.3.2 Population and the Sustainability of Environmental Management**

16. The Ethiopian human and domestic animal population is growing fast and, given the low level of economic development of the country, the pressure exerted by this growing population is causing a serious depletion of the natural resources base. More information on the situation is given in section 3.1. It is worth recalling here, however, that this pressure is most intense in the highlands, which constitute only 43 per cent of the land area but accommodate about 90 per cent of the human and 80 per cent of the animal populations. This has resulted in the steady impoverishment of many farming families and, in some areas, in their more or less complete dependence on food aid.

17. Population growth rates in the pastoral lowlands are much lower than in the highlands. The long-term total livestock numbers probably oscillate above and below the ecological carrying capacity of the rangelands which, itself, oscillates above and below a mean. However, in these fragile environments frequent droughts, loss of vital grazing resources to rainfed and irrigated agriculture, war and civil conflict have combined with an increasing population to cause a reduction in livestock assets to well below subsistence requirements in many households. This has caused increasing numbers of marginalised pastoralists to take up precarious rainfed cropping to supplement

food supplies from dwindling livestock resources. In this ecologically fragile environment, rainfed cropping is causing soil erosion and increasingly sedentarized herds are causing both soil and pasture degradation.

### **1.3.3 Poverty and the Sustainability of Environmental Management**

18. In 1992, it was estimated that 8.7 million people needed relief assistance in Ethiopia. The situation has been compounded by the demobilization of more than 400,000 former soldiers with an estimated 800,000 dependents, and nearly 1.5 million refugees, returnees and internally displaced persons.

19. Ethiopia ranks as one of the poorest countries in the world with a per capita GDP of about US\$120 a year. A recent study on poverty in Ethiopia estimated that approximately 27 million people fall below the poverty line. Some 13 million rural people who are mainly subsistence farmers with very small farms or no farms at all constitute the major group of poor people. However, even in the urban areas the chronically poor are about 4 million (out of a total population of over 7 million). This all pervading poverty is exemplified by some of the worst social indicators in Africa. These are shown in Table 1.

### **1.3.4 Previous Government Involvement and Interventions in Natural Resources and Environmental Management**

20. In 1975, an economically *laissez faire* centralist imperial government was replaced by an even more centralist "command economy" military government. Between 1976 and 1985 it has been estimated that some 600,000 kms of soil and stone bunds were constructed on cropland and some 500,000 kms of terraces on hillsides, some 500 million tree seedlings were planted and about 80,000 hectares of hillsides closed for regeneration. Reafforestation was implemented on nine catchments in nine regions and peri-urban plantations were established in Addis Ababa, Nazareth, Dessie and Debre Birhan. The cutting down of trees by peasants was banned. However, despite these and other massive intervention and regulation by the past government in the economy as a whole and in environmental management in particular, natural resource and environmental degradation continued unabated. Those forced government interventions and their negative environmental impacts can be usefully grouped into three sets of "policy or government failures":

- a) Policy and regulatory interventions which had direct or indirect negative environmental impacts;

**Table 1** *Ethiopia: Basic Socio-Economic Indicators*

No.	Indicator / unit / year(s)	Ethiopia	LDC	SSA	ADC	World
1	GNP/Capita /US\$/ 1991	120	240	540	880	4160
2	GNP/Capita Growth Rate /1980-88/	-1.4	-0.8	-2.2	3.3	3.6
3	Food production /per capita/ 1991 /1979-1 = 100/	8.6	0.8	9.6	10.9	-
4	Daily calory supply as % of requirement 1988-90	71	92	92	118	113
5	Daily calory supply per capita 1988-90	1700	207	217	248	-
			0	0	0	
6	Gross domestic savings /as % of GDP/ 1991	0	2	12	25	23
7	Gross domestic investment /as % of GDP/ 1991	10	15	17	26	23
8	Population below poverty line /% total/ 1980-88	64	75	-	32	-
	- Rural	65	70	-	36	-
9	Population growth rate /1990-2000/	3.0	2.8	3.4	1.9	1.6
10	Dependency ratio 1990	94	90	97	69	64
11	Infant mortality per 1000 live births 1992	123	112	101	60	-
12	Life expectancy /years/ 1992	46.4	50.1	51.1	63.0	65.6
13	Health coverage /%/ 1985-91	46.0	54.0	59.0	81.0	-
14	Access to safe water /%/ 1988-91	28.0	45.0	46.0	70.0	-
15	Adult literacy /%/ 1992	50	46	51	69	-
16	Primary enrolment ratio 1986-88					
	- Male	46	46	75	110	109
	- Female	28	69	61	92	93
17	Primary & secondary enrolment ratio 1986-88	27	50	43	70	78
18	Debt service /% of exports of goods & services/ 1991	18.6	25.2	29.3	21.3	-
19	Total debt /as % of GDP/1991	53	81	101	40	-
20	Exports /as % of GDP/1991	5.0	11.0	26.0	21.0	16.0
21	Imports /as % of GDP 1991	17.0	22.0	22.0	24.0	17.0
22	Food import dependency ratio /%/					
	- 1969/71	1.1	-	6.5	6.7	
	- 1988/90	9.4	11.3	10.2	10.5	
23	Cereal imports 1991 /thousands Mt. tons/	802.0				
24	Food aid 1992 /US\$ millions/	217.8				

LDC = Least Developed Countries  
 SSA = Sub-Saharan Africa  
 ADC = All developing Countries

Source: UNDP, Human Development Report 1994, Oxford University Press.

- b) The failure to implement policies and regulations which would otherwise have had direct or indirect positive impacts;
- c) The lack of policies or regulations, the default producing negative environmental impacts.

21. Perhaps the most important policy and regulatory interventions in terms of their negative impacts on the environment were those impositions which increasingly and cumulatively eroded the rights of individuals and communities to use and manage their own resources.

22. For about a century prior to 1975, social, economic, and cultural constraints were put in place to ensure the subjugation of the peasantry and popular participation was not allowed beyond religious and ritual ceremonies. The impact of these on natural resources and the environment has been analyzed in Volume I.

23. *The creation of Peasant Associations in 1976* with the power to allocate and control their own resources created for the first time an agrarian structure which established local units of administration and self-determination. However, from 1977 onwards the central organs of the state increasingly assumed control of resource use and management, coopting the individuals in the peasant organizations into becoming mere executing agents of the centralized repressive state.

24. The semblance of continuing to be peasant organizations was however continued in the power to allocate and reallocate land. But even thus, the frequent reallocations of plots only institutionalized the insecurity of tenure that had been created by the feudal system and led increasingly to a perception by individual farmers of a complete alienation from their crop and grazing lands and particularly their produce including any trees planted on them. The consequences were that soil conservation structures were not constructed and those that had existed or were constructed by coercion were not maintained. Trees found or planted on communal lands were, though communally owned, divorced from community authority. The prohibition on cutting down trees made both the community and the individual loose interest in protecting them, and led them into becoming "open access" resources owned by nobody and to be "illicitly" cut down by anybody. Thus, because farmers and communities did not have any control over trees which they might plant, either they did not plant any at all, or when coerced to plant did not

maintain or care for them. In this way many community woodlots planted with great physical effort resulted in little gain.

25. State demarcation and management planning of forest land which often encompassed farming communities was undertaken with little or no participation of those communities. This, coupled with the inability of the government forestry agencies to effectively "police" all the protected forest lands, led forests to being increasingly encroached upon, and cleared and turned to farmland. Because this farmland was "illicitly" obtained, farmers perceived that they had even less security of tenure on it and consequently had no desire to invest in soil conservation work. Thus, ill defined tenure rights on the part of both the state and the farmers over forest land and the inability of the coercive state to enforce its own regulations led to the massive and often haphazard destruction of natural forests.

26. The lack of or the implementation of incorrect policies and their negative impact on natural resources was exemplified by the lack of appropriate pricing policies with respect to water and/or appropriate regulatory supervision over its use. Irrigation water used on the state farms in the middle Awash valley was never costed and poorly regulated, and led to excessive usage without proper drainage with eventual salinization of the land which was then either abandoned or rehabilitated with high additional investment.

27. In retrospect, a major common characteristic of the rural programmes and campaigns which were implemented between 1977 and 1991 is seen to have been their lack of sustainability. In particular, many of the programmes of villagization and the creation of producer cooperatives, physical soil conservation and community forestry have collapsed as a reaction to coercion. Between the fall of the Military Government and the consolidation of power by the Transitional Government the pent up feeling of resentment in the rural people was released resulting in much forest and wildlife destruction.

#### **1.4 CURRENT TRENDS IN THE USE AND MANAGEMENT OF NATURAL RESOURCES AND THE ENVIRONMENT IN THE CONTEXT OF THE NATIONAL ECONOMY**

##### **1.4.1 The Natural Resource Base**

28. Natural resources are the foundation of the economy. Smallholder peasant agriculture, in some areas including forestry, is the dominant sector accounting for about 45 per cent of the GDP, 85 per cent of exports and 80

per cent of total employment. Agriculture has also been the main source of the stagnation and variability in GDP growth caused in the main by policy failures and exacerbated by recurrent drought, civil war, natural resource degradation, and poor infrastructure.

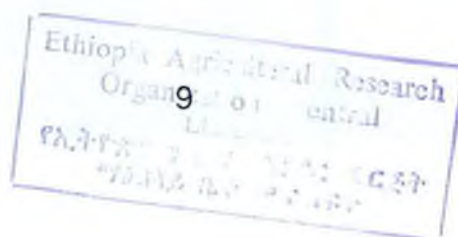
29. Renewable natural resources, i.e. land, water, forests and trees as well as other forms of biodiversity, which meet the basic needs for food, water, clothing and shelter have now deteriorated to a low level of productivity. In many areas of highland Ethiopia, the present consumption of wood is in excess of unaided natural sustainable production. Estimates of deforestation, which is mainly for expansion of rainfed agriculture, vary from 80,000 to 200,000 hectares per annum.

30. The burning of dung as fuel instead of using it as a soil conditioner is considered to cause a reduction in grain production by some 550,000 tonnes annually. In 1990, accelerated soil erosion caused a progressive annual loss in grain production estimated at about 40,000 tonnes, which unless arrested, will reach about 170,000 tonnes by 2010. Livestock play a number of vital roles in the rural and national economy but according to one estimate some 2 million hectares of pasture land will have been destroyed by soil erosion between 1985 and 1995. Land degradation is estimated to have resulted in an annual loss of livestock production in 1990 equivalent to 1.1 million tropical livestock units (TLUs), and, unless arrested, will rise to 2.0 million TLUs or to 10 per cent of the current national cattle herd by 2010.

31. In economic terms, soil erosion in 1990 was estimated to have cost (in 1985 prices) nearly Birr 40 million in lost agricultural production (i.e. crop and livestock) while the cost of burning dung and crop residues as fuel was nearly Birr 650 million. Thus in 1990 approximately 17 per cent of the potential agricultural GDP was lost because of physical and biological soil degradation.

32. The permanent loss in value of the country's soil resources caused by soil erosion in 1990 was estimated to be Birr 59 million. This is the amount by which the country's soil "capital" should be depreciated in the National Accounts or which should be deducted (as capital depreciation) from the country's Net National Income (NNI).

33. The Ethiopian Forestry Action Program (EFAP) estimated the full value of forest depletion in 1990 to have been about Birr 138 million or some 25 per cent of the potential forestry GDP of Birr 544 million.





34. Despite the presence of mineral resources in quantities and qualities suitable for exploitation, they currently contribute only about 2 per cent of the GDP.

35. Only 1 per cent of the potential of Ethiopia's vast water resources for irrigated agriculture and hydropower generation have been developed. The energy sector is one of the least developed in the world with 90 per cent of needs being met from biomass fuels, particularly wood, charcoal and animal dung. The genetic diversity of Ethiopia's domesticated plants and its unique flora and fauna is increasingly being eroded in the face of an expanding population and the needs of agriculture.

#### **1.4.2 The Urban Environment**

36. The current urban proportion of the population is relatively low at only 15 per cent although the annual rate of growth is 5.4 per cent and this rate is likely to rise to 30 per cent by the year 2020. There is a high proportion of female households headed by women in urban areas.

37. About 31 per cent of households in Addis Ababa have no sanitation facilities, while in other urban areas the proportion is about 48 per cent. The serious deficiencies in sanitation services and the lack of proper sewerage and random defecation in urban areas have created dangerous health and environmental problems. Rivers and streams in the vicinity of Addis Ababa and other large urban centres have become open sewers and are one of the main sources of infections resulting in diarrhoea and other diseases. Privacy for women is almost impossible as many latrines are shared among many people and even simple doors are often absent. The current stock of urban housing is both insufficient and of very poor quality.

#### **1.4.3 Natural and Cultural Heritage**

38. Ethiopia's rich natural and cultural heritage permeates every facet of daily life and provides a powerful and socially cohesive force in the national consciousness. It can also provide a major attraction for tourists and is an important element in the development of a tourist industry. However, much of this heritage and culture is under threat 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.

## 1.5 THE NEW ROLE OF GOVERNMENT IN ACHIEVING THE SUSTAINABILITY OF ENVIRONMENTAL MANAGEMENT

39. Any potential role for government in achieving sustainable environmental management by individuals, communities, private organizations and state agencies will have three distinct but overlapping and complementary dimensions:

- a) An enabling role
- b) An interventionist role
- c) A regulatory role

40. The role of the Transitional Government has been defined in the various macro policy and strategy documents which are described more fully below. Essentially the Government has as its major economic objective the transformation of the previous centrally planned economy to a market based one. In the context of the three dimensional conceptual framework outlined above this involves:

- a) An increased enabling role for government to ensure that the fundamental conditions exist for markets to function by:
  - i) Rectifying previous policy failures which have caused or exacerbated market failures which have in turn resulted in a lack of sustainable management of resources, and caused environmental damage and economic stagnation and even decline;
  - ii) Exercising a prudent macro-economic management and ensuring that other macro-policies do not have negative environmental impacts;
  - iii) Making available market information where this is lacking; and
  - iv) Reforming and/or establishing, as the case may be, legal frameworks and democratic institutional structures which provide clearly defined and secure natural resource access and tenure rights as well as a framework for constructive partnership, dialogue and negotiation between government on the one hand and resource users and developers on the other;

- b) A reduced interventionist role in direct economic and production activities except in investment in the development of key strategic resources (e.g. large-scale hydroelectricity generation, large-scale mining) and confining its other interventions to
  - i) Investment in the provision of "public goods" which the private sector would or could not otherwise provide such as infrastructure, education, training, credit, research, and technology development and extension; and
  - ii) Enhancement of the enabling environment through the use of specific policy instruments such as taxes and incentives as well as charging full user costs for previously "unpriced" resources (e.g. water, forests);
- c) As an adjunct to its reduced interventionist role, government will adopt a relatively minimal and cost effective monitoring, regulatory and, where all else fails, coercive role which is always within its capacity to enforce in order to minimize the perpetration of environmental damage and thus act as the country's "environmental guard".

41. Thus while the new primary economic role of government is to provide an enabling environment for a market economy it is recognised that there may be many cases where markets will fail in the allocation and efficient and sustainable use of natural resources and in care for the environment. These "market failures" provide, therefore, a rationale for government intervention.

42. But a "market failure" is a necessary condition not a sufficient one. The benefits of any government intervention or regulation should exceed the costs of its planning and implementation. As indicated above the previous centrally planned economy saw many examples of intervention where the costs to government greatly exceeded the benefits.

43. The new government structure takes power away from the centre to regions and localities. The relative roles of government at the different levels (Federal, Regional and Local) in terms of powers and duties, including on fiscal matters, have been defined by Proclamations 33 of 1992 and 41 of 1993, in part and 4 of 1995.

44. The duties and responsibilities of the Federal Government are to:

- a) Initiate policies, prepare plans and allocate budgets and implement the same;
- b) Ensure the enforcement of laws, regulations and directives of the Federal Government;
- c) Undertake studies and research, as well as collect and compile statistical data;
- d) Give assistance and advice to Regional States, and follow up the proper implementation of laws, regulations and directives by their executive organs; and
- e) Enter into contracts and international agreements in accordance with the law.

45. Duties and responsibilities of Regional States are to:

- a) Prepare and implement plans and allocate budgets;
- b) Ensure the implementation of laws, regulations and directives;
- c) Undertake studies and research, as well as collect and compile statistical data, and transmit same to concerned central executive organs;
- d) Enter into contracts in accordance with the law; and
- e) Submit periodic activity reports to concerned regional and federal executive organs.

## **1.6 THE NEW MACRO POLICY AND STRATEGY FRAMEWORK**

### **1.6.1 Ethiopia's Economic Policy during the Transitional Period**

46. In November 1991, the Government issued **Ethiopia's Economic Policy During the Transitional Period**. Its stated objectives are to establish peace and security as well as to reduce poverty by encouraging growth. The broad strategies that the policy advocates are:

The replacement of the previous centrally planned economy with a market-orientated one;  
A reduced role for the state sector;  
Popular participation in the development process;  
The promotion of private investment; and  
The mobilization of external resources.

Within these strategies, there are a number of policy elements of importance to The Conservation Strategy of Ethiopia.

47. **Rural Land Tenure:** The Policy recognizes two opposing views on the ownership of rural land: continuation under state ownership or changing to private ownership with the right to sell and exchange. Given the political and economic problems associated with the issue the question was taken to the debate on the new constitution. In December 1994, this constitution was approved. It retains land under the control of the people and government of Ethiopia thus prohibiting its buying and selling. But it ensures its usufructuary tenure rights and allows for leasing its usufructuary rights to or from others.

48. During the transition period there were no changes (except for three minor amendments) in the current policy of public ownership. This policy was originally established by **Proclamation 31 of 1975**. The last policy amendments to land tenure were made at the 11th Plenum of the Workers Party of Ethiopia in March 1990 and it must be assumed that these together with the three amendments in the Transitional Economic Policy define the current policy. The 1990 announcements confirmed the policy changes announced the previous year that all further new land allocations and plot re-allocations of existing holders should cease. All existing land use rights for peasant farmers were confirmed. Existing holders were permitted to transfer holdings by inheritance to legal heirs. Cooperatives were to be democratically based and commercial (i.e. private commercial) agriculture permitted. State control of grain marketing was abolished and farmers were permitted to sell their produce where and how they pleased. In order to implement the new policy a set of regulations and directives were issued by the Council of Ministers.

49. The Transitional Economic Policy confirms that there should be no reallocations of land except to the landless and that there should be no further fragmentation of holdings. Whilst preventing the sale or mortgage of land the policy upholds the rights of peasants to lease land, to pass it on to kin, to freely sell their produce, to hire labour, and to be compensated fully if expropriated. There are three new elements in the transitional policy: (i) permitting new land allocations to the landless, (ii) the right, which was not

openly expressed in the pronouncements of the 11th Plenum, to lease land in or out, and (iii) the right for existing land holders to be compensated fully if land is expropriated by the state. In practice allocation to the landless has largely been confined to demobilized soldiers, and returning refugees and settlers, and not to the landless already within the community. In some areas state farms have been formally handed over to their relevant Regional State Governments.

50. There have been a number of legal instruments issued with respect to the leasing of land, to water and to mineral exploitation.

51. **Proclamation 15 of 1992** (A Proclamation to Provide for the Encouragement, Expansion and Coordination of Investment) provides for investors to have access to sufficient land and water commensurate with their investment. The conditions of the use of the land and water are to be governed by lease agreements. The Proclamation provides for government incentives in the form of tax and other exemptions for investment in agriculture, natural resource development as well as protection and preservation, the construction and building industry, and rural transportation.

52. **Council of Ministers' Regulation 120 of 1993** provides for the issuance of licences for investors wishing to engage in agricultural activities. Agricultural activities include the production of annual and perennial crops, animal and fish resources, forests, wildlife and wildlife products. An investor must first obtain land on a lease agreement entered into with the Regional State Government and no land will be given in a manner prejudicial to the rights and interests of peasants. The Investor will also have to provide a feasibility study which should include "conditions regarding environmental protection".

53. **The Mining Proclamation 52 of 1993** provides for state ownership of all mineral resources and sets out responsibilities for ensuring the conservation and development of mineral resources. The Proclamation sets out the conditions for licences for prospecting, exploration and development, and distinguishes between artisanal mining (of a non-mechanized nature), and small-scale and large-scale mining the difference between the latter two to be defined later under Mining Regulations. The Proclamation sets out the different ways in which prospecting, exploration and development licences and discovery certificates may or may not be transferred.

54. **Development of Agriculture:** The Policy confirms a reorientation of government support away from state farms to peasant agriculture, in particular for the construction of rural infrastructure (roads, etc.), the expanded

distribution of inputs and the provision of extension services. The policy also indicates a significant increase in Government support to the previously neglected "areas with special problems": Previous Government policy had been to focus support almost exclusively on "surplus producing weredas". Included in the areas with special problems are the lowland pastoral areas.

55. The role of the state farms will be reduced and that of private modern farms expanded on "open and fertile lands" made available on a concessionary basis provided that no existing peasant, pastoral or shifting cultivators will be evicted or their interests affected adversely (see Ministers' Regulation 120 of 1993).

56. **Conservation and Development of Natural Resources:** The Policy gives priority to the conservation and development of natural resources. Priority will be given to the conservation and development of forestry, soil, water, and livestock resources. Policies will also be issued with respect to public participation in forestry development and conservation land use, wildlife preservation, soil and water conservation, and the proper use and development of livestock. Participation of peasant farmers will be a key element of all these policies.

57. **Resettlement and Villagization:** Although recognizing the problems associated with previous resettlement programmes the Transitional Policy acknowledges that voluntary resettlement where it does not create conflict with local populations will be required to assist in relieving shortages of land and high population densities. However no programmes will be instituted during the transitional period. Where settlers on current schemes wish to return to their original areas they will be assisted. For those who wish to remain efforts will be made to promote goodwill between the settlers and the local peoples and to enhance their self-reliance.

58. No further villagization programmes will be instituted unless based on the free will of the people and only when the necessary infrastructure is in place.

### **1.6.2 Policy Framework Paper**

59. In September 1992 the Government presented its **Policy Framework Paper 1992/1993-1994/95 (PFP)** to the IMF and the World Bank as a major step in implementing its economic policy. The Policy will be implemented in three overlapping phases: stabilization, structural reform and further structural reform.

60. It comprises a new macro-economic package which includes the devaluation of the Birr, improved incentives for the agricultural sector to produce and export a surplus, and the promotion of sustained growth of the economy. The PFP includes the formulation of a **Conservation Strategy** in its package of policies and strategies for structural adjustment.

61. Of the 18 policy areas covered in the Policy Framework Paper, eight are dealt with directly or indirectly by the Federal Policy on Natural Resources and the Environment. The linkages are shown in Table 2.

Table 2. *Policy framework and its linkages with CSE*

PFP Policy Area	Related CSE Sectoral and Cross-sectoral Programmes
a) <b>Sectoral Programmes</b>	
Environment	Improved Land Husbandry, Forestry, Biodiversity, Environmental Education
Agriculture	Sustainable Agriculture, Improved Land Husbandry, Forestry, Rangelands Management
Water Supply & Sewerage	Water Resources Development, Urban Environment
Mining	Mineral Resources Development
Energy	Energy Development
b) <b>Cross-Sectoral Programmes</b>	
Human Resource Development:	
- Education	Environmental Education
- Population	Population and Resources
Investment Policy and Industry	Mineral Development, Energy Development, Environmental Economics
Pricing and Distribution	Water Supplies, Minerals, Energy, Forest Industries, Environmental Economics

### 1.6.3 The Long-Term Strategy of Economic Development for Ethiopia

62. **The Overall Strategy:** The country's long-term economic development strategy is termed **Agricultural Development-Led Industrialization (ADLI)** and has been formulated within the framework of the Transitional Economic Policy. The goal of this strategy is to achieve rapid and sustainable economic growth by improving the productivity of the agricultural sector and building up an agriculturally based industrial sector which is labour-intensive and utilizes local raw materials.



63. The export of firstly agricultural, but increasingly mineral products, will be the main initiators of growth, which will in turn provide the means for a self-generating process of interdependent agricultural and industrial development. The strategy thus has two layers: "an outer crust of export led growth and an inner core of ADLI".

64. **The Agricultural Development Strategy:** The ADLI strategy focuses primarily on agricultural development to be attained through improved productivity of peasant agriculture and the establishment of large-scale private commercial agriculture, particularly in the lowlands.

65. Peasant agriculture is envisaged to develop in three stages with stages 1 and 2 taking place in the short to medium-terms. Stage 1 involves the improvement of existing crop and land husbandry practices and techniques. Stage 2 consists of the development of agricultural infrastructure such as small-scale irrigation and the introduction of fertilizers and agrochemicals.

66. Stage 3 is a long-term strategy which envisages increasing farm sizes which will occur as the population moves out of agriculture to non-agricultural activities. The strategy sees that the sustainability of agriculture in the long-term can only be realized by sufficient industrial employment generation so as to absorb a rural population which is no longer able to enter into, or is moving out of, agriculture.

67. **The Industrial Development Strategy:** The industrial development strategy relies predominantly on an expansion of the manufacturing sector directed primarily at the domestic market, using labour-intensive technology and, as much as possible, domestically available raw materials. According to the ADLI strategy, people in the agricultural sector will become a major market for domestically produced consumer goods. Manufacture of goods for export will play a relatively minor role in the industrial development strategy.

#### **1.6.4 The National Population Policy**

68. The **National Population Policy** was issued in April 1993. The policy has the following general objectives:

- a) Closing the gap between high population growth and low economic productivity through a planned reduction of population growth combined with an increase in economic returns;

- b) Expediting economic and social development processes through holistic and integrated development programmes designed to expedite the structural differentiation of the economy and employment;
- c) Reducing the rate of urban migration;
- d) Raising the economic and social status of women by freeing them from the restrictions and drudgeries of traditional life and making it possible for them to participate productively in the community at large; and
- e) Significantly improving the social and economic status of all vulnerable groups (women, youth, children and the elderly).

69. Specific objectives of relevance to the CSE are:

- a) Making population and economic growths compatible and thus the over-exploitation of natural resources unnecessary;
- b) Ensuring spatially balanced population distribution patterns with a view to maintaining environmental security and extending the scope of development activities;
- c) Improving productivity in agriculture and introducing off-farm non agricultural activities for the purpose of employment diversification;
- d) Mounting an effective country-wide population information and education programme addressing issues pertaining to the small family size and its relationship with human welfare and environmental security; and
- e) Maintaining and improving the carrying capacity of the environment by taking appropriate environmental protection and conservation measures.

#### 1.6.5 The National Policy on Women

70. The **National Policy on Ethiopian Women** was issued in March 1993 and has the following objectives:

- a) To ensure and respect women's rights to equality in every aspect of life;
- b) To create an environment which will enable women to equally initiate ideas and participate in the formulation and implementation of development and economic plans;
- c) To eliminate, step by step, centuries old gender based discriminatory attitudes and practices towards women; and
- d) To ensure the supply of basic services necessary for women as well as for the overall development of society.

71. The policy stresses three major objectives which must be part of all other policies, plans or laws:

- a) Laws, regulations, systems, policies and development plans that are issued by the Government shall ensure the equality of men and women. Special emphasis shall be given to the participation of rural women;
- b) Economic, social and political policies, programmes and activities shall ensure the equal access of men and women to the country's resources and in the decision making process so that they can benefit fully from all activities carried out by central and regional institutions; and
- c) Development institutions, programmes and projects shall ensure women's access to and involvement in all interventions and activities.

#### **1.6.6 The Constitution**

72. The Constitution was approved by the Constituent Assembly in December 1994. It reaffirms all the developments which have so far been considered in this volume as positive for the environment. Among others, it addresses the following:

- a) Maintains land under the ownership of the Ethiopian people and government but protects security of usufructuary tenure;

**CHAPTER II**

**THE FEDERAL POLICY**  
**ON**  
**NATURAL RESOURCES AND THE ENVIRONMENT**

**2.1 SITUATION SYNOPSIS**

75. The Government of the Federal Democratic Republic of Ethiopia (FDRE) has established a macro-economic policy and strategy framework. Sectoral development policies and strategies have been, or are currently being, formulated. Environmental sustainability is recognized in the constitution and in the national economic policy and strategy as a key prerequisite for success. However, there is as yet no overall comprehensive cross-sectoral and sectoral policy framework on natural resources and the environment to detail these broad directions and guide the sustainable development, use and management of the natural resources and the environment. Therefore, given the current stage of the country's political and policy development, the time is most opportune for developing a comprehensive environmental policy on natural resources and the environment.

**2.2 THE OVERALL POLICY GOAL**

76. 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 generations to meet their own needs.

**2.3 SPECIFIC POLICY OBJECTIVES**

77. The policy seeks to:

- a) Ensure that essential ecological processes and life support systems are sustained, biological diversity is preserved and renewable natural resources are used in such a way that their regenerative and productive capabilities are maintained and where possible enhanced so that the satisfaction of the needs of future generations is not compromised; where this capability is already impaired to seek through appropriate interventions a restoration of that capability;

- b) Ensure that the benefits from the exploitation of non-renewable resources are extended as far into the future as can be managed, and minimize the negative impacts of their exploitation on the use and management of other natural resources and the environment;
- c) Identify and develop natural resources that are currently under-utilized by finding new technologies, and/or intensifying existing uses;
- d) Incorporate the full economic, social and environmental costs and *benefits of natural resource development into the planning, implementation and accounting processes* by a comprehensive valuation of the environment and the services it provides, and by considering the social and environmental costs and benefits which can not currently be measured in monetary terms;
- e) Improve the environment of human settlements to satisfy the physical, social, economic, cultural and other needs of their inhabitants on a sustainable basis;
- f) Prevent the pollution of land, air and water in the most cost-effective way so that the cost of effective preventive intervention would not exceed the benefits;
- g) Conserve, develop, sustainably manage and support Ethiopia's rich and diverse cultural heritage;
- h) Ensure the empowerment and participation of the people and their organizations at all levels in environmental management activities; and
- i) Raise public awareness and promote understanding of the essential linkages between environment and development.

## 2.4 THE KEY GUIDING PRINCIPLES

78. Underlying these broad policy objectives are a number of key principles. Establishing and clearly defining these guiding principles is very important as they will shape all subsequent policy, strategy and programme formulations and their implementation. Sectoral and cross-sectoral policies and environmental elements of other macro policies will be checked against these principles to ensure consistency.

### 79. The Key Guiding Principles are:

- a) Every person has the right to live in a healthy environment;

- b) Reinforces the devolution of power and local participation in planning, development and decision taking;
- c) Ensures the equality of women with men;
- d) Ensures the appropriate management as well as the protection of the well-being of the environment; and
- e) Maintains an open economic policy.

### **1.6.7 The Federal Democratic Republic of Ethiopia (FDRE)**

73. On August 18, 1995 the Transitional Government of Ethiopia tenure came to an end and on August 21, 1995 state power was transferred to the first elected government, which formally established the Federal Democratic Republic of Ethiopia (FDRE).

The FDRE comprises of the Federal State and the Regional State members. The Federal State and Regional States have legislative, executive and judicial powers. The parliamentary system of government has two councils, the Council of Peoples Representatives and the Council of Federations.

The Council of Peoples Representatives, which is the highest legislative body in the Federation, has 550 seats of which 20 are reserved for the representation of minority nationalities. The Council of Federation is mandated to interpret the constitution and deal with issues related to constitutional matters. Each nation, nationalities and peoples in the country are represented by at least one deputy in the council with an additional one deputy for every one million population.

The President of the Republic, with a six year term of office, was elected by the *joint session of the Council of Peoples Representatives and the Council of Federations*. The Prime Minister, who is the Chairman of the Council of Ministers and Commander-in-Chief of the armed forces, was elected for a five year term. The Council of Ministers, which is composed of 14 Ministers, a Deputy Prime Minister who is also a Defence Minister, another Deputy Prime Minister and a Director of the Administration of Federal Revenue, took office on August 25, 1995.

The Federal Democratic Republic of Ethiopia has nine Member States, which are: Tigray, Afar, Amara, Oromiya, Somali, Benshangul/Gumuz/, Southern Nations, Nationalities and Peoples, Gambela Peoples, and Harari Peoples.

The Addis Ababa Administration is responsible to the Federal Government.

## **1.7 THE FORMAT OF THE FEDERAL POLICY ON NATURAL RESOURCES AND THE ENVIRONMENT**

74. This policy document comprises three main sections:

- a) Overall policy goals and objectives and a number of key guiding principles;
- b) Cross-sectoral policy objectives, principles and strategies; and
- c) Sectoral policy objectives, principles and strategies.

Within the last two sections, each cross-sectoral or sectoral area is presented as a logical sequence flowing from a "Situation Synopsis" which leads to a "Policy Objective". This leads to a set of "Guiding Principles" from which logically follows a set of "Strategies" for implementation. The strategies lead logically to a set of Prioritized Actions in Volume IV with a corresponding set of Investment Programmes, Components and Elements in Volume V.

- b) 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 the environment;
- c) The development, use and management of renewable resources shall be based on sustainability;
- d) The use of non-renewable resources shall be minimized and where possible their availability extended (e.g. through recycling);
- e) Appropriate and affordable technologies which use renewable and non-renewable resources efficiently shall be adopted, adapted, developed and disseminated;
- f) 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;
- g) Full environmental and social costs (or benefits foregone or lost) that may result through damage to resources or the environment as a result of degradation or pollution shall be incorporated into public and private sector planning and accounting, and decisions shall be based on minimizing and covering these costs;
- h) Market failures with regard to the pricing of natural, human-made and cultural resources, and failures in regulatory measures shall be corrected through the assessment and establishment of user fees, taxes, tax reductions or incentives;
- i) Conditions shall be created that will support community and individual resource users to sustainably manage their own environment and resources;
- j) As key actors in natural resource use and management, women shall be treated equally with men and empowered to be totally



involved in policy, programme and project design, decision making and implementation;

- k) 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;
- l) Social equity shall be assured particularly in resource use;
- m) Regular and accurate assessment and monitoring of environmental conditions shall be undertaken and the information widely disseminated within the population;
- n) Increased awareness and understanding of environmental and resource issues shall be promoted by policy makers, government officials and by the population, and the adoption of a "conservation culture" in environmental matters among all levels of society shall be encouraged;
- o) Local, regional and international environmental interdependence shall be recognized;
- p) Natural resource and environmental management activities should be integrated laterally across all sectors and vertically among all levels of organization;
- q) Species and their variants have the right to continue existing, and are, or may be, useful now and/or for generations to come;
- r) The wealth of crop and domestic animal as well as micro-organism and wild plant and animal germplasm is an invaluable and inalienable asset that shall be cared for; and
- s) The integrated implementation of cross-sectoral and sectoral federal, regional and local policies and strategies shall be seen as a prerequisite to achieving the objectives of this Policy on Natural Resources and the Environment.

## CHAPTER III

### CROSS-SECTORAL POLICY OBJECTIVES, PRINCIPLES AND STRATEGIES

80. The integration of all sectors into a coherent and consistent system of planning, management and sustainable utilization of natural resources which also enables the safeguarding of the environment is a prerequisite for sustainable economic development. To accomplish this, policies are needed which address cross-sectoral environmental management issues. The following cross-sectoral policies are prioritized based on two criteria:

- a) The seriousness or urgency of the problem the policy is to address; and
- b) The potential contributions of the policy to the economy and social well-being of the people and the integrity of the environment.

81. Strategies are presented in the order of their priority for action. Often a strategy formulated in the context of a sectoral or cross-sectoral issue will have an impact on other sectoral or cross-sectoral issues. To avoid repetition of statements, such strategies are cross-referenced in the document.

#### 3.1 POPULATION GROWTH AND DISTRIBUTION, AND ITS IMPACT ON NATURAL RESOURCES

*Cross-References: 3.5, 3.11, 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, and 4.8.*

82. **Situation Synopsis:** The 1993 estimated population of 53.6 million is increasing at an annual rate of 3.1 per cent. If current trends in fertility continue then the population can be expected to grow at a rate of 3.6 per cent during the second decade of the next century.

83. In terms of spatial distribution some 88 per cent of the population live in the highlands which constitute only 43 per cent of the country's land area.

84. At current rates of population growth and existing levels of agricultural technology, the Ethiopian Master Land Use Plan estimated that by the year 2010 three quarters of the pre-1987 awrajas will be unable to meet their

subsistence food needs. Another population–resource analysis estimated that a livestock crisis will occur when all potential grazing land will be fully utilized in 2004 and a cropland crisis by 2017 when all potential cropland will be utilized. These estimates do not take into account declining resource productivity caused by land degradation and deforestation caused in turn by the ever increasing pressure on the natural resource base.

85. In 1993, the Transitional Government published its National Population Policy which aims at harmonizing the interrelationships between population dynamics and other development factors through a planned reduction of population growth. Of importance to the Federal Policy on Natural Resources and the Environment is the objective of maintaining and improving the carrying capacity of the environment by taking appropriate protection, improvement and conservation measures. There is, therefore, a direct linkage between the National Population Policy and the Federal Policy on Natural Resources and the Environment.

86. **Objective:** To maintain and improve the human carrying capacity of the environment by managing population growth and distribution in such a way as to match people and resources in a manner which is environmentally sound, economically sustainable, both economically and biologically productive as well as socially and culturally acceptable.

87. **The Guiding Principles are:**

- a) As there is a great deal of empirical evidence which indicates that fertility rates decline as women's level of education rises, young women shall be given greater access to education and literacy programmes;
- b) To achieve a sustainability of life styles, population planning, resources management and rehabilitation of and care for the environment shall be integrated;
- c) To tackle simultaneously the issues of poverty, health, education and empowerment as these are interlinked with those of population growth, availability and access to resources and the well-being of the environment;
- d) The decisive role of women in managing population growth and in looking after the environment and their right to equal opportunities

and responsibilities with men shall be recognized in all planning, implementation and management activities;

- e) Since virtually all values and the discipline of work are established during childhood, the education and care of children shall be given due attention, especially in the context of development and the sustainable use of natural resources; and
- f) Voluntary migration and resettlement, where it does not create conflict with local populations, will be required to assist in reducing population pressure and relieving shortages of land, but these should be on an entirely voluntary basis, the role of government being that of facilitating the provision of basic infrastructure, social services and technical support.

**88. The Strategies are to:**

- a) Increase access to family planning and maternal and child health care programmes, targeting both men and women in order to lower the population growth rate to make it compatible with economic growth and to relieve pressure on natural resources and social services;
- b) Complete the empowerment of women especially to enable their full participation in population and environmental decision making, resource ownership and management;
- c) Integrate population concerns into all programme and project planning and implementation;
- d) Give a high priority to raising the status of women by increasing female participation in the education system at all levels;
- e) Give high priority to the welfare and education of children, especially to the inculcation of the values required for hard work and the sustainable use of natural resources, as well as for the appreciation of the need for a balance between population and the economy;
- f) Promote off-farm income generating programmes which aim at the alleviation of poverty, especially amongst women and the landless;

- g) Undertake a comprehensive and country-wide assessment of the human carrying capacity of the natural resources and the environment to identify potential areas for voluntary resettlement;
- h) Integrate federal, regional and local population plans with the strategies for sustainable development of natural resources for increased agricultural production specified in the sectoral policy areas of 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, and 4.7 as found in Chapter IV of this Federal Policy on Natural Resources and the Environment.

### **3.2 PEOPLES' PARTICIPATION IN SUSTAINABLE DEVELOPMENT AND MANAGEMENT OF NATURAL, HUMAN MADE AND CULTURAL RESOURCES AND THE ENVIRONMENT**

*Cross-References: 3.5, 3.6, 3.9, 3.10, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 4.10, 4.11, and 4.12.*

89. **Situation Synopsis:** During the long history of the feudal system, social, economic and cultural constraints were put in place to ensure the subjugation of the peasantry and popular participation was not allowed beyond religious and ritual ceremonies. The creation of Peasant Associations in 1976 with the power to allocate and control their own resources created an agrarian structure which established local units of administration and local empowerment.

90. However, from 1977 onwards the central organs of the state increasingly assumed control of resource use and management. Policies which were formulated and implemented from the centre such as collectivization, villagization, resettlement, state controlled grain marketing and set quotas, campaigns for reforestation and soil conservation, and prohibitions on tree cutting all combined to usurp local control by communities and individual farmers over the use and management of their resources.

91. During the destabilization, preceding and during the collapse of the outgoing Military Government, and the interim, while stability was established following the incoming Transitional Government, the rural population had an opportunity to take matters to its own hands to express its resentment of the past repression.

92. Now some genuine popular participation is taking place and the scene seems set for consolidating it. However, the previous coercive soil conser-

vation and community forestry campaigns have left a legacy of mistrust on the part of farmers towards outside "assistance" which will have to be overcome in supporting any new participatory initiatives.

93. **Objectives:** To ensure sustainability by empowering and supporting natural resources users at all levels to be in charge of their own development efforts and thus to develop, use and manage their natural, human-made and cultural resources responsibly.

94. **The Guiding Principles are:**

- a) Effective peoples' participation depends on free and open communication among local communities, resource management professionals and government decision makers;
- b) Effective participation involves a genuine joint effort to set resource management priorities and to resolve resource use conflicts;
- c) Effective participation requires a clear definition of the distinct decision making powers and responsibilities of local communities, resource management professionals and government institutions;
- d) The local management of resources maximizes access to relevant specific knowledge and to user concern and responsibility;
- e) All phases of environmental and resource development and management, from project conception to planning and implementation to monitoring and evaluation shall be undertaken based on the decisions of the resource users and managers;
- f) Resources users and managers shall be assisted in identifying and mobilizing existing and new resources to implement decisions emanating from the diagnostic and design process led by themselves;
- g) To minimize needs for new resources and to maximize harmonization, existing community and local institutional mechanisms shall be used and built upon wherever possible; and
- h) Local indigenous knowledge shall be identified, evaluated, used and/or further developed and used wherever possible.

95. The Strategies are to:

- a) Develop the necessary legislation, training and financial support to empower local communities so that they may acquire the ability to prevent the manipulated imposition of external decisions in the name of participation, and to ensure genuine grassroots decisions in resources and environmental management.
- b) Authorize all levels of organization to raise funds locally from the use of natural resources to fund the development, management and sustainable use of those resources;
- c) Greatly increase the number of women extension agents in the field of natural resource and environmental management;
- d) Ensure that Development Agents, especially those working in areas occupied by disadvantaged minorities and communities with distinctive life styles are drawn from among them;
- e) Design programmes that involve and benefit the most disadvantaged groups, particularly women, children, the disabled and the landless;
- f) Reorient management professionals employed in natural resource and environmental extension programmes to embrace participatory development, and strengthen their communication skills so as to more effectively disseminate both the results of scientific research and the practical experience of local farmers;
- g) Develop effective methods of popular participation in the planning and implementation of environmental and resource use and management projects and programmes; and
- h) Ensure information flow among all levels of organization including the Federal and Regional States and the people at the grassroots level by developing a two way mechanism for data collection and dissemination.

### 3.3 RURAL LAND AND NATURAL RESOURCE TENURE AND ACCESS RIGHTS

*Cross-References: 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, 4.9, 4.12, and 5.2.*

96. **Situation Synopsis:** The Land Reform of 1975 which gave "land to the tiller" was instrumental in providing security of tenure to existing land users, bringing an end to grain, labour and other contributions to landlords in southern Ethiopia and to the constant litigation in the northern "rist" areas. However, the agrarian policies from 1977 onwards and the frequent reallocations of land increasingly combined to give the land users strong feelings of insecurity of land tenure. The resolutions of the 11th Plenum of the Workers Party of Ethiopia in March 1990 revoked most of these agrarian policies. Further land allocations were stopped although in some areas, where discredited Peasant Association committees were unable to prevent it, considerable areas of communal land were ploughed up by individuals who were either landless or took the chance to acquire more land.

97. The old practice of considering woody plants open property resources for the taking by anyone has so far made it impossible for peasants to plant trees outside their own home compounds, and for the state to look after the trees planted by the coerced peasants. This has reduced security of tree tenure and caused the deforestation of the country.

98. Since March 1990, no further actions have been taken with respect to rural land tenure. The policy of the Transitional Government with respect to rural land tenure has been to defer any new decisions to be made by the constitution. However, judging by the views being expressed by political parties and farming communities it became clear that security of tenure was assured. This promise of security of tenure encouraged a country-wide spate of tree planting.

99. In December 1994, the new constitution was approved. It retains land under the control of the people and government of Ethiopia thus prohibiting its buying and selling. But it ensures its usufructuary tenure rights and allows for leasing of its usufructuary rights to or from others.

100. **Objective:** To provide security of tenure for land and natural resource users by clearly defining and strengthening land and other natural resource tenure rights and responsibilities so as to support sustainable agricultural, pastoral, forestry and fisheries production and a sustainable urban environment.



**101. The Guiding Principles are:**

- a) When taking decisions to recognize that the constitution now ensures that the user of land has the right to a secure and uninterrupted access to it and to renewable natural resources on it (e.g. trees, water, wildlife and grazing);
- b) To recognize and protect wherever possible the customary rights of access to and use of land and natural resource which are constitutionally acceptable, socially equitable and are preferred by local communities.
- c) Where constitutionally acceptable and socially equitable traditional community institutions for resource management exist and are preferred by local communities then these shall be legally empowered to regulate the use and management of natural resource in their areas; and
- d) Any proposed alienation of legally held individual or communal rights by the state shall be subject to judicial review.

**102. The Strategies are to:**

- a) Undertake as a matter of urgency studies, consultations and discussions into existing and potential mechanisms for providing security of access to and tenure of natural resources;
- b) Study the experience of other countries with similar socio-economic conditions with respect to the institutional structures, legal systems and any other interventions for the cost-effective administration of land tenure systems; and
- c) Undertake a country-wide survey of the major categories of existing land users and uses as a basis for formulating Federal and Regional Strategic Land Use Plans, e.g. in smallholder agriculture, in communal lands of pastoralists, among agro-pastoralists and shifting cultivators, in land under different government ministries, in designated state forests, parks and other protected areas, in designated urban areas, etc.

### 3.4 A FEDERAL LAND RESOURCE USE POLICY AND STRATEGIC PHYSICAL LAND USE PLANNING

*Cross-References: 3.3, 4.1, 4.2, 4.3, 4.4, 4.5, 4.9, and 4.12.*

103. **Situation Synopsis:** Hitherto land development has not occurred within a medium to long-term strategic planning framework. In the state sector this has often resulted in uncoordinated land development with conflicts among the objectives of various state sector agencies. For example, soda extraction from Lake Abijata is in direct conflict with the conservation objectives of the Abijata-Shala Lakes Park, while the Bebekka State Coffee Farm was developed in one of the Priority State Forest Areas.

104. There have been state sector land developments undertaken with little or no consideration for or participation of existing peasant or pastoral sector users and their land use systems. Examples of these include the delineation of Parks in areas used by pastoralists and agro-pastoralists, development of large state fuelwood plantations in areas of mixed smallholder agriculture, large-scale irrigation schemes in vital pastoralist dry season grazing areas, the alienation of large areas of smallholder agriculture for state farms, and the establishment of resettlement schemes in areas unsuitable for rainfed agriculture.

105. There has been uncontrolled expansion of smallholder agriculture into areas either used by pastoralists for wet season grazing or by the state for the conservation of natural forest or of wildlife. Examples include the expansion of rainfed agriculture into the grazing areas of the Afar in South and North Wollo Zones and into those of the Somali Pastoralists in western and southern areas of Jigjiga Zone; the expansion of agriculture into the natural forests in the Kefa Region and the Bale, Arsi and Illubabor Zones in the Oromiya Regional State; and the intrusion of livestock into the Bale Mountains Park.

106. **Objectives:** To achieve coordinated, integrated and participatory local plans and land use decisions to achieve ecologically, socially and economically sustainable state and private sector land utilization.

107. **The Guiding Principles are:**

- a) To ensure that *Federal, Regional and Community Strategic Land Use Plans (SLUP)* define broad land use and land user categories together with generalized resource management recommendations which can then be used to guide the formulation of detailed local

resource use and management plans by individuals or communities, as the case may be.

- b) Recommended land use categories shall be based on the criteria of both biological, chemical and physical factors (i.e. carrying capacity, vulnerability to erosion, wetland values, biodiversity values, pollution hazards, etc.) as well as social and economic considerations; and
- c) Given the need to harmonize potentially conflicting state and community or private commercial sectoral demands on natural resources and the environment, the institutional responsibility for undertaking strategic land use planning at the federal and regional levels should not be within a single line ministry but in an agency which is impartial to all.

**108. The Strategies are to:**

- a) Collate all country-wide surveys of natural resources, farming and pastoral systems and the results of the existing user survey, and define the most appropriate broad land use categories for use in the Federal and in the Regional Strategic Land Use Plans;
- b) Establish broad management guidelines for specific types of natural resources located in specific agro-ecological zones and farming systems for each of the broad land use categories;
- c) Develop draft Regional Strategic Land Use Plans based on each region's strategy for natural resources and the environment and through a process of local, wereda and zonal level consultations;
- d) Develop a draft Federal Strategic Land Use Plan based on the draft Regional Strategic Land Use Plans and the Federal Policy on Natural Resources and the Environment in close collaboration and agreement with regional states;
- e) Finalize the Regional and Federal Strategic Land Use Plans, following agreement between Federal Government and Regional States;

- f) Use the Regional Strategic Land Use Plans to coordinate and integrate state, community and private commercial and community sector land utilization; and
- g) Assist communities develop their own land use plans and land and water management agreements within the overall framework of the Regional Strategic Land Use Plans.

### **3.5 INTEGRATION OF SOCIAL, CULTURAL AND GENDER ISSUES IN SUSTAINABLE RESOURCE AND ENVIRONMENTAL MANAGEMENT**

*Cross-References: 3.1, 3.2, 3.9, 3.11, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, and 4.9.*

109. **Situation Synopsis:** It is now clear that a major characteristic of the rural programmes and campaigns which were implemented between 1977 and 1991 was their total lack of social sustainability. In particular, the villagization and producer cooperative programmes and the physical soil conservation and community forest campaigns have all but totally collapsed. Social and cultural concerns were in most cases disregarded. In addition, a number of large-scale irrigation projects (in particular in the middle and lower Awash Valley) developed over the past three decades have had very severe negative social impacts on pastoral societies. Efforts to integrate pastoralists into these large capital projects have failed, and many of the irrigation schemes are now no longer functioning.

110. Women play a vital role in the Ethiopian society not only as child bearers but as main actors in the country's economic, social, cultural and political sectors. However, despite this immense contribution women do not usually benefit fully from the fruits of their labour and are not given an equal chance to compete with men. And yet existing government policies stipulate that women are equal with men, and the new constitution stipulates the complete equality of women with men. It even states the need for affirmative action to bring about the equality it envisages.

111. **Objective:** To ensure that the disadvantaged stakeholders, especially local communities and women at all levels of society are fully involved in the development, management and use of the natural, human-made and cultural resources and the environment so that social, cultural and economic sustainability is achieved.

**112. The Guiding Principles are:**

- a) Because the planning and execution of projects in sustainable development are of a long-term nature, peace and security are essential and in order to achieve this, communities shall be in full charge of their own affairs of peace, security and administration;
- b) All policies, programmes and projects shall include impact assessments to maximize equity for economic, ethnic, social, cultural, gender and age groups, especially the socially disadvantaged;
- c) Formal and informal training in environmental and resource management shall include methodologies and tools for analysis and elimination of inequities; and
- d) Environmental awareness and public education programmes shall include both men and women in all social, economic and cultural groupings of society.

**113. The Strategies are to:**

- a) Place administration, including regulation, planning and implementation in the control of communities, and open to annual popular review all administrative, managerial, planning and executing activities at all levels of government ensuring that all social and economic groupings and all women and men and, as appropriate, all youth and children are fully involved;
- b) With the participation of the users, study and, where indicated, improve existing and adopt, adapt or generate new appropriate technologies to lighten the household chores of women;
- c) Develop effective procedures and methods of social, economic and cultural impact assessment for policies, programmes and projects;
- d) Facilitate the participation of women across all sections of society in training, public awareness campaigns, formal and informal education and decision making in environment and resource management; and

- e) Collect and disaggregate gender information related to the environment and to natural and man-made resource use and management.

### **3.6 ENVIRONMENTAL ECONOMICS, MACRO ECONOMIC POLICY AND NATIONAL ECONOMIC DEVELOPMENT**

*Cross-References: 3.4, 3.5, 3.10, and 4.1-4.11*

#### **3.6.1 Environmental Valuation and Accounting**

114. **Situation Synopsis:** National Accounts are used to measure the value of a country's output, i.e. those goods and services which have a market price traded over one year. The normally quoted measure is the Gross Domestic Product (GDP). This measure is "gross" because it does not account for the depreciation of capital assets. To calculate the Net National Product (NNP) or the Net National Income (NNI), consumption or depreciation of capital assets used in production must be deducted from the GDP. The current methodology used in Ethiopia depreciates only human-made capital and not the country's natural capital such as soil, forests, water, and minerals.

115. However, the depletion of such renewable resources as forests through logging, or of such non-renewable resources as gold through mining are shown in the National Accounts as income and not as depreciation of capital. Soil erosion is loss of natural capital but is not deducted from the national accounts. It is estimated that deforestation represents an annual loss of natural capital worth Birr 138 million per annum and that soil erosion in 1990 represented a loss of natural capital valued at Birr 60 million. The National Accounts should, therefore, be adjusted to reflect this depreciation of natural capital if they are to truly reflect the country's sustainable income.

116. In the economic appraisal of a development project, the costs of environmental and natural resource benefits foregone as a result of the project's activities are rarely included in the calculations. For example, the value of the loss of wet season grazing and thus the value of livestock production foregone in the middle and lower Awash Valley should be set as a cost against the development of irrigation. Similarly, the value of the biodiversity loss should be set against the value of the soda ash extracted from Lake Abijata.

117. **Objective:** To integrate environmental costs and benefits into economic planning, development and accounting at all levels of government in order to

reflect the true costs and benefits of development, and to ensure that the full costs of using or misusing the environment and natural resources are fully reflected in economic assessments.

**118. The Guiding Principles are:**

- a) To ensure that environmental costs and benefits, used in the development planning process including programme and project preparation consider environmental gains and losses include the values of benefits foregone which are thus costs;
- b) Accounting procedures at the macro and micro levels should take environmental gains and losses into consideration;
- c) To recognize that estimating environmental costs and benefits is often imprecise both because of the lack of accurate information and because of the lack of standardized methodologies, and to account for these costs using the best available information and methodologies;
- d) Using a renewable natural resource beyond the capacity of that resource to renew itself should be recognized as a reduction of the country's natural capital assets rather than as revenue. Thus, depletion or degradation of natural resources should enter the National Accounts as depreciation of capital;
- e) However, until internationally recognized environmental accounting procedures are established, an effective approach should be the development of a set of "satellite" environmental accounts; and
- f) To recognize that environmental impacts have long time spans, usually to be reckoned in decades, and to lengthen the time frame in economic analysis accordingly.

**119. The Strategies are to:**

- a) Initiate a pilot project on the application of environmental accounting in Ethiopia;
- b) Develop a capacity in environmental economics in the Ministry of Economic Development and Cooperation, in the Environmental Protection Authority, in line ministries, in institutions of higher

learning and in corresponding regional institutions in order to be able to more effectively develop and review project proposals, federal and regional resource allocations, and national accounts to ensure that the costs of natural capital depreciated and the value of benefits forgone are taken into account;

- c) Develop a capacity in the Ministry of Economic Development and Cooperation and in the corresponding regional bureaux to prepare satellite environmental accounts as part of the National Accounts; and
- d) Explicitly consider in 5-, 10-, 50- and 100-year time perspectives the economic costs and benefits to the environment in the planning of all major development programmes, projects and activities.

### 3.6.2 Correcting Market Failures and Avoiding Policy Failures

120. **Situation Synopsis:** In 1975 an economically "laissez faire" centralist government was replaced by a "command economy" centralist government. In the post-1975 period despite massive intervention and regulation by the coercive state in the economy as a whole and in the management of the environment in particular, natural resource and environmental degradation continued unabated. These government interventions and their negative environmental impacts can be termed "Government" or "Policy" failures.

121. Perhaps the most important policy and regulatory interventions which adversely affected environmental management were those which eroded the rights of individuals and communities to use, manage and develop their own resources. This erosion of tenure rights resulted in a total lack of incentives to invest in resource conservation and development measures.

122. The new constitution and the economic policy propose a change to a mixed market economy where generally the "market" will determine prices. However in Ethiopia markets for natural resource and environmental goods and services are either poorly or not developed at all, and thus either no prices or incorrect prices prevail. These "market failures" provide, therefore, a rationale for government intervention. But government interventions to correct market failures need to avoid the policy failures.

123. **Objective:** In situations where free market prices fail to reflect the full costs to society, to ensure that renewable natural resources degradation and environmental damage arising from pollution, erosion and other factors are



rectified by government interventions including policies and legal frameworks; and to clearly define and uphold resource tenure rights, through policy instruments such as taxes, incentives and charges, through regulations which are cost effectively enforceable and through investment programmes to provide "public goods" which the private sector would not provide.

**124. The Guiding Principles are:**

- a) A priority rôle of government in a mixed or market economy should be to intervene through policy and regulatory means when markets fail in the allocation and efficient use of natural resources and in safeguarding the environment rather than be an implementing agency for resource management activities;
- b) When government intervenes in or regulates the market, its intervention should perform at least as well as the free market or at least improve resource allocation;
- c) The benefits of any government intervention or regulation should at least equal the costs of its planning, implementation, monitoring and enforcement together with any indirect costs that may be inflicted by the intervention on other parts of the economy;
- d) Government interventions in terms of investment programmes should focus on the provision of "public goods" which the private sector will not or can not provide such as infrastructure, education, training, credit, research and technology development, extension and the development of selected key resources (e.g. large-scale hydropower development, strategic minerals);
- e) In Ethiopia, a distinction needs to be made between the private commercial sector, which aims to maximize cash income and which is still small, and the community sector which, though all private, aims not at the maximization of profit but at a self-sufficient or subsistence production and is by far the largest and most important producer and consumer but which presently operates outside the formal economic and pricing system and market structure;
- f) It follows, therefore, that a key role for government in dealing with "market failures" in this situation should be the establishment of a legal framework and democratic institutional structures which provide clearly defined and secure natural resource access and

tenure rights, and a framework for constructive partnership, dialogue and negotiation between government and resource users and developers in the community sector;

- g) Where possible the tax structure should be such that it provides to the community and private commercial sectors positive incentives for environmentally desirable activities and negative incentives for actions which damage the environment;
- h) Conditional contracts, leases, concessions and performance bonds should also be used to regulate the private commercial sector's use and management of natural resources;
- i) Government should adopt the "Polluter Pays Principle" which requires, for example, that before being allowed to operate a factory, a processing plant or a farm, the operator be made responsible for any costs or damage to the environment;
- j) Government should adopt the "User Pays Principle" which requires that prices reflect the full cost of using a resource such as charging appropriate stumpage fees for logging trees, tourist fees for visiting protected areas, and water charges for irrigation;
- k) Resource taxes in the same product group should be used in a differentiated way between different products which have differing environmental impacts: e.g. diesel might be taxed more than electricity which is derived from hydropower;
- l) Subsidies should be selectively used to cover costs of achieving sustainability above the amount that specific resource users can be expected to pay (e.g. poor farmers constructing soil conservation structures); and
- m) A careful environmental, social and economic impact assessment should be undertaken to determine any potential negative impacts wherever subsidies are so used, and the types or levels of subsidy which encourage waste or misuse should be avoided.

**125. The Strategies are to:**

- a) Withdraw or reform government policy interventions that have been shown previously to result in environmental mismanagement and degradation;
- b) Establish a formal system of review to evaluate all government policies and public investment proposals in order to prevent direct and indirect environmental damage;
- c) Develop mechanisms to reduce the implementation responsibilities of and costs to government and non-government agencies as well as to improve effectiveness by involving local communities, particularly those in the peasant sector, in natural resource management and environmental protection at the local level;
- d) Assess and charge the appropriate level of user and access fees and performance bonds, for example, to parks, for use of closed grazing areas, for water use and consumption, and for logging in order to sustainably maintain the resource or the environment, and identify the appropriate target groups and assess and provide subsidies, taxes or tax concessions to achieve the sustainability of the use of natural resources and the environment (e.g. soil conservation works, installing pollution treatment facilities);
- e) Explore the possibility of using at the federal, regional or community levels medium-term development concessions with conditionalities to the private sector by granting exclusive rights to use a public or community resource, and so incorporate the public or community costs of resource management into the costs to the user, for example, private lodges in parks, hunting concessions issued by wereda councils in controlled hunting areas within their domain;
- f) Develop the capacity of government agencies to analyze the impact of user fees and incentives and to monitor contracts, leases, concessions and performance bonds used for achieving sustainable resource management and environmental protection; and
- g) Improve the capacity of the tax administration at the federal and regional levels to effectively assess, collect and handle proposed tax incentives/disincentives used to encourage sustainable resource use and management.

### 3.7 ENVIRONMENTAL INFORMATION SYSTEMS

*Cross-References: 3.8, 3.9, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 4.10, 4.11, and 4.12*

126. **Situation Synopsis:** The sustainable development and management of natural resources, the urban environment and cultural heritage requires information. Currently, there is considerable information but it is scattered in various agencies. It is often not available and often knowledge of its existence is confined to a few people. A number of specialized computer-based resource data management and geographical information systems (GIS) have been established and more are proposed. At the present time, the content of their information is not widely known and a formal system for information exchange among them does not exist. Neither the documents nor the computerized systems are thus available to decision makers.

127. **Objective:** To collect, analyze, store and disseminate on a continuous basis, reliable information relating to resource and environmental issues, including the assessment and conservation of natural resources, the condition of the urban and industrial environment, the state of the country's cultural heritage, and the quality of its life support systems.

128. **The Guiding Principles are:**

- a) To adhere to the principle that the right to live in a clean and healthy environment carries with it the right to be informed about environmental issues and to develop an appropriate information system;
- b) To create by law a system for the protection of community intellectual property rights.
- c) To make available environmental information as a legal right to all interested parties except where the release of such information would compromise national security, community intellectual property rights or individual intellectual property rights;
- d) To base information generation on an identification of user needs, i.e. it should be demand-driven;

- e) The introduction of new information technologies should be appropriate and compatible with the information needs of the country;
- f) To ensure that all environmental data collection and analysis as well as information dissemination are coordinated and as far as possible standardized but not centralized;
- g) The primary institutional responsibility for specialized data collection should remain in the concerned sectoral ministry, bureau or agency; and
- h) To ensure that there be a central point or agency at which it is possible to have access to widely used information and to ascertain the type and location of any specialized data and information.

129. **The Strategies are to:**

- a) Provide clear legislation and guidelines on environmental data and information generation, collection and dissemination specifying the nature of restrictions required;
- b) Designate a central point or agency to collate, store and disseminate information on the types and whereabouts of any special natural, human-made, cultural and socio-economic or environmental data or information, and to develop a country-wide environmental information network;
- c) Strengthen specialized environmental data and information collection agencies through training and logistical support and formally link them to the central information network; and
- d) Subject to the respect of the intellectual rights of local communities, document, evaluate, store, disseminate and utilize indigenous and traditional knowledge and technology of resource use and management and environmental protection.

### **3.8 ENVIRONMENTAL RESEARCH FOR SUSTAINABLE DEVELOPMENT**

*Cross-References: 3.7, 3.9, 4.1, 4.2, 4.3, 4.4, 4.5, and 4.6*

130. **Situation Synopsis:** While there has been some effort to cater for research at the sectoral level (e.g. soils, water, forestry, etc.) this is usually

weak, especially in the forestry sector, and there are a number of deficiencies with respect to cross-sectoral research in the field of natural resource and the environment. In particular there is a need to undertake research into the complex and interrelated fields of resource degradation and poverty, government policies, population pressure on resources, and the need for resource use and management systems responsive to change, environmental economics, gender relations in the context of resource use, the management of industrial effluent and water pollution and the establishment of safe standards.

131. The linkages among "strategic research" which addresses issues wider than those specific to a set of field conditions and whose outputs are usually knowledge from which can be drawn technologies, "applied research" which generates technologies from a body of knowledge and "adaptive research" which adjusts technologies to specific agro-ecological and socio-economic conditions have been weak. All three need to be more developed and functionally dovetailed.

132. **Objective:** To carry out demand-driven strategic, basic and applied research required for the sustainable, environmentally sound, biologically and economically productive as well as socially and culturally acceptable use, development and management of the country's natural, human-made and cultural resources.

133. **The Guiding Principles are:**

- a) Strategic, basic and applied research shall be undertaken within the context of an overall integrated research system;
- b) To develop strategic environmental research which aims at identifying the social, economic and technical factors which influence resource management;
- c) Environmental research programmes for technology generation and application shall be demand-driven and prioritized;
- d) To promote the training and the improvement of the working conditions of researchers so that they become technically competent and familiar with the agro-ecological and socio-economic conditions of the potential end users;

- e) There shall be a system of monitoring and feed back on how research outputs have performed in practice;
- f) To put in place an appropriate information exchange system and institutional structure which facilitate closer interaction among farmers, pastoralists, government professionals, development NGO's, and researchers;
- g) To support research on appropriate technologies for environmental management and sustainable development through a partnership between scientists and potential end users, so as to benefit from the universal knowledge of the former in science and technology and the unique knowledge of the latter in the very often site specific conditions under which the technology is to be used;
- h) To coopt existing traditional systems of research and learning into a new system which incorporates both modern and traditional components; and
- i) Existing governmental and non-governmental research organizations and agencies should be fully utilized before new ones are created.

**134. The Strategies are to:**

- a) To allocate funds to support strategic, applied and adaptive research programmes and projects;
- b) Establish Science and Technology Associations in all communities to identify and support their traditional systems of research and development and provide a channel for feedback of information concerning the suitability or otherwise of research outputs;
- c) Promote and support applied and adaptive research and development programmes to adopt, adapt or generate appropriate technologies, including the use and/or incorporation of indigenous technologies, for sustainable environmental management and resource use;
- d) Support environmental research by non-governmental agencies (e.g. Universities) through research contracts, and foster their linkages with relevant international research and development institutions,

including universities and other institutions with proven experience;  
and

- e) Support traditional and rural institutions of science and technology by building in them the capacity to record and report results.

### **3.9 SCIENCE AND TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT**

*Cross-References: 3.2, 3.3, 3.5, and 3.7*

135. **Situation Synopsis:** Developments in science and technology underlie any positive economic or socio-political development. It is thus critical that a country consciously develops a strategy for science and technology, especially if it wants its development to take place fast and become sustainable.

136. Ethiopia has two parallel systems of science and technology: firstly, the traditional system which serves virtually the whole of the peasant agricultural and pastoralist sectors, and virtually all the crafts and cottage industries, and secondly the modern sector, which serves only the few factories, and the rather small transportation system as well as the rather few modern installations. The latter, though the smaller of the two, enjoys formal recognition and government support, while the former, though the larger of the two, is usually ignored and even suppressed. The net result is that in spite of its pervasive application, the traditional system is weakened without even a mere notice of the fact being formally made. For example, when the situation of crafts was studied in Tigray by the Tigray Peoples' Liberation Front in the struggle years, it was found that blacksmithing had come to a virtual stop because years of neglect had made anvils unavailable and there were less than 20 in the whole region! The situation was presumably roughly the same throughout the whole of Ethiopia. It may even still be so; nobody has studied the issue.

137. Environmental, social and cultural conditions vary considerably within Ethiopia and a new technology may or may not fit in a given setting. Even an existing technology may fail to fit in a given society because of changes that have taken place. The ultimate test for suitability is its acceptance by the people.

138. **Objective:** To support and help evolve the existing traditional system of science and technology and to select and introduce modern science and



technology ensuring that the two systems are mutually supportive of each other and to lead them towards a new synthesis for a sustainable economic, social and cultural development.

**139. The Guiding Principles are:**

- a) The traditional system of science and technology, on which most Ethiopians depend, should have a high priority of support from both government and the public;
- b) This support should include breaking down the barriers in the form of castes, for example among blacksmiths, potters and tanners, and the correcting of deficiencies;
- c) The choice of a new technology should be based on its suitability to the natural environment, its ability to solve the problem as realized by the potential users (not the makers) and to fit in with the other existing technologies (new and traditional) with which it will be used in combination with the availability of appropriate raw materials, the existing knowledge and skills of the potential users, their financial capability, their socio-cultural conditions and other related variables;
- d) Because it will be difficult to make *a priori* decisions on the successful performance of a new technology due to the many and varied considerations, its introduction should be made on a pilot basis in trials involving a large sample of users;
- e) Because the monopolization of a technology by a section of the population produces entrenched advantage if associated with power, or entrenched disadvantage if associated with weakness, care should be taken to ensure that new technologies do not exacerbate or even create inequities;
- f) In particular since men tend to run new technologies even when aimed at the traditional work of women, e.g. running grinding mills, a conscious effort should be made to ensure women's access to technology;
- g) The interests of both users and non-users should be taken into consideration before technologies are disseminated and promoted to ensure that the latter are not adversely affected;

- h) Because a genuine self-sustaining development is not possible if there is complete dependence on imported technologies, technology generation within the country should be fostered;
- i) Because a strong scientific base is essential to evaluate and strengthen traditional technologies and to generate new ones, higher education and research in all fields of science should be fostered;
- j) There should be periodic reviews to identify particular fields of science and technology in which to invest more effort either to strengthen sectors of Ethiopia's comparative advantage, or emerging fields in which Ethiopia could compete with the rest of the world by starting early at the formative stage of the science and/or technology and the chosen sectors should enjoy special attention; and
- k) The capacity to monitor developments throughout the world should be developed in order to obtain information on them on a continuing basis as well as to alert the appropriate institutions, organizations, ministries, or sections of the public on these developments.

**140. The Strategies are to:**

- a) Foster and financially and logistically support the development of Science and Technology Associations from the community up to the federal level to document, review and recommend developments on science and technology;
- b) Establish credit schemes and help develop markets for supporting artisans;
- c) Foster the development of artisan guilds to ensure standards of quality and access to credits, raw materials and markets;
- d) Support existing and establish new institutions of research and development in science and technology as recommended by the Science and Technology Associations, getting the directions and priorities of their research from these Associations;
- e) Ensure that, subject to the observance of community intellectual rights, empirical knowledge and technology existing in communities

is fully considered and integrated with modern knowledge and technology in the planning and execution of projects that affect the environment and/or are aimed at bringing about development;

- f) Establish a monitoring centre for new technologies and products to provide an early warning system about technological developments in the world that would affect Ethiopia beneficially or adversely, or the ones that are new and appropriate for Ethiopia to join in their further development; and
- g) Establish an information centre for new technologies which will keep updating the information base of these societies, whose recommendations on what new technologies to adopt will be given due consideration in decision making on technology research and imports.

### **3.10 ENVIRONMENTAL IMPACT ASSESSMENT OF POLICIES, PROGRAMMES AND PROJECTS**

*Cross-References: 3.1, 3.2, 3.3, 3.5, 3.6, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6,  
4.7, 4.8, 4.9, 4.10, and 4.12*

141. **Situation Synopsis:** Currently there is no formal system requiring environmental impact assessments on policies, programmes or projects. Present requirements for the incorporation of environmental concerns in development planning and implementation are *ad hoc* and not coordinated. Thus, developers in urban areas may be called upon to give details of industrial processes under the town planning legislation. The former EVDSA has incorporated environmental and social impact assessments in its River Basin Master Plans. The Ministry of Mines and Energy has draft mining regulations which include environmental protection requirements as does the draft Water Code. However, there is no overall coordination or supervision of environmental impact assessment, and no legal requirements for environmental impact statements or for environmental audits.

142. Increasingly international and bilateral funding and development agencies are requiring some formal environmental impact assessment as part of the project cycle. Experience from other countries where environmental impact assessment is a formal requirement indicates that the usefulness of Environmental Impact Assessment (EIA) is considerably enhanced if it adequately involves the private sector and local community participation.

143. **Objective:** To provide a system of Environmental Impact Assessment and Environmental Audit so that adverse environmental impacts can be foreseen, monitored, eliminated or at least mitigated, and environmental benefits are enhanced.

144. **The Guiding Principles are:**

- a) The fundamental purpose of EIA is to provide a framework for the systematic consideration of environmental management and planning concerns early in the development planning process;
- b) To ensure that environmental impact assessments consider not only physical and biological impacts but also address social, socio-economic, political and cultural conditions;
- c) To ensure that public and private sector development programmes and projects recognize any environmental impacts early and incorporate their containment into the planning and design process;
- d) To recognize that public consultation is an integral part of EIA and ensure that EIA procedures make provision for both an independent review and public comment before consideration by decision makers;
- e) To ensure that an environmental impact statement always includes mitigation plans for environmental management problems and contingency plans in case of accidents;
- f) To ensure that at specified intervals during project implementation, environmental audits regarding monitoring, inspection and record keeping take place for activities where these have been required by the Environmental Impact Statement;
- g) The EIA process should be administered, coordinated and monitored independently of institutions with sectoral mandates;
- h) To ensure that Preliminary and full EIA's are undertaken by the relevant sectoral ministries or departments, if in the public sector, and by the developer, if in the private sector; and
- i) It should be the role of the independent EIA coordinating agency to be responsible for the EIA process, to approve/disapprove projects

on environmental grounds, to set conditionalities and subsequently to monitor conditionalities and take action where they are not being met.

**145. The Strategies are to:**

- a) Create by law an EIA process which requires appropriate EIAs and Environmental Audits for private and state development projects which includes the following:

All projects and programmes are to produce a preliminary EIA,

Based on the preliminary EIA, the EIA coordinating agency at national or regional level is to decide whether a full EIA is required,

Should a full EIA not be required, the EIA process is complete and no further action is required,

Where a full EIA is required it will be undertaken by the programme/project preparation agency and a report (i.e. an Environmental Impact Statement) produced,

Based on the Environmental Impact Statement the federal or regional EIA coordinating agency will either:

- authorize the go ahead with no conditionalities, or
- authorize the go ahead with additional conditionalities, or
- refuse the project;

- b) Establish the institutional framework and determine the linkages of its parts for undertaking, coordinating and approving EIA's and the subsequent system of environmental audits required to ensure compliance with conditionalities;
- c) Develop detailed sectoral technical guidelines in EIA's and Environmental Audits;
- d) Ensure that social, socio-economic, political and cultural conditions are considered in environmental impact assessment procedures and included in sectoral guidelines; and

- e) Develop EIA and environmental audit capacity and capability in the Environmental Protection Authority and in sectoral ministries and agencies as well as in the regions.

### **3.11 ENVIRONMENTAL EDUCATION AND AWARENESS AND HUMAN RESOURCE DEVELOPMENT**

*Cross-References: 3.2, 3.5, 3.7, 4.1 – 4.12.*

146. **Situation Synopsis:** A pilot environmental education project has been operating in the Ministry of Education for five years. However, there is no national strategy for environmental education at all levels embracing all subjects though the school texts in the sciences and in geography do often highlight environmental issues. The environmental issues raised in the present curricula at primary, secondary and tertiary levels are inadequate. There is no specialized environmental studies programme at the tertiary level and there is no overall strategy for promoting public environmental awareness.

147. **Objective:** To provide education, training and awareness programmes to increase public awareness and understanding of the need for the sustainable use and management of the natural, human-made and cultural resources and the environment, and to prepare a workforce equipped with environmental and resource management skills and technical abilities to implement federal and regional programmes of sustainable resource and environmental management.

148. **The Guiding Principles are:**

- a) To promote the teaching of environmental education on a multi-disciplinary basis and to integrate it into the ongoing curricula of schools and colleges and not treat it as a separate or additional subject, though this should also be done at the tertiary level;
- b) To ensure that legally established coordination and management bodies from the federal down to the community level handle the sectoral and cross sectoral planning and implementation issues identified as the responsibilities of concerned line ministries commissions, authorities and bureaus, as applicable to the level of organizations, including those of the relevant federal executive organs as well as regional and municipal governments, elected councillors, non-governmental organizations, community representatives, representatives of professional or other environmental associations and the private sector;

- c) To use to the maximum, whenever possible, existing institutional structures;
- d) Special programmes to develop the required human resources should be launched at tertiary level institutions; and
- e) To recognize the important role the mass media play and to effectively use them in creating and promoting environmental awareness in view of the physical problems of access and communications in Ethiopia;

**149. The Strategies are to:**

- a) Incorporate environmental education into the curricula at all levels of formal education with an early focus on teacher education;
- b) Develop environmental training materials as a first priority for primary schools and then for all training institutions;
- c) Develop and conduct programmes for the retraining of teachers in environmental issues;
- d) Strengthen existing higher level training and education institutions so that they can offer programmes and courses in sustainable resource and environmental management for economists, planners, lawyers, engineers, sociologists and medical practitioners as well as for natural resource and environmental scientists;
- e) Provide in-service training in such specialized subjects as environmental economics, environmental law, environmental monitoring, geographical information systems (GIS), pollution monitoring and control, and hazardous waste management;
- f) Encourage the local development of environmental awareness associations and programmes specific to particular agro-ecological zones and support them with scientific inputs;
- g) Develop environmental awareness programmes for urban environments for dissemination by the mass media and foster the development of urban environmental awareness associations;
- h) Initiate, encourage and support the involvement of local community, and religious leaders in programmes to promote environmental awareness; and
- i) Develop and strengthen the capacity of the mass media to effectively create and promote environmental awareness country-wide through the provision of training, technical information and logistical support.

## CHAPTER IV

### SECTORAL POLICY OBJECTIVES, PRINCIPLES AND STRATEGIES

150. The sectoral policy objectives, principles and strategies presented below do not represent the "development policy and strategy" for any particular sector. Rather these are a necessary subset of policies and strategies designed to ensure the "sustainability" of such sectoral development strategies when implemented. The order of presentation of the sectoral policies in this chapter reflects to a large degree the orders of magnitude of the overall resource and environmental problems. As with the cross-sectoral policies, strategies are presented in the order of their importance and priority for action respectively.

#### 4.1 IMPROVED SOIL, CROP AND ANIMAL HUSBANDRY FOR SUSTAINABLE AGRICULTURAL PRODUCTION

##### 4.1.1 Improved Soil Husbandry for Sustainable Agricultural Production

*Cross-References:* 3.1, 3.2, 3.3, 3.4, 3.7, 3.8, 3.9, 3.11, 4.3, 4.4, 4.5, 4.6, and 4.9

151. **Situation Synopsis:** Land degradation and the associated threats to the ecological support systems underpinning agricultural production is the most serious environmental problem facing Ethiopia. However, land degradation is not a new phenomenon. While up to 40 per cent of the landscape may have once been covered by high forest, deforestation has occurred progressively over the millennia and has accelerated over the past three decades in response to rapidly growing human populations.

152. Land degradation has many expressions including soil removal by sheet and gully erosion, nutrient depletion due to burning of dung and other forms of biomass, nutrient loss due to crop removals without replacement, and the continued loss and degradation of forest areas. Some 80 per cent of the crop losses due to land degradation result from breaches in the nutrient cycle. Dung and crop residues are burnt because of the lack of wood for fuel. In the past, organic matter management has been relatively neglected in the soil and water conservation efforts made by governments. On the other hand, there is a rich inventory of indigenous land husbandry and soil conservation technologies



which had been little studied, let alone used and built upon, in the efforts by past governments

153. The underlying and deep-rooted causes of land degradation have been to a very large degree the result of government and policy failures with respect to natural resource tenure and use rights. These have been examined in detail in many of the cross-sectoral policy areas in Chapter III. However, the analysis also pointed to the need to address land degradation not only at the macro policy level but also at the farm and community levels. Land husbandry on individually farmed land and on adjoining communal grazing and forest lands is linked technically as well as socially. These linkages have important implications for extension and research.

154. **Objective:** To promote improved soil conservation practices that enhance and maintain land productivity for the sustainable development of agriculture and, in general, for protecting biomass and biodiversity.

155. **The Guiding Principles are:**

- a) To foster 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;
- b) To base, where possible, increased agricultural production on sustainably improving and intensifying existing farming systems by developing and disseminating technologies which are biologically stable, appropriate under the prevailing environmental and socio-cultural conditions for farmers, economically viable and environmentally beneficial;
- c) To promote the use of appropriate organic matter and nutrient management for improving soil structure, nutrient status and microbiology in improving soil conservation and land husbandry;
- d) To safeguard the integrity of the soil and to protect its physical and biological properties, through management practices for the production of crops and livestock which pay particular attention to the proper balance in amounts of chemical and organic fertilizers, including green manures, farm yard manures and compost;

- e) To promote effective ground cover as one of the most important factors in soil erosion control, taking advantage of the wide range of sustainable agronomic, pastoral and silvicultural approaches used in various areas of Ethiopia as potentially flexible alternatives to mechanical soil conservation systems;
- f) To promote In drought-prone and low rainfall areas water conservation which is as important as physical soil conservation for more secure and increased biomass production, including crop production;
- g) To ensure that, for reasons of cost and acceptability, improvements in land husbandry are made with an appreciation of existing husbandry systems, technologies and knowledge;
- h) To ensure that, given the heterogeneous environment of the Ethiopian highlands, agricultural research and extension have a stronger focus on farming and land use systems and support an immediate strengthening of effective traditional land management systems;
- i) To promote, for the relatively more environmentally uniform Ethiopian lowlands, a long-term approach to agricultural research programmes to develop appropriate farming and land management systems that yield high outputs;
- j) To ensure that planning for agricultural development incorporates in its economic cost-benefit analysis the potential costs of soil degradation through erosion and salinization as well as soil and water pollution; and
- k) To ensure that inputs shall be as diverse and complementing as the physical, chemical and biological components of the soil require, and shall not focus solely on a quick and transitory increase in plant nutrients to the long-term detriment of soil structure and microbiology.

**156. The Strategies are to:**

- a) Build on indigenous systems of soil management to develop and promote improved technologies for increasing the quantity and improving the quality of soil organic matter, soil structure, soil

nutrients, and soil flora and fauna, and in particular exploit the complementary effects of chemical and organic fertilizer sources such as farm yard manures, green manures, compost, and biological nitrogen fixation in order to improve soil quality and structure, minimize soil pollution and increase crop production;

- b) Institute the stall feeding of domesticated animals through a combination of agricultural residues, on-farm produced forage and fodder as well as the cutting and carrying of grass and browse from meadows and hillsides in order to encourage revegetation of grazing lands and the reduction of soil erosion;
- c) Develop forestry on the farm, around the homestead and on eroding and/or eroded hillsides to increase the stock of trees for fuelwood, construction material, implements and crafts, for forage and for other tree products by developing complementing agroforestry practices using trees appropriate for improving the soil and crop micro-climate when planted around and scattered within fields, and for protecting and building up the soil as well as for providing other useful products (e.g. fruits, nectar for bees, medicines, dyes and raw materials for crafts);
- d) Determine for specific agro-ecological zones the relative efficiencies and economic advantages of physical and biological soil conservation systems to determine the biological or physical measures or the mixes of both which are the most suitable for soil conservation; and
- e) Enhance and strengthen a holistic approach to research, extension and training of farmers, extension workers and researchers in land husbandry by addressing the needs of the entire farming system.

#### **4.1.2 Improved Crop and Animal Husbandry for Sustainable Agricultural Production**

*Cross-References: 3.1, 3.2, 3.3, 3.4, 3.5, 4.3, 4.4, 4.5, and 4.7.*

**157. Situation Synopsis:** Traditional crop and animal varieties, breeds and strains have developed over millennia and have achieved a fine adaptation to the extremely varied and variable environmental conditions in Ethiopia, including tolerance to drought, waterlogging, low soil fertility, low and variable animal feed quality and quantity, and resistance and tolerance to diseases and

pests. Similarly the husbandry techniques and tools and implements have been appropriately developed to suit the environment and the personal resource assets of farmers and pastoralists. Production under these environmental, economic and technological conditions has been relatively low but relatively secure. These systems of crop and livestock husbandry thus meet farmer and pastoralist production objectives of risk spreading and the minimization of drastic production losses.

158. However, these husbandry systems are increasingly under pressure from the increasing size of the human population. In the past, the relatively larger area of land, supply of animal feed, distances among crop fields and smaller number of animals were sufficient to maintain an adequate level of crop and animal production with a minimum impact of pests and diseases on crops and animals and a relatively low level of soil erosion. Now, however, land and feed is increasingly in short supply and crop fields and domestic animals more crowded leading to an increasing incidence and prevalence of pests and diseases and escalating soil erosion. The introduction of crops with narrow genetic bases replacing the farmers' varieties which have broad genetic bases has exacerbated the problem. The net results are that levels of crop and animal production per household are falling and, despite increasing numbers of farm households, total agricultural production is stagnating.

159. Under increasing population pressure and with an increase in the area of cropland at the expense of the area of grazing land, crop and livestock production systems are becoming integrated even more through a greater dependence of livestock on crop residues and on-farm production of fodder. The value of the straw component of crops in relation to the grain component is increasing. This has important implications for crop breeding to improve the quality and quantity of straw and for farmers to more efficiently store and utilize crop residues. As livestock production intensifies there are important implications for the enclosing of crop fields, on-farm forage and fodder production, and more efficient and more intensive utilization of communal lands for fodder and wood production.

160. **Objective:** To increase crop and animal production while maintaining the diversity, the security, the in-built safety mechanisms and thus the sustainability of traditional crop and animal production systems.

161. **The Guiding Principles are:**

- a) Development of improved crop and animal husbandry for sustainable agriculture should start with the involvement of the intended

beneficiaries in the identification of problems and the characteristics of the types of solutions which would be acceptable to them;

- b) Improvements to crop and animal husbandry systems should seek to expand the range of technical options and not to narrow them;
- c) Crop and animal breeding programmes should recognize the multiple production objectives of farmers and include these in the evaluation of potential adoption by farmers;
- d) Crop and animal breeding programmes should recognize the multiplicity and variability of environments (natural, social and economic) facing farmers and incorporate them accordingly;
- e) Plant breeding programmes should develop not only high yielding varieties for favourable environments, but equally, varieties which will perform satisfactorily under adverse conditions and low input technologies;
- f) Development of improved crop varieties should first exploit the suitability of existing varieties in or outside the country before embarking on a more expensive and time consuming plant breeding programme;
- g) Crop and animal research and extension programmes should recognize the strengthening of integration of crop and animal production systems, which is taking place at the farm level under decreasing area of grazing land;
- h) While genetic engineering is being suggested as the solution to problems of low crop yields and transgenic organisms can do wonders, it is also true that they can cause havoc, and they should, therefore, be used with appropriate precautions being taken;
- i) The time tested system of minimizing pests and diseases through maximizing the variation in crop species and genetic variation within crop species and the use of "break" crops and cultural methods such as crop rotation, planting time, weeding time, sanitation and closed seasons should be augmented rather than eroded as has been the recent tendency;

- j) To safeguard the health of domesticated animals and so minimize the use of drugs and other chemicals, a broad genetic base should be maintained and environmental management used as far as possible;
- k) To use biological and cultural methods as well as resistant or tolerant varieties or breeds, pheromones or sterile male techniques in an integrated manner as a pest and disease management method in preference to chemical controls;
- l) Non-indigenous predators, parasites and pathogens should not be introduced unless their potential effects on indigenous flora and fauna have been thoroughly assessed;
- m) Where chemical control methods have to be applied they should be used selectively and in minimal quantities to supplement other techniques; and
- n) To safeguard human and environmental health by producing adequate regulation of agricultural (crop and livestock) chemicals.

162. The Strategies are:

- a) With the involvement of farmers in the identification of problems and the types of solutions which would be acceptable to them, undertake participatory research, diagnostic studies and technology evaluation of existing agronomic, socio-economic and environmental constraints to develop sustainable agriculture;
- b) Develop and promote livestock production systems which use as far as possible stall feeding of on-farm produced forage and fodder, crop residues or agro-industrial by-products, or tethered grazing in fields in order to reduce pressure on grazing land;
- c) Shift the present focus of agricultural development and extension on maximizing crop yields utilizing high cost technology that requires imported agricultural inputs to one of producing yields which will meet most or all of farmers' production objectives through the judicious use of locally available and/or imported inputs;
- d) Given the increasing shortages of livestock feed and the need to integrate crop and livestock production more closely, focus on

increasing livestock production as much as on increasing crop production in development planning, research and extension;

- e) Study the effects of shortage of crop and grazing land on the stability of existing peasant agricultural systems (e.g. dropping pulses from the crop mix) to identify vulnerabilities and to design methods of compensation;
- f) Shift the 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;
- g) Promote changes in crop and livestock husbandry that increase production and can be effected at no or minimal additional cost in money or labour;
- h) Promote the process of participatory land use planning for the planting in mosaics of the whole range of crops that will grow in the area avoiding the planting over wide areas of a single crop even when that crop is a farmers' or a multi-line variety;
- i) Undertake research and development into cost-effective and preferably simple methods of improved pest management;
- j) Undertake research and development of tools and implements based on existing technologies to ease the burden and improve the efficiency of application of human and animal power for agricultural and domestic operations, particularly those undertaken by women; and
- k) Undertake research and development into simple and cost-effective methods of crop residue treatment and utilization of agro-industrial by-products which are appropriate for smallholder production systems.

#### **4.2 RANGELANDS MANAGEMENT AND PASTORAL DEVELOPMENT**

*Cross-References: 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.4, 4.5, 4.6, and 4.7.*

**163. Situation Synopsis:** The Ethiopian rangelands are located in the lowlands and comprise some 56 per cent of the country's land mass and accommodate

about 10 per cent of the population. They are mainly inhabited by pastoralists and agro-pastoralists in the arid and semi-arid northwest, northeast, southeast and south, and sedentary and shifting cultivators in the moist malaria and tsetse infested southwest and west. Yet despite their hostile environment, the Ethiopian rangelands play an important role in the national economy. The pastoralists use efficiently the range resources for livestock production which amounts to 20 per cent of the country's total. Above their subsistence needs they supply to the adjacent highlands draught animals, beef cattle, goats and sheep, and supply the majority of animals for the export market. Most of the potential for irrigated agriculture on a large to medium-scale is in the rangelands. The southwestern and western rangelands offer potential for expanded agriculture and settlement.

164. There are a number of misconceptions regarding pastoralists and the way in which they use and manage the rangelands. These misconceptions have in the past incorrectly guided government policy and development planning. They include the mistaken beliefs that movements of people and animals are haphazard and irrational, that pastoralists keep far more livestock than they need for survival, that pastoralists are resistant to change, and that their production systems contribute little to the national economy.

165. Over many decades of this century the pastoralists have faced an increasing number of problems including the loss of vital grazing areas, the ravages of military and civil conflicts, disruptive international borders, the lack of access to and difficulties in the provision of services and little or no participation in rangeland or livestock development planning undertaken by the state. Given the increasing pressures on resources in the highlands as well as the rangelands and the development potential of the lowlands there is need for a clear development policy and strategy for these areas which integrates with those for the adjacent highland areas.

166. **Objective:** To manage the country's rangeland resources within their capacity to sustainably maximize the production and wise use of livestock, crops, woodlands, water and wildlife resources.

167. **The Guiding Principles are:**

- a) It should be recognized that sustainable management and development of the Ethiopian rangelands will depend largely on supporting increased agricultural productivity in the highlands and the effective management of agricultural expansion in the lowlands;



- b) The formulation of policies for sustainable development of rangelands and pastoral areas should fully reflect the needs and views of their communities;
- c) Any programme for improved rangeland management and pastoral development should be based on the existing traditional system of resource use and management and should be undertaken with the empowerment and under the control of the existing rangeland users;
- d) To use the precautionary principle in assessing potentially damaging impacts when taking decisions that affect social and economic conditions, natural resources and the environment, especially in the pastoral areas, which are perhaps the least studied in the country;
- e) A holistic approach should be adopted to rangeland development research, planning and extension incorporating ecological, social, and economic production elements and concerns;
- f) To ensure that new technical recommendations are compatible with existing pastoral and agricultural systems, agro-ecological conditions and the prevailing socio-economic environment;
- g) New technologies or management practices should not disadvantage vulnerable groups or sections of the community or the family (e.g. women or children); and
- h) As far as possible secure and mutual inter-group "Resource Management Agreements" should be made with respect to shared resources and grazing areas during programme or project preparation.

**168. The Strategies are to:**

- a) Strengthen the capacity of regional and local governments to study, plan and implement programmes of sustainable rangeland use in terms of trained human resources and infrastructure;
- b) Strengthen the capacity of the Extension Service to undertake the required surveys and to foster locally driven participatory development planning and implementation;

- c) Undertake full environmental, social and economic impact assessments of all existing irrigation schemes in the Ethiopian rangelands and establish a programme of correcting their negative environmental, social and economic impacts;
- d) Negotiate with local communities on the benefits they will derive from existing and future irrigation projects and the support they will give to those projects;
- e) Strengthen the livestock economy by improving market support, the availability of basic goods and commodities, animal health services, forage and water supplies, access to social services, and appropriate technologies;
- f) Improve capability for mutual communication and responsiveness to the needs of the pastoral and other communities of the lowlands with due recognition being given by the Federal and Regional State Governments to the internal authority of the communities;
- g) Develop with local communities and groups new management plans for, and tourist facilities in, protected areas in the rangelands, and formulate mechanisms of revenue sharing supported by law to benefit local communities which in turn will enable them to protect the areas;
- h) Undertake detailed natural resource, ecological, socio-economic, livestock and existing infrastructure surveys in the rangelands as a basis for development planning; and
- i) Undertake surveys of, and establish a data base on, exclusive and shared wet, dry and reserve grazing territories of the various pastoral and agro-pastoral groups, and identify and survey existing rangeland resource management systems, inter-group access agreements and institutions.

### **4.3 FOREST, WOODLAND AND TREE RESOURCE MANAGEMENT**

*Cross-References: 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.4, 4.5, and 4.7.*

**169. Situation Synopsis:** Climax forests in Ethiopia, which might have covered some 40 per cent of the country, had been reduced to about 2.7 per cent by

1989 and are currently being destroyed at an alarming rate. It has been projected that at the current rates of destruction they will be reduced to scattered and heavily disturbed patches in very remote parts of the country within the first quarter of the next century. The primary cause of the destruction of natural forest is agricultural expansion.

170. Woodlands totalling 5 million and bushlands totalling 20 million hectares are largely located in the moist western and the dry eastern lowlands respectively. Large parts of the woodlands are now threatened by shifting cultivation, the spread of sedentary agriculture and having to meet the urban demands for increasing amounts of construction materials, fuelwood and charcoal.

171. In the cereal agriculture systems of the eastern, central and northern highlands trees grown by farmers have not been an important element of the farming system, though until this century uncultivable hillsides have had woodlands, groves or even forests forming mosaics with cultivated land. Now, however, these forests and woodlands have largely been destroyed and fuelwood deficits are widespread. The lack of security of tree tenure has so far discouraged individual farmers from planting trees except inside their own compounds. The centrally driven "community forestry" woodlots coercively established in the 1980s with little or no community participation have mostly been cut down since 1991, when the centralist military government which had forced their establishment started to crumble.

172. Industrial plantations established by Government amount to only 135,000 hectares. Expansion of these has been constrained by the limited capacity of the state to establish and operate commercial forestry undertakings. The annual incremental yield of wood production in Ethiopia is estimated to be 14.5 million cubic meters set against an annual demand for 47.5 million cubic meters.

173. **Objective:** To conserve forest ecosystems and genetic resources and to increase the production of forest resources on a sustainable basis, including sawn timber, fuelwood, poles, fodder and minor forest products, as well as to increase soil fertility and decrease land degradation thus improving agricultural production through the planting of appropriate trees.

174. The Guiding Principles are:

- a) To recognize the complementary roles of communities, private entrepreneurs and the state in forestry development;
- b) The state shall not undertake the execution of forestry projects and programmes when either communities or entrepreneurs can do so, but it should create an enabling environment for their participation;
- c) Forestry development by individual farmers, communities and private entrepreneurs shall be encouraged through research and extension, the provision of infrastructure, appropriate pricing policies and increased sense of security of land and tree tenure;
- d) To encourage all concerned individuals and communities as well as the government to actively involve in the planning and implementation of forestry programmes to ensure sustainability, minimize cost, and forestall conflict;
- e) To ensure that forestry development strategies integrate the development, management and conservation of forest resources with those of land and water resources, energy resources, ecosystems and genetic resources, as well as with crop and livestock production;
- f) To ensure that afforestation with exotic species be restricted to backyard woodlots, to peri-urban plantations and to plantations for specific industrial projects and other projects; otherwise until reliable information and knowledge on exotic species are available afforestation shall use local species as these are in tune with the environment and thus ensure its well-being;
- g) To assist the natural process of afforestation of uncultivable areas by controlling felling and grazing and by planting judiciously selected local species, as well as by other affordable interventions; and
- h) To adhere to the principle that "sustainable forest management" is achieved when social acceptability and economic viability have been achieved and the volume of wood harvested in a given period is about equal to the net growth that the forest is capable of generating.

**The Strategies in:**

**175. Forest Resource and Ecosystem Management are to:**

- a) Increase the data on the types and extent of forests, woodlands and trees through comprehensive surveys and studies;
- b) Develop partnerships between Federal/Regional State Governments and local governments whereby communities are included in benefit sharing including in the provision of social and infrastructural developments, and obtain forest products and other items for household consumption which in return will make them willing to protect trees and forests;
- c) Promote conservation of natural forests and expand the existing network of protected areas by concentrating efforts on establishing and implementing management plans for forest priority areas; determining which are for habitat protection, for conservation and for production so that the existing network of protected areas is expanded, endemic and rare species as well as unique ecosystems and watersheds are adequately protected and adequate wood production is carried out on a sustainable basis;
- d) Plant selected, scattered and exposure tolerant native trees in uncultivable areas to afford shade to the trees that demand it for their establishment, and plant scattered trees that give food and habitat to forest tree seed dispersing animals and so facilitate natural forest regeneration and, to make this possible, ensure that local species of trees for seed supply are available nearby (e.g. in church groves or by specially planting these trees);
- e) Pursue agricultural and other policies and programmes that will reduce pressure on fragile woodland resources and ecosystems; and
- f) Promote changes in agricultural and natural resource management systems which will limit the need for free grazing of animals in protected forest areas.

**176. Tree and Forest Production are to:**

- a) Develop agreed partnerships between local communities and the private entrepreneur or the state (whichever operates the plantation

forest) whereby the community benefits financially and so affords protection to the forest;

- b) Ensure a rapid build up of seedling supplies by initially expanding production capacity at state run nurseries and increasingly promoting farmer/community production of seedlings, including through the transfer of state nurseries to community or individual farmer operation;
- c) Establish incentives that promote private sector development of industrial plantations and farmer and community investment in farm forestry, hillside protection forestry, woodlots and peri-urban fuelwood plantations;
- d) Reorganize and strengthen forestry research and extension to ensure effective integration of agroforestry practices (at farm and community levels) with land management and farming systems, and to secure active involvement of local communities and farmers in land use planning;
- e) Reduce government's involvement in industrial and peri-urban plantations by gradually transferring management rights to private commercial or community interests and restructure remaining state plantations to ensure commercial viability or privatize them;
- f) Make it mandatory that wood processing industries use only wood from plantations and not from natural forests unless deliberate exceptions are made by the Federal State based on a thorough impact assessment study and forest management plan that clearly shows the sustainability of the logging programme; and
- g) Push wood using industries to establish their own forests or to develop firm contracts with wood producing plantations through tax or other incentives, and where such industries establish their own forests make the replanting after harvest a condition of any land lease.
- h) Find substitutes for construction and fuelwood whenever capabilities and other conditions allow in order to reduce pressure on forests.

177. **Technology Development and Dissemination** are to: Improve the dissemination of research results through the extension services.

178. **Capacity Building and Institutional Development** are to:

- a) Develop and/or revise school, professional forestry institution and higher education curricula in forestry management and conservation and in awareness on forestry;
- b) Implement the curricula through technical assistance to schools, institutes, colleges and universities;
- c) Provide appropriate short-term and in-service training courses for federal, regional and wereda level staff in forestry and natural resource management; and
- d) Strengthen forestry training institutions through the training of trainers and through the provision of teaching materials, equipment, services for the translation of text books, etc.

#### 4.4 GENETIC, SPECIES AND ECOSYSTEM BIODIVERSITY CONSERVATION AND MANAGEMENT

*Cross-References: 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.6, and 4.7.*

179. **Situation Synopsis:** Ethiopia is of world importance in the diversity of its genotypes and species of domesticated and wild flora and fauna as well as in its varied and unique ecosystems. While the conservation of domesticated crop genetic resources is relatively well catered for, there are deficiencies in the system for the conservation of genetic resources of medicinal plants, forest resources, microbial resources, naturally occurring plants, and domesticated and wild animals. Erosion of the genetic resource base is being caused by the destruction of habitats, the introduction of crop varieties of narrow genetic spectra and recurring droughts, wars and conflicts. There is a lack of legal and policy guidelines with respect to the exploration, collection, distribution, introduction, testing, exchange, and utilization of this biodiversity, as well as intellectual property rights for its users and developers.

180. Wildlife conservation initially focused on the larger fauna with the conservation of associated flora and smaller fauna happening incidently. Approximately 32,000 km<sup>2</sup> or 2.7 per cent of the country is supposedly under

strict protection (i.e. Parks and Sanctuaries), although only two of the nine parks are gazetted. Lack of facilities and human resources have meant that in the Parks there is little infrastructure development for tourists. A number of Parks and Sanctuaries suffered severe damage either during the war or during its immediate aftermath. Country-wide and regional wildlife surveys are currently two or more decades out of date.

181. There are growing conflicts between biodiversity conservation and the increasing demands on land for agricultural and livestock development. These growing conflicts must be seen within the context of the levels of chronic poverty which exist in the rural areas.

182. **Objective:** To preserve, develop, manage and sustainably use the diversity of gene pools of Ethiopia's species of wild and domesticated flora and fauna and its natural and human-managed ecosystems for the country's social and economic development and for the integrity of the biosphere.

183. **The Guiding Principles are:**

- a) Biological diversity should encompass natural and human-managed ecosystems, species of domesticated and wild flora and fauna, and the genetic variation within individual species;
- b) To promote *In situ* systems (i.e. conservation in a nature reserve, farmer's fields, etc.) as the primary target for conserving both wild and domesticated biological diversity; but also promote *ex situ* systems (i.e. conservation outside the original or natural habitat) in gene banks, farms, botanical gardens, ranches and zoos as supplementary to *in situ* conservation;
- c) To promote the *in situ* conservation of crop and domestic animal biological diversity as well as other human made and managed ecosystems through the conscious conservation of samples of such ecosystems, even when change as a whole is taking place;
- d) The conservation of human-made and managed ecosystems will likewise require a conscious continuation of certain management systems in the face of change;



- e) The value of scientific information about biological systems derived from biodiversity should be realized in taking decisions on conservation;
- f) In order to strengthen the planning process for the conservation and sustainable use of biodiversity, the knowledge base on its extent, nature, status and location should be regularly updated and broadened and the adequacy of the current protected area network reviewed;
- g) To ensure that the importation, exportation and exchange of genetic and species resources should be subject to legislation, e.g. to ensure the safeguarding of community and national interests, the fulfilling of international obligations, quarantine, etc.; Above all biological material which is self-regenerative and impossible to control once allowed to get out of control may result in the most insidious and damaging form of pollution which is biological pollution, thus the importation and use of biological material including those genetically engineered should be under stringent regulations;
- h) Access to biological diversity shall be ruled by the provisions of the Convention on Biological Diversity which has been ratified, exchanging biological diversity with financial and technological benefits and inputs into capacity building when dealing with foreign industrialized societies and exchanging biological diversity with other biological diversity when dealing with foreign farming communities;
- i) Conservation of biological diversity should be seen as natural resource management which has as its primary goal the maintenance of the country's biological resources to meet the needs and aspirations of present and future generations;
- j) To ensure that factors such as the level of vulnerability, uniqueness, importance and economic and environmental potential of the genome be taken into account in determining priorities in conservation;
- k) To ensure that the conservation of genetic resources *in situ* maintains a dynamic system of genetic variability in an environment of constant selection pressure that is normally present in the natural or human made ecosystem as the case may be;

- l) To promote the involvement of local communities inside and outside protected areas in the planning and management of such areas;
- m) To ensure that the conservation of biological diversity outside the protected area system be integrated with strategic land use plans, local level plans and sustainable agricultural and pastoral production strategies;
- n) To include in protected areas as wide a range of ecosystems and habitats as possible and where appropriate to link them by corridors of suitable habitats along which species can migrate;
- o) Eco-tourism shall be seen as one way of conserving biological diversity while at the same time earning revenue;
- p) To ensure that pricing policies and instruments support conservation of biological diversity;
- q) To ensure that park, forest and wildlife conservation and management programmes which conserve biological diversity on behalf of the country allow for a major part of any economic benefits deriving therefrom to be channelled to local communities affected by such programmes; and
- r) To recognize that certain animal and plant species are vermin or pests or may be a reservoir of disease to humans, crops and livestock, and to control them.

184. The Strategies are to:

- a) Enact and enforce legislation for the preservation, conservation, management and sustainable use of genetic and ecosystem resources to provide for the conservation of biological diversity in its widest sense;
- b) Ensure the decisive participation of local people in the planning, management and care for protected areas and the flora and fauna they contain; establish a range of flexible mechanisms for protected area management which includes local communities as on-site managers and ensure that a significant proportion of any benefits accrue to those local communities;

- c) Assert sovereignty over Ethiopia's biological resources by enacting and enforcing legislation for the regulation of the transfer of genetic resources (including modified organisms and alien species and races) into, out of and within the country, and establish the international linkages required;
- d) Undertake a systematic evaluation of the status of biodiversity in natural and near natural areas both inside and outside the existing protected area network in order to define priorities for both the management of the existing protected areas and the designation of additional areas;
- e) Identify valuable areas of biological diversity outside the formal protected area system and in consultation with local communities explore ways and means of protecting and conserving the genomes, species and ecosystems in such areas;
- f) Develop effective and sustainable integrated federal, regional and local *in situ* and *ex situ* systems including protected areas, botanical gardens, zoological parks, aquaria and gene banks to acquire, conserve and utilize the genetic resources of crops and their wild relatives, forage plants, medicinal plants, timber trees, domesticated animals and their wild relatives, as well as all the other indigenous wild plants and animals and microorganisms;
- g) Support local communities to set aside and protect samples of non-agricultural areas free from human interference;
- h) Support communities to institute *in situ* conservation of samples of their agricultural systems in the face of change;
- i) Foster public support for the conservation of biological diversity by encouraging private investment in wildlife conservation;
- j) Recognize, identify and exempt from protective legislation certain plant and animal species which may be pests or vermin outside strict protection areas;
- k) Coordinate sectoral institutions concerned with the conservation of biological diversity;

- l) Enhance public awareness in the area of biodiversity conservation at all levels as part of the broader environmental education strategy; and
- m) Strengthen links with international conventions on biological diversity: e.g. CITES, Ramsar, World Heritage, etc.

#### **4.5 WATER RESOURCES DEVELOPMENT FOR IRRIGATION, HYDRO-ELECTRICITY AND WATER SUPPLIES**

*Cross-References: 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.6, 4.7, and 4.9.*

185. **Situation Synopsis:** The expansion of irrigation is essential in agricultural development, the expansion of the use of the immense hydropower potential is a key element in all sectors of economic development, and the provision of water supplies is a priority element of environmental health development.

186. However, while estimates of the potential irrigable land in Ethiopia is about 3.7 million hectares, only 75,000 hectares of large-scale and 72,000 hectares of small-scale irrigation has been established. A complex of policy, institutional and financial problems have hindered irrigation development. A number of policy problems have been identified including the lack of an overall irrigation policy and strategy, a poor information base, weak institutional capacity, the previous restrictions on private sector participation, lack of cost recovery mechanisms, lack of land tenure security, a complex institutional structure with overlapping responsibilities and poor coordination, lack of clarity of responsibilities of irrigation scheme operators and the previous macro pricing and monetary policies which treated water as a free good. Finally, until very recently there was no legal framework. With a healthy irrigation development, much needed food and industrial crop production could be realized.

187. Of the estimated hydropower potential of over 135 thousand GWH per year, only 1 per cent has been developed. This is further discussed in Section 4.6.

188. Deforestation and poor land husbandry practices have resulted in accelerated run-off, reduction in the recharge of groundwater reserves, increased sediment load of rivers and siltation of reservoirs and increased incidence and degree of flooding.

189. The present infrastructure for water supply systems is at a low level of development. Clean water for domestic use is provided to only 27 per cent of the total population. Only 19 per cent of the rural population and 76 per cent of the urban population have access to clean water.

190. **Objectives:** To develop water resource for increasing sustainable agricultural production, for the generation of hydroelectricity and for the health and well-being of the population.

191. **The Guiding Principles are:**

- a) Water resource development for basic domestic and subsistence purposes should have overriding priority;
- b) To recognize that water resources play an important role to meet Ethiopia's energy demand and that, by generating power causes no pollution on the environment;
- c) Ethiopia can develop its substantial irrigation potential to raise its agricultural production;
- d) The "drainage basin" should be used as the basic planning and development unit with priority being given to watershed management to control and conserve water and to regulate its balance in the catchments;
- e) However, given the decentralization of administration into self-governing regions, it should be recognized that there will be a need to establish suitable institutional arrangements involving both Federal and Regional State Governments;
- f) An integrated approach to water resource development should be adopted putting emphasis on multi-purpose projects;
- g) As most large and medium-scale irrigation potential is located in the rangelands of the lowlands occupied by pastoralists, to consider the opportunity costs of irrigating important dry season grazing areas of the pastoralists for crop production in any cost benefit analysis of such irrigation projects;

- h) Local communities should receive adequate compensation for economic loss they incur in irrigation development undertaken in their areas whether by government or by entrepreneurs;
- i) Water resources should be sustainably managed at the lowest appropriate government or community level;
- j) Technologies for small-scale irrigation and village water supplies should always be simple, acceptable, and easy to handle and maintain by local communities. They should also be affordable to local communities and suitable to the local conditions and the environment;
- k) To involve water resource users, particularly women and animal herders, in the planning, design, implementation and follow up in their localities of water policies, programmes and projects so as to carry them out without affecting the ecological balance;
- l) Surface and groundwater uses should be planned to maximize efficient use of the quantity and to improve the quality of water available, and allocations to domestic, industrial and agricultural uses should not exceed the sustainable supply;
- m) Priority for state assistance should be given to small and micro irrigation schemes (i.e. less than 200 hectares) to allocate the greater share of resources to peasant agriculture in line with the Government's economic policy;
- n) The amount of water used for irrigation should be kept at the minimum required to maintain soil conditions suitable for plant growth and, in particular, to protect the soil from salinization;
- o) Sufficient attention should be given to operation, maintenance and management of irrigation projects and existing ones should be monitored and evaluated to this end;
- p) To ensure that the control of environmental health hazards be a necessary condition in the design, construction and use of dams and irrigation systems;
- q) To recognize that natural ecosystems, particularly wetlands and upstream forests, are fundamental in regulating water quality and

quantity and to integrate their rehabilitation and protection into the conservation, development and management of water resources;

- r) To ensure that any proposed introduction of exotic species into water ecosystems be subject to detailed ecological studies and environmental impact assessment; and
- s) To promote the protection of the interface between water bodies and land (e.g. lake shores, river banks and wetlands).

**The Strategies in:**

**192. River Basin and Irrigation Development are to:**

- a) Subject all major water conservation, development and management projects to the environmental impact assessment process and include the costs and benefits of protecting watershed forests, wetlands and other relevant key ecosystems in the economic analysis of such water projects;
- b) Promote an integrated approach by concerned government agencies and NGO's in the implementation of conservation and protection measures in catchment areas to control soil erosion and siltation and to maintain productive water environments;
- c) Develop the capacity in the regional/zonal water resource development departments to undertake irrigation design and implementation and through the regional women in development (WID) desks ensure that the interests of women are duly reflected in this;
- d) Rehabilitate and upgrade the hydrological as well as the surface water monitoring networks, strengthen the information management system for resource planning, and establish a country-wide groundwater monitoring network as well as a monitoring system for irrigation schemes;
- e) Promote, through on-site training, effective water management techniques at the farm level for improved performance of medium to large-scale irrigation schemes;

- f) Establish institutions with federal and concerned regional representation for inter-regional river basin master planning and project implementation in order to avoid conflicts;
- g) Undertake comprehensive and integrated resource surveys and assessments and make proposals for land and water development and management on the basis of the river basin;
- h) Reappraise all previous large and medium-scale irrigation feasibility studies in the light of the new economic and environmental policies;
- i) Strengthen and develop the institutional capacity to undertake water resources assessment;
- j) Establish appropriate laboratories for hydraulics and hydrology, and for evaluating water resources as well as for monitoring water quality;
- k) Provide technical and credit support to the private sector in water resource development activities; and
- l) Develop plans for small-scale and micro irrigation within the context of regional, sub-regional and local level agricultural planning and development with collaboration and participation of local communities.
- m) Promote, to the extent possible, viable measures to artificially recharge ground and surface water resources.
- n) Recycle waste water when it has been found to be safe for health and the environment or when it has been made safe without entailing high cost.

**193. Water Supply Development are to:**

- a) Develop a federal strategic plan for water supplies indicating priority areas, target populations, technologies, the needs for rehabilitating existing schemes, appropriate systems of repair and maintenance, funding requirements, and institutional responsibilities;
- b) Empower rural communities and urban municipalities to ensure local ownership of water supplies through the formation (if not already in



existence) of local representative water committees in rural areas and municipal technical units in urban areas and pass to them responsibility for day-to-day management and maintenance;

- c) Develop a local technical capacity for rural community and urban municipality management and maintenance of water sources and for measures to prevent health hazards around water points;
- d) Adopt, adapt or develop and promote simple and easy-to-use technologies which are appropriate for the local conditions in rural and urban situations, and acceptable to, as well as affordable by, local communities; and
- e) Generate information on water quality in rivers and groundwater reserves and on water resources, particularly in drought-prone areas.

#### **4.6 ENERGY RESOURCES DEVELOPMENT AND MANAGEMENT**

*Cross-References: 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, and 4.9.*

194. **Situation Synopsis:** Ethiopia's energy consumption per capita is one of the lowest in the world and yet only 1 per cent of the country's hydroelectric and none of its geothermal potential has been realized. Natural gas and coal reserves have been proven but are as yet not developed. Over 95 per cent of domestic energy needs are met from bio-fuels contributing to deforestation, loss of soil nutrients and organic matter, and thus to physical and biological land degradation.

195. The incremental fuelwood needed to match present requirements would involve the equivalent of 2.1 million hectares of block plantation and this would rise to 6 million hectares in 2014. These areas represent 10 and 30 times the combined areas of existing industrial, peri-urban and community woodlots, with the latter figure being the equivalent of an average annual establishment rate of some 400,000 hectares over the next 15 years. This scale of tree planting does not appear to be realistic even under ideal conditions. The energy sector will, therefore, need to promote an integrated approach to tree planting, promotion of end-use efficiency with traditional fuels and the substitution of modern commercial fuels for traditional fuels wherever possible.

**196. Objectives:** To augment the supply of energy commensurate with the country's energy demand and reduce the growth rate of that demand through increasing supplies of energy and improving efficiency in its production and conversion.

**197. The Guiding Principles are:**

- a) To adopt an inter-sectoral process of planning and development which integrates energy development with energy conservation, environmental protection and sustainable utilization of renewable resources;
- b) The supply of energy to remote and isolated areas shall be based on decentralized energy supply systems in order to minimize investment costs;
- c) Institutional, pricing and regulatory arrangements shall ensure the optimal and efficient development and utilization of energy resources;
- d) Increasing reliance shall be placed on energy efficient technologies, sustainable use of renewable resources, and the development of indigenous energy resources;
- e) To promote the development of renewable energy sources and reduce the use of fossil energy sources both for ensuring sustainability and for protecting the environment, as well as their continuation into the future;
- f) The participation of communities especially that of women in all aspects of resources development and utilization shall be ensured;
- g) The private sector shall be encouraged and provided with the necessary incentives to participate in the development of the country's energy resources;
- h) Energy resources assessment, investment planning and least cost investment programming shall be undertaken at all levels as a joint effort by concerned agencies;
- i) Energy development shall be included at all levels of planning but especially in wereda and local development plans;

- j) Energy resource assessment, investment planning and investigation of least cost investment programmes shall be undertaken as a joint effort by all state and private sector agencies;
- k) To make institutions and industries which consume large amounts of wood fuel establish their own plantations or make contractual arrangements with plantations to meet their wood requirements; and
- l) To encourage government leases for private entrepreneurs to plant for fuel woodlots in peri-urban areas.

The Strategies in:

**98. Development and Conservation of Biomass Energy Resources are to:**

- a) Ensure that energy plans adequately address fuelwood requirements;
- b) Link the implementation of energy policies and strategies more closely to the implementation of policies and strategies on agriculture and forestry as well as on biomass and renewable resources;
- c) Focus extension programmes on farm and homestead tree planting to ensure that each homestead grows enough trees to satisfy its wood requirements;
- d) Set aside land for long-term leases for private sector woodlots especially in peri-urban areas;
- e) Boost technical and social research on the design of improved cooking stoves;
- f) Promote local manufacturing and distribution of improved charcoal and biomass stoves; and .
- g) To locate, develop, adopt or adapt energy sources and technologies to replace biomass fuels.

**199. Development of Alternative Energy Resources and their Utilization are to:**

- a) Develop alternative energy sources (e.g. solar power, wind, biogas, agricultural bio-fuel, liquid bio-fuel or small hydroelectric plants) for towns and villages remote from the national grid;
- b) Acquire, develop, test and disseminate appropriate and improved energy use technologies (e.g. improved stoves, charcoal kilns, solar powered cookers and heaters);
- c) Demonstrate and support the use of other energy sources (e.g. geothermal, solar, etc.) in the various economic sectors where it is currently little used such as in transportation, irrigation, crop-drying, food processing, fish drying, and thermal heating; and
- d) Site factories that require hot water in areas with hot springs giving due consideration to the overall environmental, economic and social advantages.

**200. Development of Electricity are to:**

- a) Promote the appropriate development of electricity in accordance with a prioritized energy investment programme;
- b) Ensure that feasibility studies for hydroelectricity facilities and other significant generating facilities include rigorous environmental impact assessments to allow informed decision-making that maximizes benefits to the community and to the country at large and eliminates or at least minimizes damage to the natural resources base and/or to environmental well-being; and
- c) Adopt energy pricing policies that promote the sustainable development of a local electrical goods industry capable of producing affordable lamps, cooking and heating appliances.

**201. Capacity Building and Institutional Strengthening are to:**

- a) Strengthen research, planning and project implementation capability of the federal and regional energy agencies;

- b) Review current institutional, pricing and regulatory arrangements in the energy sector to suggest reforms that will better meet community energy needs and maximize the opportunities for private commercial and community sector initiatives to develop and market environmentally sound energy sources;
- c) Formulate an integrated country-wide energy master plan;
- d) Establish a centre for testing alternative and efficient energy sources, technologies and appliances; and
- e) Promote and assist the private sector to assemble and manufacture energy development facilities and end-use appliances.

#### **4.7 MINERAL RESOURCES DEVELOPMENT AND THE MANAGEMENT OF MINING OPERATIONS**

*Cross-References: 3.2, 3.4, 3.5, 3.6, and 4.10*

**202. Situation Synopsis:** Despite the presence of a wide range of useful minerals of exploitable grades and extent, the mining sector is small and undeveloped. In the context of the New Economic Policy and the Agricultural Development-Led Industrialization Strategy, minerals can play important roles through the provision of primary and intermediate inputs for construction and industry as well as for direct export. This mineral exploitation can easily cause serious damage to the natural resources base and to the environment if appropriate management of mining operations for protecting the environment are not adopted.

**203. Objective:** To increase the contribution of mining to the diversification and expansion of the economy and to export earnings, and to increase mineral use in manufacturing, construction, agriculture and services through the development of self-sustaining and environment-friendly private and state sector mining, mineral processing and mineral based manufacturing.

**204. The Guiding Principles are:**

- a) Mineral resources are finite and shall be used as frugally as possible in order to extend their use as far into the future as possible;

- b) To adopt as mineral resources are depleted sooner or later, that the long-term usability of the land be safeguarded from the outset so that with due care during and following the mining activities, it can still be used for the agriculture and/or other economic activities;
- c) As mining activities can very easily be permanently destructive of the environment, agricultural production and human health, adequate safeguards shall be in place to ensure that significant environmental damage does not occur;
- d) Mineral development shall be integrated with the development of the sectors of the economy which are end-users of minerals, and with those sectors that provide inputs and support to the mining industry;
- e) The important role of women as participants in, and beneficiaries of, mineral development shall be recognized and integrated into the development programming and project preparation activities;
- f) To encourage and support artisanal and small-scale miners to practice mining which is organized and responsible so as to be consistent with environmental laws, rules and regulations to safeguard the well-being of the land and its other natural resources;
- g) To advise and train mining communities in methods of environmental protection and reclamation of abandoned mining areas; and
- h) Given the increased role of the private sector and of possible foreign investment in large-scale mining the capacity of the state sector mining agencies to regulate and administer environmental protection shall be strengthened.

**The Strategies in:**

**205. Increasing Productive Capacity are to:**

- a) Compile and maintain a public database on mineral production and exploration required for planning and disseminate this within the industry;

- b) Undertake detailed petroleum exploration in known areas, and collate, compile, standardize and make available existing geological, geochemical, gravimetric and magneto-telluric sounding information in order to promote petroleum exploration in new areas;
- c) Increase the coverage of regional geological, hydrogeological and detailed geochemical mapping and mineral exploration surveys;
- d) Adopt mechanisms for attracting venture capital investment in mineral development;
- e) Create a simplified and efficient system for permitting investors to operate, including negotiation, licensing, land rights acquisition, dealing with other agencies, inspection and control;
- f) Attract foreign investment in large-scale mining in order to facilitate the acquisition of technology, investment capital and access to export markets for minerals by publishing information on the country's geological and mineral assets;
- g) Strengthen the capacity of the federal and regional institutions for the survey, monitoring, regulation and administration of the planning and implementation of mining operations by communities, entrepreneurs, and state agencies;
- h) Decentralize decision making for the issuance of licences for the collecting of surface minerals, including panning for gold, drilling for groundwater and quarrying to the municipal authorities in urban areas and to wereda councils in rural areas and for mining large salt deposits to regional councils;
- i) Provide technical assistance and information to private sector developers in small-scale mining such as salt extraction, lignite mining, brick making, and gemstone mining;
- j) Establish good working relations with existing artisanal gold miners, provide technical assistance to improve their output, support their handicraft and jewellery making, and improve their environmental management;
- k) Promote and support the local manufacture of mining equipment in particular for the small-scale and artisanal mining sectors through

technical assistance and training, and through facilitating financing for mining service industries; and

- l) Provide support to women in mineral development with special practical training and technical assistance particularly in small-scale and artisanal mining.

**206. Environmental Management and Protection are to:**

- a) Implement continuous programmes of education for the public and industry, environmental monitoring, and the provision of technical advice and assistance, in environmental management during mining operations;
- b) Provide technical and material assistance to artisanal miners to improve environmental protection and output efficiency;
- c) Use conditions of contract to ensure licensed mining operations prepare pre-development environmental impact studies, adopt sound environmental management practices during operations, and undertake appropriate mitigation and reclamation measures both during and after operations;
- d) Prepare and enact specific mining environmental protection legislation;
- e) Prepare environmental management plans for areas earmarked for artisanal and small-scale mining; and
- f) Assess the degradation of lands due to past mining operations and seek local community assistance and participation in restoring these lands to productive use.
- g) To establish guarantee system for enforcing measures that should be taken by the licensee for the restoration of the land to its previous conditions or to the best improved level that the prevailing ecological conditions allow.



#### 4.8 HUMAN SETTLEMENTS, URBAN ENVIRONMENTS AND ENVIRONMENTAL HEALTH

*Cross-References: 3.1, 3.2, 3.4, 3.5, 3.6, 4.6, 4.7, 4.10, and 4.12*

207. **Situation Synopsis:** The current urban proportion of the national population is relatively low standing at only 14.7 per cent. The annual rate of urban population growth is 5.4 per cent and the national proportion of urban population is likely to rise to 30 per cent by the year 2020. There is a high proportion of households headed by females in urban areas. Some 4 million urban dwellers (approximately 60 per cent) are classified as "chronically poor".

208. About 31 per cent of households in Addis Ababa have no sanitation facilities, while in other urban areas the proportion is about 48 per cent. In Addis Ababa shared toilet facilities constitute 24.8 per cent of all units, while in other urban areas the proportion is about 34.8 per cent. Sewerage services are absent in all towns except Addis Ababa which is limited to only 800 establishments or 1 per cent of households. The serious deficiencies in sanitation services, the lack of treatment of the sewerage collected by the limited collection service and random defecation in urban areas have created serious environmental problems. Rivers and streams in the vicinity of Addis Ababa and other large urban centres have become open sewers. During the rainy season raw sewerage is washed down hillsides. Privacy for women is almost impossible as many latrines are shared among many people and even simple doors are often absent. All of these conditions now present an increasing public health hazard of terrible proportions.

209. The current stock of urban housing is both insufficient and of very poor quality. In 1974, about 60 per cent of the housing stock was nationalized and allocated on fixed rents which have now become low. For the past twenty years, there has been little or no maintenance leading to a deterioration of the existing housing stock. In addition there has been a very low rate of housing construction leading to considerable overcrowding. Many areas do not have vehicle access which results in poor or no service provision (e.g. cesspit emptying). The annual housing need over the past two decades was estimated at 77,600 units. The actual supply has been 6,000 indicating a deficit of 92.3 per cent.

210. Hitherto the government has taken the lead role in housing and infrastructure provision but is now finding that it is unable to keep pace with the increasing demand. Given the very high rates of poverty, private sector

involvement in sanitation and other habitat improvements is likely to be difficult to promote.

**211. Objectives:** To plan and manage human settlements and their environments so as to satisfy the physical, social, cultural, health and other needs of their inhabitants on a sustainable basis.

**212. The Guiding Principles are:**

- a) To incorporate rural-urban migration, human settlement and environmental health concerns which arise from urbanization created by social and economic development into regional, wereda and local level planning and development activities;
- b) To integrate harmoniously, human-produced and natural elements in the development and management of urban areas in order to maintain the natural ecosystems;
- c) To ensure that improved environmental sanitation be placed highest on the federal and regional agendas for achieving sustainable urban development;
- d) The first priority for improved sanitation shall go to urban areas, second to smaller towns and villages, and third to dispersed rural areas;
- e) To promote the construction by individual families of their own houses and create conducive conditions for communities and individual families to make improvements to their immediate habitats, as well as to provide human and domestic waste disposal facilities;
- f) However, given the very high levels of poverty in urban areas security of tenure of houses and land to encourage investment in sanitation shall be recognised as an essential incentive in individual and community sector involvement;
- g) To recognize the importance of and help bring about behavioural change through education and public awareness of environmental sanitation problems in trying to achieve demand-driven community led programmes of improved urban environments as well as the sustainable use and maintenance of sanitation facilities;

- h) Methods used to raise public awareness shall be participatory and interactive and also be action orientated focusing on "learning by doing";
- i) The government's role shall be confined to ensuring security of tenure of houses and land, formulation of an enforceable environmental regulatory framework, and provision of basic infrastructure and sanitation and health services;
- j) To bring a sound partnership between the government and communities in the development of an integrated sanitation delivery system, and to foster the supplementary role of NGO's.
- k) To ensure that housing and sanitation technologies and regulatory standards are set at a level and cost that are within reach of the users and flexible enough to be adaptable to the very varied socio-economic, epidemiological, climatic and physical site conditions which are found in urban areas;
- l) In developing urban sanitation programmes the interactions among the various environmental problems shall be recognized, for example, poor surface drainage and random solid domestic waste disposal in drainage lines;
- m) To give priority to waste collection services and to its safe disposal;
- n) On the one hand to recognize the importance of adequate water supply as an important component in achieving a sustainable and healthy urban environment, and on the other hand to recognize the minimization of the need for water as an important factor in the choice of sanitation technologies;
- o) There shall be clear lateral and vertical operational linkages among the federal sectoral administrations and the regional/local administrations which are responsible for the urban environment;
- p) Local citizen groups and neighbourhood centres shall be encouraged and supported to provide advice on health care, hygiene, family planning, self-help housing, and efficient use of energy and water;

- q) The symbiotic relationship between an urban area and the surrounding rural areas shall be recognized and integrated into regional, urban and rural local land use planning; and
- r) These principles shall apply to existing and new settlements schemes and as far as possible to temporary camps.
- s) To promote the development of sewerage systems and sewage treatment facilities in urban centers; and
- t) To the extent possible to recycle liquid and solid wastes from homesteads and establishments for the production of energy, fertilizer and for other uses.

**213. The Strategies are to:**

- a) Establish an institutional framework which ensures clear mandates and coordination of responsibilities among the various government agencies active in the fields of planning and developing urban areas, providing water, sanitation and other urban environmental infrastructure and services;
- b) Promote environmental sanitation, education and the creation of awareness in the community to foster a sense of responsibility and determination to acquire and maintain a relatively higher standard of environmental sanitation;
- c) Develop a federal sanitation plan which addresses the problems of the provision of sanitation services and includes such components as sanitation promotion, self help strategies, low cost sustainable technologies, participation of women, urban and rural differences, areas of priority, and define the yearly implementation rates required to meet demand;
- d) Encourage the creation of and support for local citizen groups and neighbourhood centres to establish a partnership with government agencies for developing sustainable sanitation delivery systems and for providing advice on, and creating awareness of, issues of health care, hygiene, family planning, and the efficient use of energy and water;

- d) To adopt the "polluter pays" principle while endorsing the precautionary principle since pollution is likely to occur, and ensure that polluting enterprises and municipalities and wereda councils provide their own appropriate pollution control facilities;
- e) To establish clear linkages between the control of pollution and other policy areas including water resources, agriculture, human settlements, health and disaster prevention and preparedness;
- f) To provide adequate regulation of agricultural (crop and livestock) chemicals and micro-organisms;
- g) To ensure that pollution control is commensurate with the potency, longevity and potential to increase or reproduce of the pollutant; and
- h) When dealing with substances that accumulate in higher order carnivores, e.g. DDT, it is the control of the concentration in the tissues of the higher order carnivores that shall be the focus of regulatory decisions.

The Strategies in:

**218. Regulatory Framework for Pollution Control and Management of Hazardous Materials are to:**

- a) Review and evaluate all existing legislation in the context of the Federal Policy on Natural Resources and the Environment to determine overlaps, omissions and duplications, and prepare umbrella "enabling" environmental legislation for environmental protection and the institutional framework required to implement it;
- b) Review and establish environmental standards for water quality and waste disposal into water, land and air;
- c) Review and establish environmental standards for methods of the safe handling and storage of hazardous and dangerous materials and issue regulations to enforce them;
- d) Review and establish standards of public hygiene that public services shall follow and issue regulations to enforce them;

- e) Review and prescribe minimum standards of environmental safety in mining operations, including the development of mine contingency plans and the disposal of mine tailings and dumps, and issue regulations to enforce them;
- f) Establish safe limits for the location of sanitary landfill sites in the vicinity of wells, bore holes and dams, and issue regulations to enforce them;
- g) Stipulate procedures for the reclamation and restoration of land, top soil and vegetation of mined out areas to be followed by mining companies and enforce their application through the use of adequate performance bonds, and monitor the recovery of such areas;
- h) Review, develop and institute safety and health codes for industrial practice and guidelines based on the hazard levels of various industry types, and issue regulations to enforce them;
- i) Review and develop guidelines for waste disposal, public and *industrial hygiene and techniques* to enable the cost-effective implementation of defined standards of control, and issue regulations to enforce them;
- j) To formulate and implement a country-wide strategy and guidelines on the management of wastes from the medical, agriculture and other sectors that may use potentially hazardous biological organisms, their fragments or chemicals, and to issue the necessary regulations to enforce them;
- k) Review and develop contingency plans and *guidelines for environmental emergencies*;
- l) Establish a system for monitoring compliance with land, air and water pollution control standards and regulations, the handling and storage of hazardous and dangerous materials, mining operations, public and industrial hygiene, waste disposal, and water quality;
- m) Maintain an up-to-date register of toxic, hazardous and radioactive substances, and make the information available on request;

- n) Maintain regular environmental audits to ensure the adoption of environmentally sound practices in all public and private development activities including industrial and mining operations;
- o) Enforce the exhaustive labelling and detailing of the contents, usage and expiry date of foods, drugs, cosmetics, other chemicals, and when any of the contents are poisonous or dangerous in any other way, the fixing of a strikingly visible label to that effect; and
- p) Promote waste minimization processes, including the efficient recycling of materials wherever possible.
- q) To create bylaw an effective system of control, distribution, utilization and disposal after use or expiry of chemicals, biological organisms or fragments of organisms that could be hazardous but are required for use;
- r) To prohibit from importation to and from transit through Ethiopia hazardous materials, organisms or fragments of organisms as agreed by African states in Bamako;

**219. Capacity Building, Institutional Strengthening and Increasing Environmental Protection Awareness are to:**

- a) Strengthen the capacity of the Environmental Protection Authority (EPA) to develop appropriate legislation, regulations and standards, to undertake environmental audits and to coordinate federal and regional systems of environmental impact assessment through the provision of training;
- b) Through the development of technical guidelines, and the provision of training, develop and strengthen the capacity of the mandated line ministries and regional bureaus to systematically monitor and regulate legally established environmental standards and regulations, and to undertake environmental impact assessments as part of their own project preparation process as well as to enforce such undertakings by commercial private and local community entrepreneurs;
- c) Strengthen institutional and technical capacities and enhance institutional coordination for enforcing land, air and water pollution control standards and regulations, for the handling and storage of

hazardous and dangerous materials, for mining operations, for enforcing standards of public and industrial hygiene, waste disposal, and water quality;

- d) Hold as legally liable an employer who deploys employees in using or handling hazardous materials without adequately training them on how to deal with the hazard and without adequate equipment to protect each one of them for physical harm or disease that is caused by working conditions whether the harm or disease sets in the place of work or away from it.
- e) Train and encourage extension workers, and through them, farmers in the safe and proper use of agro-chemicals; and
- f) Foster better understanding of the dangerous effects of chemicals and organisms and their fragments through the provision of information in a form understandable to users, and provide or enforce the provision of information on the appropriate methods and technologies for the treatment and disposal of wastes.

#### **4.10 CONTROL OF ATMOSPHERIC POLLUTION AND CLIMATE CHANGE**

*Cross-References: 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, and 4.7*

**220. Situation Synopsis:** In the geological time scale climate keeps changing. Ethiopia has often been wetter or drier than it is now. There also seem to be cyclic changes of varying time scales which are not well understood.

221. Climate is a major natural resource that affects nearly all human activities. Because of its complexity and variability climate is one of the key factors affecting the fate and prospect of humankind. Due to heavy emissions from energy generating plants, industrial and other sources, greenhouse gas concentrations have been increasing resulting in the warming of the atmosphere. This enhanced concentration of greenhouse gases coupled with the unwise use of natural resources is anticipated to cause a change in climate and evidence is mounting which shows that some change has already occurred.

222. Should a substantial climate change take place, its impact on the whole of nature and civilization could be devastating, whether the change is along



a wetter or drier gradient, or whether along a warmer or colder trend. It is for this reason that the world has taken very seriously the indications that the earth's climate is warming up. The culprits are believed to be the atmospheric greenhouse gases, mainly carbon dioxide which has dramatically increased since the industrial revolution, emitted from factories, fossil fuel, electricity generators, motorized vehicles, homestead appliances and fires, bush fires, etc. Since greenhouse gases generated from biomass would be taken up in the replacement generation of that biomass in the next growing season, it is believed that the main source of incremental greenhouse gases is the burning of fossil fuels.

223. Ethiopia has one of the lowest per capita rates of consumption of fossil fuel in the world. Its contribution to climatic change is, therefore, negligible. But it has one of the most vulnerable climates in the world. Its concern, therefore, should be one of the most acute. For these reasons, it should be active in trying to check climate change, looking more at the mistakes it should avoid in its future industrialization and at the diplomacy it can play in the world.

224. **Objective:** Through a country-wide programme which includes climatic monitoring, to minimize the emission of pollutants into the atmosphere to levels which are as close as possible to being compensated by their removal by green plants and other natural phenomena so as to minimize their contribution to climate change.

225. **The Guiding Principles are:**

- a) To promote a climate monitoring programme as the country is highly sensitive to climatic variability;
- b) Ethiopia has large arid and semi-arid areas which have already suffered much from the vagaries of climatic variation and are likely to suffer seriously if a shift in climate does occur, and any shift in climate thus concerns Ethiopia very seriously;
- c) Although compared with the rest of the world Ethiopia's contribution to atmospheric pollution that causes climate change has been negligible, its impact is going to increase with the growth of industrialization, and Ethiopia should do all it can to influence the rest of the world to reduce atmospheric pollution;

- d) To recognize that even at an insignificant level of contribution to atmospheric greenhouse gases, a firm and visible commitment to the principle of containing climate change is essential for a moral position from which to deal with the rest of the world in a struggle to bring about its containment by those countries which produce large quantities of greenhouse gases;
- e) To recognize that Ethiopia's environmental and long-term economic interests and its energy prospect coincide with the need to minimize atmospheric inputs of greenhouse gases as it has a large potential for harnessing hydro-, geothermal and solar energy, none of which produce pollutant gases in any significant amounts and to develop its energy sector accordingly;
- f) To actively participate in protecting the ozone layer since, as the highlands of Ethiopia already have a thin protective atmosphere and are liable to suffer agricultural losses and adverse health effects from exposure to ultraviolet rays;
- g) To recognize that the continued use of biomass for energy production makes no net contribution to atmospheric pollution as long as at least equal amounts of biomass are produced annually to compensate this and to maximize the standing biomass in the country through a combination of reforestation, agroforestry, the rehabilitation of degraded areas, a general revegetation of the land and the control of free range grazing in the highlands and to seek financial support for this from industrialized countries for offsetting their carbon dioxide emission; and
- h) The revegetation of the land, especially reforestation, affects the climate beneficially not only through sequestering excess carbon dioxide from the atmosphere, but also through enhancing the hydrological cycle and thus ameliorating micro-climate and even improving rainfall.

**226. The Strategies are to:**

- a) Maximize the standing biomass in the country through a combination of reforestation, agroforestry, the rehabilitation of degraded areas, a general revegetation of the land and the control of free range grazing in the highlands and seek financial support for this

from industrialized countries for offsetting their carbon dioxide emissions;

- b) Develop environment-friendly technologies, such as the harnessing of hydro- and geothermal power, in order to safeguard the atmosphere;
- c) Reduce to the minimum possible the use of fossil fuel for energy production;
- d) Adhere to the international conventions and protocols designed to protect the atmosphere; and
- e) Develop appropriate evaluation techniques to assess alternative measures and programmes designed to avoid climate change.

#### **4.11 CONSERVATION AND PROTECTION OF CULTURAL AND NATURAL HERITAGE**

*Cross-References: 3.2, 3.4, 3.5, 3.6, 4.5, 4.7, and 4.8*

**227. Situation Synopsis:** Ethiopia's rich heritage and culture permeates every facet of daily life and provides a powerful and socially cohesive force in the national consciousness. It also provides a potentially valuable "resource" in terms of tourism. However, much of the cultural heritage is under threat through neglect, decay, removal or destruction as well as through the less visible and tangible impacts of changing socio-cultural values, permeating foreign ideas and imported technologies. Unregulated and badly planned tourist development presents an additional and potentially very dangerous threat. Many of Ethiopia's monuments are part of contemporary religious and cultural life: e.g. the churches of Lalibela.

**228. Objective:** To preserve, conserve and sustainably manage Ethiopia's cultural heritage including its ancient and historical sites, monuments and artifacts, oral and written history, traditional arts and design, indigenous languages and social culture, and indigenous knowledge and technologies as well as natural heritage so as to retain their heritage significance and to contribute to a new modern synthesis of culture.

**229. The Guiding Principles are:**

- a) Heritage significance indicates historic, aesthetic, social, scientific or other values for past, present and future generations;
- b) Heritage, as part of peoples' lives, is not only living but also a museum of protected objects;
- c) Heritage is a continuum of cultural expression from natural wilderness to urban areas;
- d) To promote the perception of heritage conservation as part of, and integrated with, Ethiopia's general social and economic development;
- e) To recognize that the country's heritage conservation should not be seen as the responsibility of government alone and to encourage communities to play a leading role in assessing and nominating places or items of heritage significance and in conserving them; and
- f) To promote a sustainable heritage conservation and management programme that seek to understand all the elements of the system, their interrelationships and the ways in which each contributes to social and economic development.
- g) To ensure that the environment of heritage sites is so managed as to protect the landscape, the monuments, and the artifacts or the fossils as the case may be.

**230. The Strategies are to:**

- a) Initiate a programme of nomination of places or items of heritage significance to all Ethiopians and assemble a register of these;
- b) Establish criteria for assessing places, structures or objects of historic, aesthetic, social, religious, scientific or other significance at each administrative level according to rarity, or degree of association to past or present phases, or events within that administrative level in Ethiopia's history;
- c) At each administrative level a Heritage Conservation Committee should consider all nominations of heritage significance according

to criteria established for inclusion or otherwise in a heritage register for that administrative level so that there will be registers ranging from the community levels to the federal level;

- d) Establish for each item the type of required heritage management and give priorities for action; and
- e) Develop a heritage action plan and investment programme for each administrative level together with management plans for each heritage site or item.

## CHAPTER V

### POLICY IMPLEMENTATION

#### 5.1 INTRODUCTION

231. Policy implementation involves the successive detailing of policy from the level of a very broad intent as expressed in a policy framework down to laws and regulations on the one hand, and to implementable projects on the other. This is done by the structuring of actions in an action plan, and the detailing of the investment needed in an investment programme. The first prerequisite is the creation of an appropriate institutional framework and the second is the development of an appropriate legal framework. Once these actions are undertaken, then the development of a monitoring and evaluation system to measure the impact of policies on the environment, the population, and the economy becomes needed.

#### 5.2 INSTITUTIONAL FRAMEWORK, RESPONSIBILITIES AND MANDATES

232. **Situation Synopsis:** The Transitional Period Charter, and following that the Constitution, have affirmed the right of nations, nationalities and peoples of Ethiopia to self-determination and self-government so as to empower them to decide upon issues that affect them and to manage their own affairs themselves. Proclamation 7 of 1992 provided for overall political power regarding the internal affairs of the regional states to reside in their respective elected regional councils. Proclamation 41 of 1993 defined the powers and duties of the regional executive organs of the Transitional Government. Proclamation 4/1995 defines the powers and duties of the executive organs of the Federal Government. The goals of decentralization include increased administrative efficiency, increased local participation in development planning and management, and the allocation of resources so that they reflect closely the development priorities of local populations.

233. During the formulation of the Regional Conservation Strategies, inter-sectoral Regional Conservation Strategy Steering Committees have been established and have gained experience in coordinating Zonal Task Forces

undertaking the local level consultations and studies, and these have provided the institutional mechanism for regional strategic planning.

234. Proclamation 9/1995 defines the powers and responsibilities of the Environmental Protection Authority (EPA) at the federal level. This placed the responsibility of environmental development and management, as well as environmental protection within the EPA.

The rights and obligations of the ex-Ministry of Natural Resources Development and Environment Protection are now transferred to: the Ministry of Agriculture, as relating directly to forestry and wildlife; the Environmental Protection Authority, as relating directly to environmental protection; the Ministry of Water Resources, as relating to those related to water resources and meteorology.

235. Objective: To strengthen the existing institutional mechanisms so as to implement the Conservation Strategy of Ethiopia (CSE).

236. The Guiding Principles are:

- a) To give political and popular support to the sustainable use of natural, human-made and cultural resources and environmental management for effectiveness at the federal, regional, zonal, wereda and community levels;
- b) The federal and regional coordination and management bodies down to the community level should be accorded respect and recognition consistent with the powers legally vested upon them and should be supported by government ministries and bureaus as well as other governmental and non-governmental organizations and the public at large;
- c) To ensure that legally established coordination and management bodies from the federal down to the community level handle the sectoral and cross sectoral planning and implementation issues identified as the responsibilities of concerned line ministries commissions, authorities and bureaus, as applicable to the level of organizations, including those of the relevant federal executive organs as well as regional and municipal governments, elected councillors, non-governmental organizations, community representatives, representatives of professional or other environmental associations and the private sector;

- d) To use to the maximum, whenever possible, existing institutional structures;
- e) To determine Institutional arrangements for the formulation of conservation and natural resource development and management strategies, legislation, regulation, monitoring and enforcement should be determined using the following criteria:
  - (i) conformity with the Constitution, especially with respect to the decentralization of power;
  - (ii) harmonization of sectoral interests;
  - (iii) integration of environmental planning with development planning;
  - (iv) minimization of incremental financial requirements;
- f) To avoid conflicts of interest by assigning responsibilities to separate organisations for environmental and natural resource development and management activities on the one hand, and environmental protection, regulation and monitoring on the other;
- g) To ensure that enforcement of government laws and regulations with respect to environmental protection remain the responsibility of federal and regional courts and administrations; nevertheless, where government's own development activities are controlled by laws and regulations, the monitoring of such laws and regulations to ensure compliance of specific ministries and other government entities shall be carried out by the government organisation responsible for environmental protection and regulation.

**237. The Strategies are to:**

- a) Maintain the institutional separation of natural resources development and management aspect from the regulatory aspect;
- b) Create an Environmental Protection Council (EPC) chaired by an official designated by the Government and responsible to the Council of Ministers, with the Environmental Protection Authority (EPA) acting as Secretariat to the Council;
- c) Maintain the present mandate of the Ministry of Economic Development and Cooperation (MEDAC) to coordinate the planning, programming and consolidating of the overall investment programmes and annual capital budgets in accordance with the



Federal Policy on the Environment, with action programmes forming an environmental subset of the overall development programme of the country; also maintain the present mandate of regional planning bureaus to exercise identical functions with respect to regional action plans and investment programmes;

- d) Give the Environmental Protection Council as established by Proclamation No 9/1995, the mandate for the coordination of the implementation of the various development and management aspects and also the review and revision of the Federal Policy on the Environment. The Environmental Protection Council should be at liberty to co-opt, on an ad-hoc basis, various people and entities to attend council meetings to ensure, where necessary, that relevant stakeholders are given the opportunity to present their views;
- e) Recommend to the Regional States that the Regional Environmental Coordinating Committee (RECC) recently established by the regions be legally mandated to coordinate the implementation, review and revision of its respective Regional Policy on Natural Resources and the Environment. Recommend that the Committee be appropriately representative of the relevant stakeholders. In addition to Regional Executive bodies and other governmental entities, the Committee may include, as necessary, NGOs, community representatives and the private sector;
- f) Recommend to the Regional States that lower level environmental coordinating committees be legally established at the zonal, wereda and community levels;
- g) Recommend to the Regional States that the role of the Community Environmental Coordinating Committee be played by the Science and Technology Association (referred to in Vol. II, section 3.9) of that community when such an association exists, with a teacher from the nearest school selected by the committee acting as secretary; when such an association does not exist, then recommend that the community elect a Community Environmental Coordinating Committee;
- h) Continue the mandates of line ministries to implement those components of the overall policy and strategy for which they are already responsible as under Proclamation No 4/1995.

### 5.3 LEGISLATIVE FRAMEWORK

238. **Situation Synopsis:** Although a preliminary assessment was undertaken as part of Phase I of the CSE process, there is a need to produce a comprehensive and in-depth review of environmental legislation, the legal responsibilities of institutions in the state and private sectors, and to propose a comprehensive and harmonized set of laws on the environment. At present comprehensive legislation is lacking in many areas of environmental management and protection, and, in cases where there is such legislation, there is duplication or it is out of date. While devolution of powers and responsibilities will facilitate effective implementation of legislation, inter-sectoral coordination will all the more continue to be vital at all levels.

239. **Objective:** To create a legal framework for the implementation of the Federal Policy on Natural Resources and the Environment.

240. **The Guiding Principles are that the Law should:**

- a) To provide a framework for encouraging participation by the people of Ethiopia in the development of federal and regional policies, laws and plans for the sustainable use and management of the natural, human-made and cultural resources and the environment;
- b) To enable the creation of programmes that motivate the peoples of Ethiopia into restoring, protecting, managing and sustainably using the natural, human-made and cultural resources and the environment of the country;
- c) To ensure agreement with the constitution and the prevailing political, social, cultural and economic policies, laws and practices and to harmonize these with the principles of sustainable development;
- d) To be consistent with Article 44 of the Constitution and assure all people living in the country of their fundamental right to an environment adequate for their health and well-being;
- e) To create the conditions for formulating, reviewing and updating sectoral regulations on, and procedures for, the restoration, protection, management and sustainable use of the natural, human-made and cultural resources and the environment; and

- f) To provide a broad framework for both punitive and incentive measures.

241. The Strategies are to:

- a) Enact a set of laws constituting a framework for the effective management and sustainable use of natural, human-made and cultural resources and the environment which will, among others, create rights for individuals, communities or organizations to bring legal action to prevent and/or stop activities likely to damage resources and the environment;
- b) Review the existing legislation and, where appropriate, take measures designed to strengthen existing legislation and, where it does not exist, enact additional legislation which will give legal authority to the institutional arrangements specified in the next chapter;
- c) Review and update sectoral laws in conformity with the principles of this Federal Policy on the Environment;
- d) Establish a broad framework for federal and regional resource and environmental planning;
- e) Provide a broad framework for environmental monitoring and evaluation;
- f) Establish a framework for environmental standards including the establishment of *standard criteria for the management of, but not restricted to, natural resources, hazardous materials, and toxic chemicals*;
- g) Provide a framework for the minimization of pollutants to levels harmless to human health and the environment, and for the control of the source of the pollution;
- h) Ensure that the true costs of environmental pollution are paid by the polluters; and
- i) Enact domestic legislation to enable the enforcement of international treaties, agreements and conventions on the environment.

## 5.4 MONITORING, EVALUATION AND POLICY REVIEW

242. **Situation Synopsis:** Currently there is no monitoring, evaluation and policy review system in place which covers all the cross-sectoral and sectoral areas covered by this Federal Policy on the Environment. Effective implementation and appropriate timely amendments will require feedbacks on the progress of implementation and the impact of policies, legislation, action plans and investment programmes.

243. **Objective:** To monitor the impact of this Federal Policy on Natural Resources and the Environment and to adapt and modify it as necessary, as well as to evaluate the progress and effectiveness of implementation of environmental investment programmes which emanate from it.

244. **The Guiding Principles are :**

- a) To ensure that individual programme and project monitoring becomes the responsibility of the appropriate federal and/or regional implementing and/or mandated agencies;
- b) To ensure that the monitoring of the overall impacts of the implementation of the Federal Environmental Policy on the country's renewable natural resources and environmental support systems, and that compilation of recommendations for any modification that is required, should be consistent with the institutional arrangements specified in the CSE and also be responsive to popular opinion;
- c) To ensure that the Environmental Protection Authority carries the overall monitoring of the Policy implementation and is responsible for proposing modifications, in consultation with the mandated line ministries and/or the opinion of stakeholder communities and groups, and for having them approved by the Inter-Ministerial Environmental Protection Council;
- d) To ensure that line ministries and regional and lower level bureaus and branches of bureaus should monitor the overall impact of the implementation of this Federal Environmental Policy on those sectors and elements for which they have the legal mandate;
- e) To ensure that, starting with the Community Environmental Coordinating Committee and aggregating upwards through the appropriate level offices of Water Resources, Mines and Energy,

Agriculture, and Economic Development and Cooperation, review of the status of natural resources and the environment, including evaluation of the implementation of this Federal Environmental Policy are compiled annually at the appropriate levels; and to ensure that the Environmental Protection Authority will be responsible for prompting the compilation of the reports and for reporting on the process;

- f) To ensure that, at least annually, meetings held by communities at the village level with their Community Environmental Coordinating Committees (or Science and Technology Associations), then successively from the Wereda and the Regional Environmental Coordinating Committees through to the Environmental Protection Council evaluate these reviews and make their recommendations; the Environmental Protection Authority will be responsible for prompting that the evaluation takes place and for reporting on the process.

**245. The Strategies are to:**

- a) Develop internal environmental monitoring and evaluation systems, and the trained human resources to run them in all responsible line ministries and in the Ministry of Economic Development and Cooperation as well as in the relevant bureaus and bureau branches at the Regional and lower administrative levels;
- b) Produce annual reports on the environment and development by the Environmental Protection Authority at the federal level, and by the respective bureaus and bureau branches at the regional and lower levels, with the community-level report being produced by the Community Environmental Coordinating Committee and the higher level reports being based on the aggregations of the reports from the lower levels;
- c) Discuss in annual meetings of members at the community level and the Environmental Coordinating Committees at successively higher levels up to the Environmental Protection Council (EPC) of EPA at the federal level, the appropriate level reports, particularly noting whether the major issues raised by the lower level reports have been addressed and policy measures and activities recommended;

- d) Receive presentations and submissions on environmental matters affecting communities, weredas and regions by the EPA from the Environmental Coordinating Committees at the various levels as part of, and as an adjunct to, the formal monitoring process;
- e) Prepare in the Prime Minister's Office annual reports to the Parliament on environment and development and the state of the country based on the highest aggregation of the successively lower level reports; and
- f) Ensure that the Environmental Protection Authority prompts the monitoring, reporting and evaluation activities enumerated in paragraph 245 (a) to (e) are executed.

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The World Conservation Union

#### Financial Assistance

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