

**Document of
The World Bank**

Report No: 21737-ET

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LEARNING AND INNOVATION LENDING (CREDIT)

**IN THE AMOUNT OF SDR 2.0 MILLION
(US\$ 2.597 MILLION EQUIVALENT)**

AND

A PROPOSED GRANT FROM THE GLOBAL ENVIRONMENT FACILITY

**IN THE AMOUNT OF SDR 1.4 MILLION
(US \$ 1.802 MILLION EQUIVALENT)**

TO THE

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

FOR

CONSERVATION AND SUSTAINABLE USE OF MEDICINAL PLANTS

January 22, 2001

Rural Development 2 (AFTR2)
Country Department 6 (AFCO6)
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective September 30, 2000)

Currency Unit = Birr
LC = US\$
US\$1.00 = Ethiopia Birr 8.1

FISCAL YEAR

July 8 – July 7

Vice President	: Callisto E. Madavo
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ABBREVIATIONS AND ACRONYMS

AAU	Addis Ababa University
BDI	Biodiversity Institute
CAS	Country Assistance Strategy
CBD	Convention on Biological Diversity
CIDA	Canadian International Development Agency
COP	Conference of Parties
CSE	Conservation Strategy of Ethiopia
DANIDA	Danish International Development Authority
DCA	Development Credit Agreement
DDR	Department of Drug Research
DOB	Department of Biology
EA	Environmental Assessment
EARO	Ethiopian Agricultural Research Organization
EHNRI	Ethiopian Health and Nutrition Research Institute
EISC	Ethiopian Islamic Supreme Council
ENDA	Environmental Development Action
EOC	Ethiopian Orthodox Church
EORC	Essentials Oils Research Center
EPA	Environmental Protection Authority
ESTC	Ethiopian Science & Technology Commission
EWCO	Ethiopian Wildlife Conservation Organization
FOM	Faculty of Medicine
FVM	Faculty of Veterinary Medicine
GEF	Global Environment Facility
GEFSEC	Global Environment Facility Secretariat
GOE	Government of Ethiopia
GSBA	Globally Significant Biodiversity Area
HSDP	Health Sector Development Program
IBCR	Institute of Biodiversity Conservation and Research
IBRD	International Bank for Reconstruction and Development
ICB	International Competitive Bidding
ICDP	Integrated Conservation and Development Project
ICR	Implementation Completion Report
IDA	International Development Association
IDR	Institute of Development Research
IPR	Intellectual Property Rights
IUCN	The World Conservation Union
LIL	Learning and Innovation Lending
MEDAC	Ministry of Economic Development and Cooperation
MOA	Ministry of Agriculture
MOH	Ministry of Health
MOU	Memorandum of Understanding
MTR	Mid-Term Review
NCB	National Competitive Bidding
NPC	Natural Products Chemistry
NGO	Non-Governmental Organization
NH	National Herbarium

PCMU	Project Coordinating & Monitoring Unit
PCP	Project Concept Paper
PDF	Project Development Fund
PIC	Project Implementation Committee
PIM	Project Implementation Manual
PIP	Project Implementation Plan
PC	Project Coordinator
PPTC	Project Preparation Technical Committee
QAG	World Bank's Quality Assurance Group
SIDA	Swedish International Development Agency
SOE	Statements of Expenditure
SOP	School of Pharmacy
STAP	Scientific and Technical Advisory Panel
THA	Traditional Healers Association
THP	Traditional Health Practitioner
UNDP	United Nations Development Programme
WCMC	World Conservation Monitoring Centre
WHO	World Health Organization
WWF	Worldwide Fund for Nature

ETHIOPIA
CONSERVATION AND SUSTAINABLE USE OF MEDICINAL PLANTS

CONTENTS

A Project Development Objective.....	2
1.a. Project development objective.....	2
1.b. Project Global objectives.....	2
1.c. Follow-up project objectives	2
2. Key performance indicators	2
B Strategic Context.....	3
1.a. Sector-related Interim Support Strategy (ISS) goal supported by the project	3
1.b. GEF operational strategy/program objective addressed by the project.....	3
2. Main sector issues and Government strategy	4
3. Learning and development issues to be addressed by the project.....	5
4. Learning and innovation expectations.....	6
C Project Description Summary	6
1. Project components	7
2. Key policy and institutional reforms supported by the project	9
3. Benefits and target population.....	9
4. Implementation and institutional arrangements	10
5. Monitoring and evaluation arrangements	10
D Project Rationale	10
1. Project alternatives considered and reasons for rejection	10
2. Major related projects financed by the Bank and/or other development agencies.....	11
3. Lessons learned and reflected in the project design	11
4. Indications of borrower commitment and ownership.....	14
5. Value added of Bank and GEF support in this project.....	14
E Summary Project Analysis.....	15
1. Economic	15
2. Financial	15
3. Technical	16
4. Institutional.....	16
5. Social	17
6. Environmental assessment.....	18
7. Participatory approach.....	18

F Sustainability and Risks	19
1. Sustainability	19
2. Critical Risks	20
3. Possible Controversial Aspects	20
G Main Loan Conditions	21
1. Effectiveness Conditions	21
2. Other	21
H Readiness for Implementation	21
I Compliance with Bank Policies	22

Annexes

Annex 1.	Project Design Summary
Annex 2.	Detailed Project Description
Annex 3.	Estimated Project Costs
Annex 4.	Incremental Costs and Global Environmental Benefits
Annex 5.	Financial Summary
Annex 6.	Procurement, Disbursement and Financial Management Arrangements
Table A.	Project Costs by Procurement Arrangements
Table B.	Thresholds for Procurement Methods and Prior Review
Table C.	Allocation of IDA Credit Proceeds
Annex 7.	Project Processing Budget and Schedule
Annex 8.	Documents in Project File
Annex 9.	Status of Bank Group Operations in Ethiopia (Statement of Loans and Credits)
Annex 10.	Ethiopia at a Glance

Map

Ethiopia
Conservation and Sustainable Use of Medicinal Plants

Project Appraisal Document

Africa Regional Office
Rural Development 2 (AFTR2)

Date: May 2000	Team Leader: Berhane Manna
Country Director: Oey Astra Meesook	Sector Manager: Joseph Baah-Dwomoh
Project ID: ET-PE-52315	Sector: Rural Development/Agriculture
GEF Supplement ID: ET-GE-35147	Theme(s): PA/EN
Lending Instrument: LIL	Poverty Targeted Intervention: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Project Financing Data			
<input type="checkbox"/> Loan	<input checked="" type="checkbox"/> Credit (IDA)	<input checked="" type="checkbox"/> Grant (GEF)	<input type="checkbox"/> Guarantee <input type="checkbox"/> Other [Specify]
For Loans/Credits/Others:			
Amount (US\$M):			
Proposed terms:	<input type="checkbox"/> To be defined	<input type="checkbox"/> Multicurrency	<input type="checkbox"/> Single currency
		<input type="checkbox"/> Standard Variable	<input checked="" type="checkbox"/> Fixed <input type="checkbox"/> LIBOR-based
Grace period (years):	10		
Years to maturity:	40		
Commitment fee:	0.5%		
Service charge:	0.75%		
Financing plan: <input type="checkbox"/> To be defined			
Source	Local	Foreign	Total (US\$M)
Government	0.768*	0.009	0.777
IDA	0.893	1.614	2.597**
GEF	1.029	0.773	1.802
Total:	2.690	2.396	5.176
Borrower: Federal Democratic Republic of Ethiopia			
Guarantor: Not Applicable			
Responsible agency: Institute of Biodiversity Conservation and Research (IBCR)			

* of which US\$0.503 million in taxes.

** Including PPF amount of US\$90,000

Estimated disbursements (Bank FY/US\$M):					
FY	2002	2003	2004	2005	2006
Annual	2.431	1.108	0.723	0.558	0.265
Cumulative	2.431	3.539	4.262	4.821	5.086
Project implementation period: IDA: 4 years; GEF: 5 years					
Expected effectiveness date: July 2001			Expected closing date: IDA: June 30, 2005 GEF: December 31, 2006		
Implementing agency: Institute of Biodiversity Conservation and Research (IBCR)					
Contact person: Dr. Abebe Demissie/Dr. Medhin Zewdu					
Address: P. O. Box 30726, Addis Ababa, Ethiopia					
Tel: (251-1) 61-2244 or 61-5607		Fax: (251-1) 61-3722		E-mail: biod-et@telecom.net.et	

A: Project Development Objective

1.a. Project development objective: (see Annex 1)

Medicinal plants provide a vital contribution to human and livestock health needs throughout Ethiopia, and are especially important to the rural poor. Many medicinal plants are coming under increasing threat in the country due to agricultural expansion, deforestation, overgrazing, drought, fire and over-harvesting. Also, the traditional health care knowledge is not being disseminated and is likely to be lost due to lack of preservation and documentation. The overall objective of this project is to initiate support for conservation, management and sustainable utilization of medicinal plants for human and livestock healthcare in Ethiopia. The project's specific objectives are to: (i) strengthen institutional capacity; (ii) identify and document selected commonly used/indigenous medicinal plants used for the treatment of major human diseases with emphasis on the following three namely tapeworm infections, bronchopneumonia and hypertension and livestock diseases with emphasis on the following three namely tapeworm infections, mastitis and dermatophilosis; (iii) initiate studies for the safe utilization of effective medicinal plant remedies for these three major human diseases and three livestock diseases; (iv) assess the economic benefits derived from medicinal plants in human and livestock healthcare on a national level and for possible export potential; (v) develop a national medicinal plant database; and (vi) support *in-situ* conservation and management and initiate *ex-situ* cultivation of medicinal plants. The lessons and benefits derived from the project are applicable throughout Ethiopia and elsewhere in Africa where there is a high dependency on medicinal plants and traditional health systems.

1.b. Project Global objectives (see Annex 1):

The global environmental objective of the project is to promote *in-situ* conservation and sustainable use of medicinal plants in and around a site of global significance - the Bale Mountains National Park. The project would support: (i) on-site management including zoning of key areas, and detailed socio-economic and biological surveys to assess the status of medicinal plant species used, their distribution, management status and volumes harvested; (ii) identify and implement appropriate management options including preparation of guidelines for sustainable harvesting of medicinal plants; (iii) monitoring and evaluation to assess impact of harvesting guidelines and management interventions; (iv) initiate pilot, farmer-based cultivation trials for selected threatened species in available lands including home gardens, boundary and buffer zones of the national park; (v) training of appropriate personnel of the national park staff, and local communities; and (vi) public education and awareness activities.

1.c. Follow-up project objectives

If the project objectives are achieved, follow-up project activities will focus on: (i) *in-situ* and *ex-situ* cultivation of selected medicinal plants; (ii) integration of selected phytomedicines into MOH primary health care system; and (iii) expanding the GEF conservation activities in relevant sites.

2. Key performance indicators: (see Annex 1)

The success of the project will be evaluated based on the following key indicators:

- (i) Medicinal plants effective for the treatment of 3 major human diseases and 3 major livestock diseases confirmed and documented by end PY1;
- (ii) Assessment of economic benefits derived from use of medicinal plants in human and livestock healthcare on a national level and export potential completed by end PY2;
- (iii) Medicinal plants tested for safety and efficacy, and dosage and formulation determined by end PY4;
- (iv) National Medicinal Plant and Indigenous Knowledge Practices Database established by mid PY3 building upon the medicinal plants for common diseases identified under (iii) and from Bale

- Mountains survey;
- (v) Farmer-based pilot cultivation trials of the selected common medicinal plants important for the 6 major diseases (under i) established by end PY4;
 - (vi) Socio-economic and biological surveys in Bale Mountains National Park to identify protected core zones and harvesting zones completed by end PY2; and
 - (vii) Guidelines developed (by PY3) and implemented (by PY4) for management and sustainable harvesting of medicinal plants in the Bale Mountains National Park.

B: Strategic Context

1. a. Sector-related Interim Support Strategy (ISS) goal supported by the project: (see Annex 1)

ISS report number: 21189-ET

Date of latest ISS discussion: November 9, 2000

One of Ethiopia's major development objectives is sustained rapid growth with poverty reduction. The Bank's Interim Support Strategy focuses on: food security and agricultural inputs, HIV/AIDS and weak institutions/inadequate human capacity. The proposed project will contribute to poverty alleviation and human development with important links to health and environment. The project will strengthen the foundation for conservation and management of medicinal plants, as well as integrating selected phytomedicines and traditional healthcare systems into the MOH primary healthcare system.

1.b. GEF operational strategy/program objective addressed by the project

Ethiopia signed the Convention on Biological Diversity in July 1994. The Institute of Biodiversity Conservation and Research (IBCR) has overall responsibility for biodiversity conservation and management. The project is consistent with the GEF Operational Strategy for Biodiversity especially the Operations Programs for Forest and Mountain Ecosystems, as well as Article 8(j) of the Convention of Biological Diversity (CBD) regarding the protection and conservation of medicinal plants, benefit sharing and protecting indigenous knowledge. The project responds to Conference of Parties (COP) guidance on eligibility of projects that strengthen conservation, management, and sustainable use of ecosystems and habitats, particularly environmentally vulnerable and threatened habitats and species. Specifically, it responds to COP3 and COP4 guidance through promoting economic incentives and alternative livelihood opportunities for local communities.

The site chosen for *in situ* conservation activities, the Bale Mountains massif, is one of the most important conservation areas in Ethiopia and recognized as such in the World Conservation Union (IUCN) Review of Protected Areas of the Afrotropical Realm as globally important. It also lies within the Global 200 Ecoregions. It supports the most extensive Afro-alpine ecosystem on the continent and has the most extensive altitudinal continuum of natural vegetation in the country, mostly comprising forests. Local diversity and endemism are also high. The massif is an Important Bird Area (IBA), recognized as one of the Global 200 Ecoregions, and a refuge for many endemic and threatened plants and animals including the Ethiopian wolf and also endemic Afroalpine plants. Activities to be tested under the GEF project, including development of sustainable use guidelines and propagation of indigenous and threatened medicinal plants will provide useful lessons for replication elsewhere in Ethiopia and eastern Africa. Work on intellectual property issues, documentation of traditional knowledge and benefit sharing will provide best practice guidelines, relevant to other GEF and Bank projects.

2. Main sector issues and Government strategy:

The key issues associated with the sector are as follows:

(a) **Limited institutional capacity for the development of medicinal plant-based traditional healthcare systems for human and livestock and their integration with modern medicine.** Currently, 80% of the human population and 90% of livestock rely on some form of traditional healthcare systems (IBCR Project Proposal, 1999). The Bank supported Health Sector Development Program (HSDP) focuses on modern medicine and at completion in 2003 aims to increase primary health care access from 45 to 55-60%. Therefore, a large segment of the rural population will still remain without access to modern medicine and will continue to depend on medicinal plants and traditional healthcare practices. At the same time a significant proportion of the urban population, while benefiting from the improvements in modern medicine, will also continue to rely on traditional medicines. The proposed project is expected to strengthen the foundation for filling in this gap.

(b) **Limited research and information regarding extraction, standardization, safety, efficacy, dosage and formulation of medicinal plant remedies.** The World Health Organization (WHO) is providing limited support (which will end June 1999) for the Department of Drug Research (DDR) of the EHNRI to conduct extraction, standardization and formulation studies of five common cosmopolitan plant species (*Allium sativa*, *Datura* sp., *Carica papaya*, *Osmium* sp., and *Eucalyptus* sp.) using information published in the Indian Pharmacopoeia. The WHO supported project has been useful for the DDR scientists in understanding the basic methodologies utilized in Formulation Studies. The School of Pharmacy (SOP), Addis Ababa University (AAU) is able to undertake the processes of extraction, standardization, safety and efficacy, and dosage and drug formulation. DDR lacks the technical expertise and equipment to complete the formulation phase. The Faculty of Veterinary Medicine (FVM), AAU lacks the technical and laboratory capacity to carry out any of the above steps. However, they will collaborate closely with SOP to develop the necessary expertise to formulate livestock phytomedicines. The Faculty of Medicine (FOM) and Natural Products Chemistry (NPC) of the AAU can play a role in certain aspects of the phytomedicine development process. The project will significantly enhance the capacity of the laboratories to produce safe and efficacious phytomedicines by providing specific research equipment and technical training. Each of the laboratories is already collaborating with laboratories outside of Ethiopia. It is recommended that the Ethiopian laboratories utilize that linkage to verify extraction, standardization, safety and efficacy, and dosage and formulation studies, where warranted, and upgrade technical training where appropriate. In addition, it is also recommended that WHO Traditional Drug Guidelines be followed and linkages with WHO be maintained. The proposed project will build on the experience gained and give support for the development of additional approved formulations of important high-demand local phytomedicines.

(c) **Inadequate quantitative data on economic benefits derived and long-term sustainability of supply of medicinal plants.** At present, there is no formally documented information on the number of people (rural/urban) dependent on medicinal plants. Similarly, no data are available on source of supply, volumes and values purchased, under what conditions people use plant medicines, and if the present level of supply is sustainable. The proposed socio-economic assessment in selected regions will provide such baseline data. The PDF Block B Grant provides funding to initiate biological and socio-economic studies in the Bale Mountains that will facilitate the regional baseline studies proposed under the project. The Institute of Development Research (IDR), AAU among others has the expertise necessary to carry out such quantitative studies and analyses.

(d) **Habitat degradation, inadequate *in-situ* conservation programs and unsustainable collection practices of medicinal plants.** The present knowledge on Ethiopia's plant biological diversity is being recorded in a Modern Flora of Ethiopia. However, the limited conservation and management measures

being undertaken do not adequately deal with the ever-advancing factors of genetic erosion. Several sources report the accelerated loss of medicinal plants due to habitat degradation, and probable over-harvesting of wild populations of medicinal plant species. More than 600 medicinal plants are known to be used in herbal preparations of which at least 18 species (WCMC, 1998) are considered under threat of extinction in Ethiopia – probably an underestimate. The successful conservation and management of medicinal plant resources will require the active participation of communities and their close collaboration with the public sector. Attention should be given to the capturing of local health traditions – many of which are oral in nature and therefore largely undocumented. Recognition must be given to the need to acknowledge the rights of THPs, communities and religious organizations to the benefits accruing from this knowledge by clearly defining Intellectual Property Rights (IPRs). Support will be provided to Ethiopian Science and Technology Commission (ESTC) and Traditional Healers Association (THA) for developing guidelines for IPRs for sharing the traditional medicinal knowledge.

Government Strategy: In 1993 the GOE promulgated Health and National Drug Policies. Priority 4 of the Health Policy reads: *“Due attention shall be given to the development of the beneficial aspects of Traditional Medicine including related research and its gradual integration into Modern Medicine”*. Article 3 of the Drug Policy reads: *“Facilitate the gradual integration of traditional drugs with modern medicine by giving due attention to traditional practices and identifying the beneficial and harmful aspects through investigation and research”*. Ethiopia’s commitment to the sector is high, however its ability to provide increased resources for the study and sustainable use of medicinal plants is limited. Strengthening of DDR, and collaborating research institutes (SOP, FVM), to carry out a program to determine the safety, efficacy, and dosage levels of commonly used medicinal plants for the treatment of major human and livestock diseases would offer the health services sector additional ways and means of fulfilling the terms of reference of the Health and Drug Policies to provide affordable healthcare. The Minister of Health’s letter endorsing the important contribution the project will make to improved healthcare is evidence of the government’s commitment to facilitate and integrate traditional and modern health systems.

Ethiopia has now in place a Conservation Strategy and an Environmental Policy. The Conservation Strategy of Ethiopia (CSE) has 11 sectoral and 11 cross-sectoral policies, and many of these are relevant to the conservation and sustainable use of medicinal plants. A Biodiversity Conservation and Development Strategy and Action Plan is being developed. Medicinal plants are explicitly recognized as important components of the natural heritage of Ethiopia. A medicinal plant inventory and better protection of habitats constitutes one of the highest priorities. Community-based approaches with the full participation of women in the management of natural resources are also given high priority.

Agricultural research is guided by a National Science and Technology Policy (December, 1993) which has specific sections on agriculture and natural resource development and environmental protection. The government has identified the IBCR, under the IBCR Board (IBCRB), as the lead agency in identifying a medicinal plant R&D strategy and action plan for conservation and sustainable utilization. IBCR has established a working link with the THA by providing land at regional stations where local healers can cultivate selected medicinal plants. Close collaboration is required between IBCR, collaborating institutions, farmers, communities, religious groups, and THA/THPs, for medicinal plant R&D.

3. Learning and development issues to be addressed by the project:

Limited institutional capacity. The project will: (i) strengthen the lead institute (IBCR) by establishing a Project Coordinating Monitoring Unit (PCMU) within IBCR; (ii) strengthen research, technical and human resources’ capacity of collaborating institutes/agencies; (iii) support ESTC for developing IPR guidelines with inputs from THA; and (iv) *ex-situ* cultivation trials of selected medicinal plants. In addition, the project will support establishment of a central database on usage, distribution and status that

would include medicinal plants used for the control of 3 major human diseases (tapeworm infections, bronchopneumonia, hypertension) and 3 livestock diseases (tapeworm infections, mastitis, dermatophilosis). The database will draw together information from oral, traditional, modern literature, and herbarium collections, with emphasis on medicinal plants species identified from Bale Mountains National Park area. This systematic documentation and evaluation of threat, rarity and demand will be unparalleled in the East African region in terms of its scope and comprehensiveness and will have global and regional, as well as national benefits.

Lack of quantitative data on economic benefits and safety issues. The project will support studies to assess current levels of usage of medicinal plants (used for 3 human and 3 livestock diseases), including market and field surveys to assess pressures on wild plant populations and habitats at selected sites. And, to better understand local community and national dependence on medicinal plants for human and livestock health care. This information will provide input to the national database and priority setting for *in-situ* conservation activities. The project will support testing for safety, efficacy and dosage levels for selected commonly used remedies derived from native plant species. The project will also support studies to identify methods for the propagation and cultivation practices for a small number of selected medicinal plants for cultivation in home gardens, farms and degraded habitats.

Conservation of medicinal plants. In view of the probable over-harvesting and loss of medicinal plants, inventory, surveys of distribution and status are highest priorities. The project, through GEF funding, will support activities to promote *in-situ* conservation and sustainable use of medicinal plants at sites of global significance; the Bale Mountains National Park and surrounding forests which have been identified as a priority pilot site. Methodologies for the sustainable harvesting of *in-situ* medicinal plants will be identified that recognize the unique biological and physical characteristics of protected areas. It is expected that such methodologies and practices involving the participation of local communities in management, decision making and monitoring developed under the project can be replicated in and around other national parks and other relevant sites in Ethiopia.

4. Learning and innovation expectations:

[X] Economic [] Financial [X] Technical [X] Institutional [X] Social [X] Environmental [X]
Participation [X] Other (IPR)

The learning and innovation expectations by the end of the project are that we would have: (i) established the institutional capacity for determining safety and efficacy, dosage testing and formulation of phytomedicines; (ii) confirmed and tested six medicinal plants effective for the treatment of 3 human diseases and 3 livestock diseases and determined their safety, efficacy and dosage levels; (iii) identified effective harvesting guidelines to sustainably improve the supply of, and access to, wild medicinal plants; (iv) in collaboration with farmers identified sustainable cultivation methodologies and an institutional framework for identifying endangered medicinal plants; and (v) strengthened on-site management of medicinal plants in protected areas.

C: Project Description Summary

The project will be co-financed by IDA and GEF. The IDA credit will support: development of a national database of medicinal plants including the plants used for the control of the 3 major human diseases and 3 livestock diseases, as well as an inventory of plants identified from the Bale Mountains; assessment of current levels of usage and economic benefits derived in the country from use of medicinal plants; training and institutional strengthening; developing IPR guidelines for sharing traditional medicinal knowledge; determining safety and efficacy, and identifying dosage levels for selected commonly used remedies derived from plant species; initiate studies for the propagation and cultivation methods for the

selected medicinal plants; and project implementation, monitoring and evaluation. The GEF grant will support biodiversity conservation and sustainable management of *in-situ* medicinal plant resources in and around the Bale Mountains National Park as a means of reducing harvesting pressure on wild plants. The GEF grant will also cover the costs of education and mass awareness campaigns, local training, and pilot farmer-based cultivation trials of selected threatened medicinal plants in home and community gardens and boundary and buffer zones of the national park.

1. Project components: (see Annex 2 for a detailed description and Annex 3 for a detailed cost breakdown)

(a) Institutional Strengthening, Human Resource Development, and Project Monitoring & Evaluation – US\$1.134 million (IDA US \$0.821 million, GOE US\$0.313 million). Under this component, the project will support: (i) strengthening institutional capacity of IBCR – lead implementing agency; (ii) developing human resource capacity of collaborating institutions for implementing project activities; (iii) (a) IBCR in collaboration with relevant bodies including traditional healers and other collaborating institutions to establish a medicinal plant field gene bank and for organizing a national workshop for same; and (iii) (b) ESTC to develop IPRs policy and guidelines for sharing traditional knowledge; and (iv) establishment and functioning of PCMU.

(b) Studies, Research and Data Base Development – US\$1.949 million (IDA US \$1.686 million, GOE US\$0.263 million). This component will support: (i) development of methods to collect, analyze and interpret quantitative data on socio-economic benefits derived from medicinal plants used in human and livestock healthcare on a national level, (ii) ethnomedical survey to explore utilization of medicinal plants and traditional healthcare practices for prevention of HIV and mitigation of adverse impact of AIDS; (iii) research on propagation and cultivation methods of selected commonly used medicinal plants for human and livestock diseases, (iv) Formulation Studies: extraction, standardization, safety and efficacy, and dosage testing and formulation of phytomedicines for 3 human diseases and 3 livestock diseases; and (v) development of a National Medicinal Plant Database.

(c) In-situ Conservation and Sustainable Use in the Bale Mountains Area – US\$2.003 (GEF US\$1.802 million, GOE US\$0.201 million). Many medicinal plants are coming under increasing threat in Ethiopia due to agricultural expansion, deforestation and over-harvesting that can be directly related to rapid human and livestock population growth. GEF funding will support *in-situ* conservation, management and sustainable use of medicinal plants in the Bale Mountains National Park and surrounding forests. These activities will be implemented by IBCR and Oromya Regional Government and in collaboration with the Ethiopian Wildlife Conservation Organization (EWCO), and other relevant NGOs and farm communities. By addressing issues such as sustainable methods and levels of harvesting and *ex-situ* propagation and cultivation of medicinal plants the project contributes to managed use of biodiversity, sustainable development, poverty alleviation, and rural health. In particular, the project evaluates the biodiversity of medicinal plants in Bale Mountains and assesses the distribution and status of threatened or rare species. In addition, through a participatory process involving local communities, THPs and local/regional institutions, the project will assist in developing a program for conservation and sustainable use of medicinal plant resources. This information will be used to identify key park areas for zoning for appropriate use and harvesting levels with the option, where appropriate, of controlled harvesting of highly threatened species. The inventory of medicinal plants and their abundancy status in the Bale Mountains National Park will be an important contribution to the National Medicinal Plant Database being initiated under the IDA component. More specifically, this component will support:

(i) On-site management including: (a) in-depth socio-economic survey and assessment (building upon the preliminary survey conducted under the PDF B phase) to: (i) identify villages/users having the greatest impact on wild populations of medicinal plants through harvesting and other activities, (ii) identify villagers/farmers for on-farm pilot propagation and cultivation trials of medicinal plants to remove pressure on wild populations; (b) in-depth biological survey and assessment of *in-situ* and *ex-situ*

conservation (building upon the preliminary survey conducted under the PDF B phase); zoning of key areas within the Park and strengthening park management in collaboration with the EWCO/WWF-Dutch project.

(ii) Development and implementation of appropriate management policy options and guidelines for sustainable levels of harvesting of medicinal plants and/or their products, including development of a comprehensive biodiversity monitoring and evaluation system. The findings of the in-depth biological and socio-economic surveys completed in PY 2 will form the basis for the development and implementation of appropriate management options and guidelines for sustainable levels of harvesting in PY 3 and PY 4.

(iii) Monitoring to assess: (a) impact of harvesting of medicinal plants in permit areas; (b) preliminary impact of harvesting guidelines/management interventions in the park; (c) project interventions in protecting threatened/rare medicinal plant species; (d) market and threatened/rare medicinal plant species; and (e) market and THP surveys to determine levels of use locally, and nationally of plants harvested from Bale Mountains National Park.

(iv) Pilot farmer-based cultivation trials for a selected number of threatened and indigenous species in home gardens and boundary and buffer zones of the national park to: (a) supply local needs; and (b) provide alternative income generation. Micropropagation techniques will be used where appropriate

(v) Training of: (a) relevant personnel in the conservation, management and monitoring of medicinal plants within the park and adjacent forests; and (b) farmers for pilot propagation and cultivation trials and management.

(vi) Education and mass awareness campaigns of the relevance of conservation and management programs of medicinal plants and importance to Ethiopia's biodiversity and long-term healthcare needs.

Component	Sector	Indicative Costs (US\$M)	% of Total	Bank financing (US\$M)	% of Bank-financing	GEF financing	GOE financing
a. Institutional Strengthening, Human Resource Development, and Project Monitoring & Evaluation	Institutional building & Project management	1.134	22.3	0.821	32.7		0.313
b. Studies, Research and Data Base Development	Research/ Info.Mgmt.	1.949	38.3	1.686	67.3		0.263
c. <i>In-situ</i> Conservation and Sustainable Use in Bale Mountains Area	Biodiversity conservation	2.003	39.4			1.802	0.201
Total		5.086	100	2.507	100	1.802	0.777

* Includes Contingencies.

2. Key policy and institutional reforms supported by the project:

The project supports Ethiopia's Health Policy (1993) in relation to traditional medicine:

- (i) Strengthening the sector through research and development of traditional drugs which are in wide use (Health Policy: Traditional Drugs, 9.1);
- (ii) Facilitate the gradual integration of traditional drugs with modern medicine by giving due attention to traditional practices and identifying the beneficial and harmful aspects through investigation and research (Health Policy: General Policy, No. 3); and
- (iii) Enhancing conditions for the application of traditional drugs ascertained to be safe and effective for treatment (Health Policy: Traditional Drugs, 9.2).

The project also supports strengthening of IBCR in its new role as lead biodiversity institution responsible for all aspects of biodiversity conservation.

3. Benefits and target population:

The principal beneficiary population would be the majority of the country's rural and urban poor that depend on medicinal plants and herbal remedies for healthcare. These groups will benefit through the dissemination of reliable information on safety, efficacy and dosage levels of selected herbal formulations through education public awareness programs. Communities, including women, poor households, farmers and THPs, will participate in the decision-making process by contributing to the identification and implementation of medicinal plant conservation, management, cultivation and harvesting strategies.

Local benefits to Bale Mountains communities would include: implementation of a managed harvesting regime with improved protection of park biodiversity; wider availability of safe and efficacious herbal remedies; and an additional source of income. Women involved in home healthcare using medicinal plants and THPs will also benefit through formal recognition of their roles.

National benefits will occur through identification, documentation and determination of safety, efficacy and dosage levels of selected indigenous medicinal plants commonly used for the treatment of 3 major human diseases (tapeworm infections, bronchopneumonia, hypertension) and 3 livestock diseases (tapeworm infections, mastitis, dermatophilosis). These activities will significantly contribute to improved supply of phytomedicines for human and livestock healthcare in the future. In addition, development and utilization of a medicinal plant national database will help the government formulate and implement national programs for conservation, cultivation, management and sustainable utilization of medicinal plants, and maximize national benefits from these resources. The project will strengthen institutional capacity and collaboration through the provision of technical training, workshops, research facilities, and increase public awareness on conservation and management of medicinal plants.

Global benefits will occur through the conservation and management of endemic and threatened species of medicinal plants within the Bale Mountains National Park – a Globally Significant Biodiversity Area (GSBA). Such actions will help to secure continued existence of these valuable resources and their potential, future medicinal, as well as other values. Specifically, the development of park zoning and management guidelines for sustainable levels of harvesting will enhance biodiversity protection. Furthermore, the project will document and underscore the important role traditional knowledge and cultural heritage can play in global biodiversity conservation and medicinal plant management programs.

4. Implementation and institutional arrangements:

Implementation period: A four-year project period is planned for IDA supported (LIL) activities, and a five-year period for GEF-funded conservation activities. A longer implementation period is required for the conservation activities, due to time required to complete biodiversity surveys, develop and implement medicinal plant management guidelines, and determine and monitor sustainable harvesting levels for medicinal plants from the Bale Mountains National Park. If this project succeeds, a follow-up project will be developed.

Implementation agencies: A Project Coordinating and Monitoring Unit (PCMU) will be established at IBCR, which has been identified as the lead agency by the government. The PCMU will facilitate achievement of project objectives, and be coordinated by a Project Coordinator (PC). The PM will have adequate control regarding budgetary matters, be responsible for coordinating project activities between collaborating institutions, and monitor and report project progress. Furthermore, the PM will be supported by one Accounting and Disbursement Specialist, one Monitoring and Evaluation Specialist, one Procurement Specialist and adequate administrative staff. The PCMU will be guided by a Project Implementation Committee (PIC). The Chairperson of PIC would be the General Manager of the IBCR, and Secretary of PIC would be the Project Manager of PCMU. The other members will be designates from the collaborating institutes/agencies, including one representative from EPA.

5. Monitoring and evaluation arrangements:

The PCMU would implement a systematic and detailed monitoring and reporting system focusing on both the output and outcome of the project. The system should allow an effective evaluation of (i) the effectiveness of the project's delivery mechanisms and procedures; (ii) the impact of the laboratory and field activities on the basis of the stated objectives, and input, output and impact indicators identified in the Project Design Summary (Annex 1); and (iii) the replicability of the *in-situ* and *ex-situ* activities at a wider national scale. The progress towards project outcomes would be evaluated during project supervision and an in-depth review 18 months after the project becomes effective; followed by a Mid-Term Review at the 30 months stage. The in-depth review after 18 months would determine the extent to which the project is performing vis-à-vis its development objectives. The Mid-Term Review at the 30 months stage would determine the possibility of developing a full-scale project. An Implementation Completion Report would be prepared at least six months prior to final disbursement of the Credit. The Government would prepare its own evaluation of the project, including a plan for a full-scale project.

D: Project Rationale

1. Project alternatives considered and reasons for rejection:

Initially, a full-scale project was planned. In November 1998, an identification mission identified several issues (e.g. lack of adequate capacity of the lead agency-IBCR, institutional complexity of the project, lack of data on medicinal plants used for the treatment of major human and livestock diseases, lack of information on economic benefits derived in the country by the use of medicinal plants, etc.) that needed to be addressed before a full-scale project could be launched on medicinal plants. Based on the findings of the mission, it was decided that a LIL would be a better instrument, and was communicated to GOE on December 21, 1998. A Project Proposal was received by the Bank on February 4, 1999, and a Pre-Appraisal mission was undertaken in May 1999.

2. Major related projects financed by the Bank and/or other development agencies:

Sector Issue	Project	Latest Supervision (Form 590) Ratings (Bank-financed projects only)	
		Implementation Progress (IP)	Development Objective (DO)
Bank-financed	Completed:		
Agricultural Productivity and economic growth	• Agricultural Research Project (Cr. 1521-ET), closed in 1994	S	S
	• Fourth Livestock Development Project (Cr. 1782-ET), closed in 1994	S	S
	• Peasant Agricultural Development Project (Cr. 1956-ET), closed in June 1997	S	S
	Ongoing:		
Forestry, and Biodiversity/ Medicinal Plants Conservation	• Agricultural Research and Training Project (Cr. 17794-ET)	S	S
	• National Seeds Project (Cr. 2741-ET)	S	S
	Ongoing		
Health Sector	• Kerala Forestry Project (Cr. 30530-IN)	S	S
	• Sri Lanka: Conservation and Sustainable Use of Medicinal Plants Project (GEF TF-Grant 17160-CE)		
	Ongoing		
	• Ethiopia Health Sector Development Program (Cr. 3140-ET)	S	S
Other development agencies			
WHO	• Support to Dept. of Traditional Medicine now DDR. Closing June, 1999		
UNDP/GEF	• A Dynamic Farmer-based Approach to the Conservation of African Plant Genetic Resources. Closing June, 1999		
WWF-Dutch ICDP Germany Supported	• Bale Mountains Project (On-going)		
Germany Supported	• Integrated Forest Management Project, Adaba/Dodola (IFMP-A-D) (1990-2000)		
	• Forestry Genetic Resources Project (1992-2001)		
SIDA/SAREC-National Herbarium	• Flora of Ethiopia (contributing agencies: NPC, ESRC)		

IP/DO Ratings: HS (Highly Satisfactory), S (Satisfactory), U (Unsatisfactory), HU (Highly Unsatisfactory)

3. Lessons learned and reflected in the project design:

From the Bank supported Agricultural Research Project in Ethiopia, (Cr. 1521-ET), completed in 1994: (i) in order to optimize the integration and collaboration of the different public institutions and agencies and private sector, implementing institutions/agencies should be familiar with IDA's procurement and disbursement procedures; towards this end, training should be provided to implementing agencies; (ii) project implementing institutions/agencies should be given the financial authority to manage resources allocated for the components; and (iii) adequate systems/resources for financial recording, reporting and accounting must be in place for efficient functioning of any institution and agency.

From WHO project in Ethiopia implemented by DDR: As a first step, the project was designed to familiarize and build some capacity of DDR to initiate basic Formulation Studies. The project essentially worked in isolation with only limited collaborative links with international laboratories. However, recently collaborative links have been developed with international laboratories. In the design of the proposed project, assurance will be obtained that the DDR continues collaboration with the advanced laboratories from within and outside the country.

From UNDP/GEF project - Dynamic Farmer-Based Approach to the Conservation of Ethiopia's Plant Genetic Resources implemented by IBCR: Farmer participation is essential in germplasm conservation programs and women are key elements in community-based conservation and management strategies. Successful collaboration between farmers and researchers is enhanced by good agricultural extension services. The documentation of germplasm/farmers' varieties can play an important role in biodiversity conservation and sustainable use.

From WWF-Dutch ICDP project in the Bale Mountains, Bale, Ethiopia implemented by EWCO: The WWF-Dutch ICDP supported project aims to: (i) strengthen institutional capacity to manage the country's important protected areas, with an emphasis on forests; and (ii) conserve and sustainably manage the Bale Mountains and the Haremma Forest. This proposed medicinal plant project will emphasize on conservation and sustainable management of medicinal plants in Bale Mountains. A collaborative link with the WWF-Dutch ICDP project will also be established.

From the German Government supported Integrated Forest Management Project (IFMP) -Adaba/Dodola: The IFMP working area covers the Adaba –Dodola Regional Forestry Priority Area, located in the North-Western part of the Bale Mountains. IFMP concept is mainly based on joint forest management of the Adaba-Dodola forest, i.e. usufructory rights of communities for utilization of wood products and grazing rights. The objective of the proposed medicinal plant project will be complementary to the efforts of IFMP since it might open up a new avenue for income generation for local communities from sustainable utilization of forest resources, thus increasing the value attached to the forests by communities. The proposed medicinal plant project will establish collaborative ties with IFMP. One of the important lessons learned from the IFMP project is that stakeholder involvement is essential for successful development and implementation of natural resources management project and the proposed medicinal plants project has reflected this aspect in the project design.

From the German Government supported Forestry Genetic Resources Project (Assistance to the Institute of Biodiversity Conservation and Research (IBCR): This project aims at building capacity for conserving forest genetic resources. The focus of the project is on woody plants. Herbal species, which play an important role for medicinal applications are not planned to be inventorised and collected under this project. For field activities, this project has given high priority for forest genetic resources conservation in the Haremma forest on the southern escarpment of the Bale Massive. This project could benefit from the data that will be gathered through an in-depth biological survey planned under the proposed

medicinal plant project in the Bale Mountains area. The proposed medicinal plant project will seek possible cooperation from the Forestry Genetic Resources project being implemented by IBCR.

From the GEF supported Sri Lanka Conservation and Sustainable Use of Medicinal Plants Project (Project ID: LK-GE-35828): questions have been raised by two local NGOs regarding the lack of protection of information related to the distribution and uses of medicinal plants, and information collected from practitioners of indigenous medicine. Because this information is not presently protected from Property Rights regimes the data will be available to anyone who may seek to privatize and profit from the indigenous knowledge of the Sri Lanka people. Public consultation was missing and legislative protection of medicinal plant information has not been secured. The proposed project will support ESTC develop IPR guidelines for sharing traditional medicinal knowledge with the full participation of THA.

From the Bank supported Kerala Forestry Project, in India: Recognizing the fact that open access to medicinal plants in the wild is one of the main reasons for the current unsustainable levels of harvesting and the trend of harvesting too much and growing and protecting too little is contributing to unsustainability. The Kerala Forestry Project is supporting a pilot program that involves tribal and other forest-dependent communities in the inventory, conservation, and sustainable development of medicinal plants. The project supports technological improvements for artificial propagation of endangered plant species; research and training in better harvesting and processing techniques; community management of plant propagation, harvesting, and marketing; establishment of community-managed, forest-based enterprises for income generation; and monitoring and evaluation of the status of these natural resources with the assistance of local communities. The proposed medicinal plant project in Ethiopia also identifies some of the similar concerns and has included in the project design a detailed biological survey to evaluate the biodiversity of medicinal plants in Bale Mountains (GSBA) and assess the distribution and status of threatened or rare species. In addition, through a participatory process involving local communities, THPs and local/regional institutions, the project will assist in developing a program for conservation and sustainable use of medicinal plant resources. It will support development, implementation and, monitoring of guidelines for sustainable levels of harvesting of medicinal plants and/or their products in the Bale Mountains area. The proposed project will also support farmer-based cultivation trials for a selected number of threatened and indigenous species in home gardens and boundary and buffer zones of the national park to supply local needs, and provide alternative income generation.

From QAG review of GEF-supported biodiversity projects in Africa: (i) biodiversity projects need to deal effectively with the economic and social pressures on ecosystems; (ii) integration of biodiversity conservation agenda into the broader national development agenda is essential; (iii) "ownership" of a biodiversity conservation agenda should be at both the local and national levels; (iv) clearly defined goals and objectives are essential to focus on project efforts, monitor progress and demonstrate impact; (v) government commitment and funding are essential for the success of biodiversity conservation projects; and (vi) the problems of biodiversity loss among "abundant" and cultivated species is a growing concern and need to be addressed. The proposed project supports socio-economic studies for effective implementation; has well focussed goals to support medicinal plant conservation; and has both local and government support through the development of Conservation Strategy and Environmental Policy. Further a Biodiversity Conservation and Development Strategy and Action Plan is being prepared by IBCR which explicitly recognizes the importance of medicinal plants.

GEF STAP review carried out on March 4, 1999 acknowledges that this is an innovative project and with successful implementation would yield many global benefits. It could serve as a desperately needed model for other areas of the world where populations depend on wild plants for primary health care needs. The review indicates that: details regarding methodologies for medicinal plant species selection

and cultivation trials need to be identified during the project development; greater emphasis should be placed on identification of sustainable harvesting practices; role of community involvement in project management is crucial; and a committee of outside experts could add value to the implementation and management of the project once it is underway.

4. Indications of borrower commitment and ownership:

Following the request of the Minister of Agriculture to fast track a project for the conservation and sustainable use of medicinal plants, a GEF-PDF A grant was provided for a workshop to identify an Action Plan. A Project Preparation Technical Committee (PPTC), with representatives from ESTC, MOA, IBCR, ORG, EARO, DDR, EORC, AAU (SOP, NH, Institute of Pathobiology, IDR, FVM) THA, EOC, EISC, ENDA and EWCO was established to identify an agenda and organize the workshop. Based on the unanimous recommendations of all workshop participants, the PPTC produced a Project Concept Paper (PCP) that was formally submitted to Bank in August 1998. The PPTC has been meeting regularly since its inception, and has been working as the Steering Committee for the development of this project.

During the Bank identification mission in November 1998, the Minister of Health and the Director General of EARO provided letters of endorsement and strongly supported the development of the project. In addition, for the GEF related project preparation activities, a PDF B grant proposal was prepared and submitted by the government to Global Environment Facility Secretariat (GEFSEC) in December 1998. The GEFSEC has approved the PDF B grant and it is currently being implemented. Under the PDF B grant the IBCR will initiate socio-economic and biological surveys of medicinal plants in the Bale Mountains National Park; identify indicators for biodiversity monitoring and evaluation; review database systems in place for medicinal plants. A letter of endorsement from the Environmental Protection Authority (EPA) (GEF focal point) for the project was received on February 26, 1999.

5. Value added of Bank and GEF support in this project:

The Bank involvement would allow valuable lessons and initiatives tested by the project to be scaled up into a larger program in the future. The project implementation experience could be utilized by the GOE to potentially develop a comprehensive program enhancing *in-situ* and *ex-situ* conservation and management of medicinal plants, as well as integrating selected phytomedicines and traditional health systems into the MOH primary healthcare system, including a potential for exports. More specifically, Bank collaboration is expected to make a significant contribution in: (i) gathering comprehensive and authoritative information (e.g. on economic benefits derived, use of biological resources as part of a national sustainable development strategy, related socio-economic issues, etc.) on medicinal plants and their uses; (ii) initiating research on medical efficacy of traditional pharmacopoeia in relation to quality control, dosage and safety; (iii) recognizing, formalizing, and promoting the important role medicinal plants and traditional healers play in providing affordable healthcare; and (iv) assessing and improving the collaborating institutions/agencies capacity to coordinate and implement initiatives on conservation, management and sustainable utilization of medicinal plants for human and livestock healthcare in the country. The project would also help in securing future coordination with other relevant donor agencies, harmonizing various approaches to the development of medicinal plant conservation, management and sustainable harvesting from natural ecosystems, and development of *ex-situ* medicinal plants cultivation research.

The GEF value added comes from its global experience on the design, implementation and financing of biodiversity projects. The GEF support is justified by the Bale Mountains biodiversity and by the unique opportunity to focus on conservation, management and sustainable utilization of medicinal plants many of which are rare and endemic. GEF funding will enable the project to target globally valued and

threatened plants and habitats. The Bank's suite of GEF and biodiversity and medicinal plants projects in the region provides opportunities for promotion of exchange of ideas, cross-fertilization with other GEF projects, and strengthened biodiversity monitoring and evaluation, review and scientific oversight.

E: Summary Project Analysis: (detailed assessments are in the project file, see Annex 8)

1. Economic: (supported by Annex 4)

Cost-Benefit Analysis: NPV= n/a million; ERR= n/a

Cost Effectiveness Analysis

Other (Incremental Cost Analysis)

At present, there are no quantitative data available on the supply of or consumer demand for medicinal plants, and on economic benefits derived in the country by the use of medicinal plants and their contribution to healthcare. Socio-economic surveys (including market surveys) to be conducted during preparation and under this project will help to fill such data gaps. The IDA-LIL components are basically aimed at innovative studies/research and capacity building (studies/surveys, identification of medicinal plants and database development, training, safety and efficacy testing, and dosage and formulation of selected medicinal plants) and do not focus on actual production (other than few pilot propagation and cultivation trails) and consumption of medicinal plants. The LIL components of this project will form the basis for initiating large-scale production and use of selected medicinal plants in the future (presumably during the next project phase) producing clear tangible benefits (e.g. better health, more income etc.). Therefore, given the capacity building and innovative character of the project at this LIL phase, it does not readily lend itself to standard cost-benefit and financial analyses. For the GEF component of the project, incremental cost analysis has been considered as the principal economic evaluation criterion as presented below:

Incremental Cost Analysis: Under the baseline conditions GOE's expenditure on conservation and management of medicinal plants forms a small percentage of the budgetary allocation for environment and scientific research. The project's scope to conserve medicinal plants yields global and domestic benefits. Global incremental benefits will include the conservation and sustainable use of medicinal plants not being targeted by current activities. Increased information and awareness on the properties and uses of medicinal plants is another global incremental benefit from the project. Domestic incremental benefits from the project will include less expensive healthcare and in the long run locally produced and patented phytopharmaceuticals. Incremental costs of the GEF component total US\$ 1.8 million and cover the costs of financing the GEF alternative (see Annex 4).

2. Financial: (see Annex 5)

NPV=n/a

FRR= n/a

(Given the capacity building and innovative character of the project, a standard financial analysis is not readily possible).

The estimated project cost is US\$ 5.086 million (Birr 40.179 million equivalent), of which US\$ 0.777 million or 15.3 percent will be funded by the government, US\$ 1.802 million or 35.4 percent will be funded by GEF, and the remaining US\$ 2.507 million or 49.3 percent will be funded by IDA. The breakdown of investment costs and recurrent costs and project financing plan are presented in Annex 5.

Fiscal impact: As the project at this LIL phase does not include commercial production of phytomedicines derived, the likely fiscal impact will be insignificant. Only in the long-run (presumably during the next project phase) when (and if) large-scale production of effective phytomedicines occur, government spending could change in the following manner: (i) increased use of medicinal plant-based

herbal remedies in the country would help reduce costly imports of pharmaceuticals thus freeing up resources for other applications in the sector; (ii) if substantial health benefits (due to increased supply and use of affordable and locally available herbal remedies) result, then presumably government would have to spend less on the national health system; and (iii) if production of medicinal plants increases, and can be taxed, then this would have an effect on government revenues.

3. Technical:

The technical capacity and training needs of the collaborating institutions will be assessed during preparation through PDF-B grant and during the first year of the project. The project will scale up the technical capacity of such institutions to facilitate appropriate analytical requirements, technology generation and transfer, and training. The main technical contributions of this project would be: (i) establishment of a medicinal plant inventory and national database; (ii) identification of sustainable cultivation practices; (iii) establishment of management guidelines and sustainable harvesting levels for medicinal plants in protected areas; (iv) identification of standard processes for evaluating extraction, standardization, safety and efficacy, and dosage and formulations for 6 selected medicinal plants.

4. Institutional:

Executing Agencies: IBCR with overall responsibility for the conservation and management of the nation's genetic resources has been designated as the lead agency. IBCR's main responsibilities include: (a) initiate policy and legislative proposals on conservation, research and utilization of biodiversity and, upon approval, enforce as well as ensure their implementation; (b) explore and survey the diversity and distribution of the country's plant, animal and microbial genetic resources; collect samples for *ex-situ* conservation and facilitate utilization of these genetic resources for research and development; (c) conserve the country's biological resources using *ex-situ* and *in-situ* conservation methods; (d) devise a strategy to harmonize biodiversity conservation and research programs with federal and regional agricultural, industrial and health development strategies and plans; and (e) work in cooperation with the concerned federal and regional bodies with respect to protection, research, conservation and utilization of biodiversity resources (refer Proclamation No. 120/1998 dated June 25, 1998 for details).

Following the Proclamation, the mandate and the organizational structure of IBCR was revised in April 1999. The revised structure provides for 56 scientific staff members including a General Manager, a Deputy General Manager, a Director for Plant Genetic Resources Center, five Heads of Departments (Ecosystem Conservation and Research, Biotechnology and Biosafety, Animal Genetic Resources, Microbial Genetic Resources, and Ethnobiology) and two Heads of Services. The earlier structure of IBCR had only 15 scientific staff. In addition, a new Department for Policy and Legal Matters has been created. The responsibility of this department is to review and streamline the various international conventions on biodiversity (such as the Convention of Biological Diversity (CBD) to which Ethiopia is a signatory) in the context of Ethiopia's national interest; and to develop policy for management and sustainable harvesting of medicinal plants in Ethiopia and develop national legislation on appropriate biodiversity conservation and sustainable utilization issues. The planned increase in staff will build the institutional capacity of IBCR for project implementation. The planned increase in staff of IBCR is independent of the project. The planned increase in staff will build the institutional capacity of IBCR for project implementation.

IBCR will be responsible for the overall project management, and project monitoring and evaluation. To facilitate overall project management and coordination and ensure timely implementation of project activities, IBCR will create a Project Coordinating and Monitoring Unit (PCMU). The PCMU will be guided by a Project Implementation Committee (PIC). The PCMU will coordinate day-to-day project

planning, procurement, disbursement, monitoring and reporting of all project activities. The basis of the interactions between IBCR and the collaborating agencies will be a Memorandum of Understanding (MOU). IBCR would sign an MOU with each collaborating agency not directly under its control. Submission of these MOUs would be a condition of Credit Effectiveness.

IBCR will have to work closely and support the activities of the collaborating institutes, THA and other relevant agencies. ESTC and MOH need to play a more active role in integrating into their programs research related to sustainable production and utilization of medicinal plants. The Bale Mountains National Park authorities fall administratively under the ORG, but technical advice is provided by Ethiopian Wildlife Conservation Organization (EWCO). One reason for doing the institutional assessment of IBCR is to see if/how IBCR can cope with its extended mandate and responsibility for all biodiversity matters in Ethiopia.

Project Management: IBCR currently has limited capacity to manage the project. There is a need to support a PCMU in IBCR. PCMU will need a full time Project Coordinator (PC) to coordinate project activities. The PC will be assisted by one Accounting and Disbursement Specialist, one Monitoring and Evaluation Specialist, one Procurement Specialist and adequate administrative staff. The PC should have sufficient authority to take timely decisions. A Project Implementation Plan (PIP) was prepared by IBCR in consultation with collaborating agencies and was finalized and submitted during Technical Discussions. Establishment of a fully staffed PCMU and an acceptable PIP will be a condition for Credit Effectiveness. During pre-appraisal, an agreement was reached on the Project Implementation Manual (PIM) including design and implementation of accounting system which would enable the project to prepare and operate the simplified model for the Project Management Report (PMR)/based disbursement.

5. Social:

The project is likely to have a positive social impact because it aims to help evaluate the therapeutic value of six traditionally used medicinal plants with the ultimate objective of improved health status of human and livestock populations. It will work closely with THPs, and women who use medicinal plants on a daily basis for home healthcare needs. As the majority of rural THPs and women are also farmers they will play an important role in identifying cultivation practices, as well as sustainable harvesting practices for wild medicinal plants. It seeks to raise the status of traditional medicine and promote its integration with modern medicine. As medicinal plants and traditional health systems are a major source of healthcare for the majority of the rural and urban poor, any effort to improve and standardize the safety and efficacy of commonly used herbal remedies will benefit the population. Coverage of primary healthcare services will increase with the production of affordable phytomedicines.

Socio-economic factors that affect the Bale Mountains component of the project will be monitored continuously. To the extent possible the project will take these factors into account, thereby minimizing individual and community concerns regarding knowledge rights, and maximizing its effects on improved healthcare and the social fabric. Gender, as well as different cultural groups within Ethiopia, view the ownership and practices of traditional healthcare knowledge in different ways. Care will be taken to ensure that individuals, especially women, and Traditional Health Practitioners (THPs) are involved as co-partners in the development and knowledge transfer process.

6. Environmental assessment: Environmental Category [] A [] B [X] C

The project will focus on documenting the distribution, availability, safety and efficacy of 6 medicinal plants used for the treatment of 3 major human diseases and 3 livestock diseases. Every effort will be made to focus on commonly used and available medicinal plants so as to take the pressure off endemic

and threatened/rare species found in protected areas. Policy and guidelines will be developed for the sustainable management and harvesting of threatened/rare medicinal plants in protected areas. The negative environmental impact is therefore considered to be insignificant.

The project activities focus on documentation and strengthening conservation and management programs of medicinal plants in the Bale Mountains National Park. Other activities, such as identification of demonstrable cultivation practices are small-scale and narrowly focused, and are not likely to cause major soil disturbance or degradation. Activities will not involve the use of agro-chemicals or pesticides.

The implementation of the proposed project is not expected to have any adverse environmental impact. All pilot community-based trials in the Bale Mountains area will be carried out in collaboration with farmers. If rare plants are being utilized (as discovered from surveys) then under the project there are resources for their protection and management, as well as to attempt cultivation in available lands. There is also under the project a real opportunity through the planned public awareness and education programs to get people to use more commonly available plant remedies.

7. Participatory approach:

A National Workshop on Biodiversity Conservation and Sustainable Use of Medicinal Plants was held in Addis Ababa in April 1998. The stakeholders included the Traditional Healers Association, Traditional Health Practitioners, government research scientists, policy makers, technical specialists, private sector, Addis Ababa University, and NGOs including EOC and EISC. Representatives of these stakeholders make up the PPTC. The unanimously approved recommendations of the workshop identified a consensus and an Action Plan from which the objectives of the proposed project and proposed interventions have been identified.

The project design requires a participatory approach in project implementation. It is anticipated that local level, site-specific planning will provide the basis for identifying conservation, management and sustainable harvesting guidelines for all medicinal plants (threatened and ubiquitous) in the Bale Mountains National Park. Local communities, park officials, researchers, local government agencies, NGOs, and line agencies will collaborate in the implementation of the project at the local level. Participation of various stakeholders at different stages of project preparation, implementation and operation can be summarized as follows:

	Ident/Prep	Implement	Operation
a. Primary beneficiaries and other affected groups: ESTC, IBCR, DDR/EHNRI, AAU (NH, FVM, SOP, IDR, DOB, FOM), ORG Farm Communities and THPs	IS/CON/COL	IS/CON/COL	IS/CON/COL
	IS/CON/COL	IS/CON/COL	IS/CON/COL
b. Other key stakeholders: EARO, MEDAC, EORC, EWCO Donors	COL	COL	COL
	IS	IS	IS

IS – Information Sharing; CON – Consultation; COL – Collaboration.

Both the socio-economic and the biological surveys to be conducted in Bale Mountains area under the GEF component will include apart from the Subject Matter Specialists, local THPs and farmers as survey team members. Before conducting these field surveys, two introductory local workshops will be organized in Bale Mountains area involving local community members (farmers, women), THPs, local NGOs, National Park Administration, and local government officials to discuss the purpose and expected benefits of the surveys and to secure local participation and cooperation. Development of sustainable harvesting guidelines will be based on participatory approach and will seek active participation of and inputs from local communities and THPs. This activity will include 2 local workshops (1 in PY3 and 1 in PY4) and 1 regional workshop (in PY4) involving local farmers (both men and women), THPs, women involved in home healthcare, and other local stakeholders. Local community outreach and farmers training are also included in the project activities to secure their active collaboration. A series of training workshops will be organized during PY 3 and PY4.

F: Sustainability and Risks

1. Sustainability:

The project has the potential to be sustainable if the following are given sufficient attention:

- The GOE provides sufficient resources to support the project's priorities such as upgrading of the DDR's technical capacity, quality control mechanisms are attained, and there is an improvement in availability and affordability of herbal drugs for the treatment of the corresponding human and livestock diseases. Financial sustainability could be improved through successful cost recovery measures, increased community participation, and improved efficiency in the use of available natural resources.
- Participatory approaches are designed to reinforce a sense of ownership at all levels and enhance the efficiency of resource management and contribute to sustainability. In terms of outcomes, sustainability will depend on replicability. The full collaboration of THPs and communities in this pilot phase is required to create the right conditions for later replication in other regions.
- Dissemination of information regarding safe dosages and use of low-cost phytomedicines in appropriate local languages and media.
- Financed research will verify within the project period the direct applicability of technical options for implementation at the laboratory, farm, and protected area levels.
- Well-trained and well-motivated DDR, SOP and FVM staff are crucial to the development of safety and efficacy standards and dosage levels of traditional herbal medicines and their integration into

modern medicine.

- Institutional capacity building under the project will develop in-country expertise to manage and implement project activities and plan for future expansion.
- A well functioning monitoring and evaluation system to help keep the project on track.
- The active involvement of rural communities in resource conservation and management programs will play a major role in project success, particularly in the protection and sustainable use of Ethiopia's medicinal plant biodiversity.

2. Critical Risks: (reflecting assumptions in the fourth column of Annex 1)

Risk	Risk Rating	Risk Minimization Measure
From Outputs to Objective		
Lack of institutional capacity and collaboration for medicinal plants conservation, management and utilization.	Modest	Funds will be provided to strengthen capacity of collaborating institutions.
From Components to Outputs		
Delays in the development of project management capacity of IBCR.	Modest	Establishment of a Project Coordinating and Monitoring Unit at IBCR with adequate staff and authority as a condition of Credit Effectiveness.
Inadequate research capacity for determining safety, efficacy, dosage testing and formulation of herbal medicines in human and animal healthcare.	Modest	Funds will be provided to upgrade the DDR, SOP and FVM's research facilities and to improve technical skills of their staff.
Traditional medicine practitioners will not share knowledge.	Substantial	Support will be provided to ESTC for developing policy and guidelines for IPRs in collaboration with THA for sharing the traditional medicinal knowledge.
Lack of motivation and collaboration of local communities to adopt sustainable medicinal plants management and harvesting practices in the Bale Mountains area.	Substantial	Local community outreach and farmers training are included in the project activities to secure their active collaboration.
MOH will not acknowledge/accept locally produced phytomedicine healthcare.	Modest	Establishment of safety, efficacy, and dosage levels of phytomedicine and affordability.
Overall Risk Rating	Modest	

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), and N (Negligible or Low Risk).

3. Possible Controversial Aspects

Rural populations are very much aware of the importance of medicinal plants, and their use in healthcare is generally guarded information by THPs. Socio-cultural differences can be expected. The knowledge that THPs, religious organizations, women and farmers can bring to identifying, implementing and managing medicinal-plant conservation and cultivation programs is seldom sought or utilized. The first step in developing a successful strategy to conserve, enhance and sustainably utilize medicinal-plant resources is to include those knowledgeable individuals as equal partners and collaborators. If such recognition is not given the project will have difficulty achieving its goals and objectives. The project includes provision to support ESTC and THA for developing IPRs policy and guidelines and incentive mechanism for THPs, women, farmers and communities for sharing their knowledge and experience about medicinal plants.

The project is sensitive to the risk of foreign access to medicinal plant genetic material and loss of ownership. Many individuals treat with skepticism the outsiders' interest in their plants and therapies, believing they will receive no credit or royalties for any future drug discoveries derived from their knowledge. The policy and guidelines that would be developed by ESTC will address these concerns.

The project is sensitive to the concerns likely to be raised regarding regulatory measures relating to the safety, efficacy, quality and dosage levels of marketed traditional herbal medicines. To manage this concern the project will assist in the preparation of pharmacopoeial monographs for the initial herbal medicines.

G: Main Loan Conditions

1. Effectiveness Conditions:

(i) Borrower will provide a letter confirming that two Project Accounts one for IDA and one for GEF are opened and the initial deposits of US\$60,000 and US\$30,000 are made by the borrower into the said IDA and GEF Accounts respectively;

(ii) Financial auditors, acceptable to the IDA, have been contracted by IBCR;

(iii) PCMU is staffed with the appropriate personnel satisfactory to the Bank (Project Coordinator, Accounting and Disbursement Specialist, Procurement Specialist, Monitoring and Evaluation Specialist and adequate administrative/support staff);

(iv) PCMU has established an accounting and financial management system for the project satisfactory to the IDA;

(v) The Borrower has adopted the Project Implementation Plan (PIP) and the Project Implementation Manual (PIM) in form and substance satisfactory to the IDA;

(vi) Signed Memorandum of Understandings between IBCR and the collaborating institutions have been submitted;

(vii) The Borrower has appointed a committee of experts with qualifications and experience satisfactory to the IDA to review the implementation and management of the GEF component; and

(viii) The Borrower shall prepare and furnish to the IDA the annual work program for the first Fiscal Year of project implementation.

2. Other: (classify according to covenant types used in the Legal Agreements)

IBCR will submit annual audit reports within six months after closing of each FY.

H: Readiness for Implementation

[] 1. a) The engineering design documents for the first year's activities are complete and ready for the start of project implementation.

[X] 1. b) Not applicable.

[X] 2. The procurement documents for the first year's activities are complete and ready for the start of project implementation.

[X] 3. The Project Implementation Plan has been appraised and found to be realistic and of satisfactory quality.

[] 4. The following items are lacking and are discussed under loan conditions (Section G):

I: Compliance with Bank Policies

[X] 1. This project complies with all applicable Bank policies.

[] 2. The following exceptions to Bank policies are recommended for approval. The project complies with all other applicable Bank policies.

[signature]

Team Leader: Berhane Manna



[signature]

Sector Manager: Joseph Baah-Dwomoh



[signature]

Country Director: Oey Astra Meesook



Annex 1: Project Design Summary

Ethiopia: Conservation and Sustainable Use of Medicinal Plants

Hierarchy of Objectives	Key Performance Indicators	Monitoring and Evaluation	Critical Assumptions
<p>A. Sector-related CAS Goal:</p> <p>1. To improve human and livestock healthcare</p> <p>B. GEF Operational Program Goal:</p> <p>1. To secure globally significant biological resources</p>	<p>Sector Indicators:</p> <p>A.1 Improved availability and utilization of medicinal plants for human and livestock healthcare</p> <p>B.1 <i>In-situ</i> conservation and management in Bale Mountains National Park</p>	<p>Sector / Country Reports:</p> <p>A.1 Government publications</p> <p>B.1 IBCR Biodiversity Conservation Report</p> <p>B.2 GEF-Project Progress Report</p>	<p>(from Goal to Bank Mission)</p> <p>Improved management of medicinal plants and enhanced sustainable social and economic development through improvement in health care</p>
<p>Project Development Objective:</p> <p>1. To initiate support for conservation, management and sustainable use of medicinal plants for human and livestock healthcare</p>	<p>Outcome / Impact Indicators:</p> <p>1.1 3 medicinal plant species for 3 major human diseases</p> <p>1.2 3 medicinal plant species for 3 major livestock diseases</p> <p>1.3 Zoning of areas for harvesting medicinal plants in Bale Mountains</p>	<p>Project Reports:</p> <p>1.1 Published Reports</p> <p>1.2 Published Reports</p> <p>1.3 Baseline Survey & Project Progress Report</p>	<p>(from Objective to Goal)</p> <p>GOE commitment to medicinal plants conservation, management and utilization remains strong</p> <p>Continued GOE commitment for integration of phytomedicines into the MOH national primary health care system, would be a condition for a follow-up project</p>
<p>Output from each component:</p> <p>1. Institutional Strengthening, Human Resource Development, & Project Monitoring & Evaluation</p> <p>1.1 PCMU fully operational, and project monitoring and evaluation system developed and implemented</p> <p>1.2 IBCR, DDR, AAU (SOP, FVM, NH and DOB), ESTC and THA capacity for implementing project activities strengthened and institutional collaboration established</p> <p>1.3 THA organized workshop and established medicinal plant field gene bank</p> <p>1.4 ESTC developed IPR policy and</p>	<p>Output Indicators:</p> <p>1.1.1 PCMU fully operational by end PY 1</p> <p>1.1.2 M&E System operational by end PY 1</p> <p>1.2.1 Institutional assessment conducted & training needs identified by end PY 1</p> <p>1.2.2 Training Completed by end PY 2</p> <p>1.2.3 Professional Assessment of Status after Training by end PY 4 [HS, S, U, HU- Criteria to be developed]</p> <p>1.3 Workshop in PY1 and field gene bank in PY2</p> <p>1.4 IPR policy and guidelines</p>	<p>Project Reports:</p> <p>1.1 Project Supervision Reports</p> <p>1.2.1 Project Supervision Reports</p> <p>1.2.2 Project Supervision Reports</p> <p>1.2.3 Implementation Completion Report (ICR)</p> <p>1.3 Project Supervision Reports</p> <p>1.4 Project Supervision</p>	<p>(From Output to PDO)</p> <p>Commitment by IBCR to fully operationalize the PCMU and implement the project</p>

<p>guidelines for sharing traditional knowledge</p> <p>2 Studies, Research and Data Base Development</p> <p>2.1. Assessments of current levels of usage, national dependence and economic benefits derived in the country by the use of medicinal plants conducted and reports prepared</p> <p>2.2 Ethnomedical survey to explore utilization of medicinal plants and traditional healthcare practices for prevention of HIV and mitigation of adverse impact of AIDS</p> <p>2.3 National medicinal plant database established identifying and documenting all plants commonly used for the control of the 3 major human diseases and 3 livestock diseases, including the medicinal plants identified (from biological survey) in the Bale Mountains National Park</p> <p>2.4. Safety, efficacy, dosage and formulation determined for commonly used herbal remedies for 3 Human and 3 Livestock diseases</p> <p>2.5. Propagation and cultivation methods for selected medicinal plants developed</p>	<p>developed by end PY2</p> <p>2.1 Assessments completed by end PY 1</p> <p>2.2 Survey completed by end PY3</p> <p>2.3.1 Number of plants identified for the three human diseases by PY 1, and database developed by PY 3</p> <p>2.3.2 Number of plants identified for the three livestock diseases by PY 1, and database developed by PY 3</p> <p>2.3.3 Medicinal plants identified in Bale Mountains entered into the national database by PY3</p> <p>2.4 Formulation Studies completed by end PY 4</p> <p>2.5 Methodologies prepared by end PY 4</p>	<p>Reports</p> <p>2.1.1 IDR published Reports</p> <p>2.1.2 Project Supervision Reports and National publications</p> <p>2.2 Published Survey Report</p> <p>2.3.1 Project Implementation Progress & Supervision Reports</p> <p>2.3.2 Project Implementation Progress & Supervision Reports</p> <p>2.3.3 Project Implementation Progress & Supervision Reports</p> <p>2.4 DDR, SOP, FVM, FOM, NPC Published Technical Reports</p> <p>2.5 Extension Bulletins/ Annual Technical Reports</p>	<p>The 3 medicinal plants will be effective and affordable for human healthcare</p> <p>The 3 medicinal plants will be effective and affordable for livestock healthcare</p>
<p>3. In situ Conservation and Sustainable Use in Bale Mountains area</p> <p>3.1 On-site management including detailed socio-economic and biological surveys and zoning conducted in the Bale Mountains area</p> <p>3.2 Guidelines for sustainable management and harvesting of threatened/rare medicinal plants from Bale Mountains and surrounding forests developed</p> <p>3.3 Impact of harvesting guidelines and management interventions monitored and evaluated</p> <p>3.4. Ex-situ pilot cultivation trials of threatened and rare medicinal plants initiated</p> <p>3.5. Training for park staff, rangers and local communities conducted</p>	<p>3.1 Surveys completed by end PY 2. Changes in community cooperation with Park staff</p> <p>3.2 Guidelines developed by PY3 and implemented by end PY 4</p> <p>3.3 Monitoring & evaluation initiated by PY 5. Impact of harvesting reduced</p> <p>3.4 Number of pilot cultivation trials initiated by end PY 4, including number of people engaged</p> <p>3.5 Training programs implemented by PY 3. Change in number of trained Park staff</p>	<p>3.1 Baseline Survey and IBCR Progress Report</p> <p>3.2 Guideline Document published by IBCR</p> <p>3.3 PCMU Monitoring and Evaluation Progress Reports</p> <p>3.4 Project Supervision Reports and PCMU Reports</p> <p>3.5 Training Manuals</p>	<p>Communities will not encroach on protected areas and will collaborate in sustainable management of medicine plants</p> <p>Can provide early warning of impacts on species before changes in numbers become obvious</p>

3.6. Public education and mass awareness campaigns implemented	3.6 Pilot programs developed by PY 2. Number of awareness programs undertaken	3.6 Education and Mass Awareness Documents	Public interest and support of communities and commitment to sustainable resource use/conservation activities
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Project Components/Sub-components:	Inputs: (budget for each component)	Project Reports:	(from components to Outputs)
1. Institutional Strengthening, Human Resource Development, and Project Monitoring & Evaluation	US \$0.134 million (IDA: \$0.821 mil.; GOE: \$0.313 mil.)	Project Reports and Disbursement Reports	GOE commitment to project remains strong
2. Studies, Research and Data Base Development	US \$1.949 million (IDA: \$1.686 mil.; GOE: \$0.263 mil.)	Project Reports and Disbursement Reports	Timely execution of key studies, and completion of Formulation Studies
3. <i>In situ</i> Conservation and Sustainable Use in Bale Mountains area	US \$2.003 million (GEF: \$1.802 mil.; GOE: \$0.201 mil.)	Project Reports and Disbursement Reports	Timely procurement of goods and services

Annex 2: Project Description

Ethiopia: Conservation and Sustainable Use of Medicinal Plants

By Component:

Project Component 1: Institutional Strengthening, Human Resource Development, and Project Monitoring & Evaluation - US\$1.134 million

1.i. Strengthening Institutional Capacity of the Institute of Biodiversity Conservation and Research (IBCR) - Lead Implementing Agency – US\$94,700

1.ii. Develop Human Resource Capacity of Collaborating Institutions for Implementing Project Activities (DDR, SOP, FVM, NH, DOB, ESTC and THA) – US\$356,300

1.iii. Establishment of Medicinal Plant Field Gene Bank and Development of Intellectual Property Rights (IPR) Policy and Guidelines – US\$81,400

(a) Support to IBCR, EORC and Traditional Healers and other collaborating institutions for Establishing Medicinal Plant Field Gene Bank – US\$23,700

(Cost for organizing National THA Workshop to provide inputs to ESTC for the development of IPR guidelines is included under item 1.ii above)

(b) Support to Ethiopian Science and Technology Commission (ESTC) for Developing IPR Policy and Guidelines (with Participation of THA) for Sharing the Traditional Medicinal Knowledge – US\$57,700

1.iv. Establishment and Functioning of Project Coordinating and Monitoring Unit (PCMU) – US\$601,200

Project Component 2: Studies, Research and Data Base Development - US\$1.949 million

2.i. Develop methods to Collect, Analyze and Interpret Quantitative Data on Socio-Economic Benefits Derived from Medicinal Plants in Human & Livestock Health Care on National Level (IDR, AAU) – US\$384,700

2.ii. Ethnomedical survey to explore utilization of medicinal plants and traditional health practices for prevention of HIV and mitigation of adverse impact of AIDS – US\$55,500 (DDR, AAU Faculty of Medicine in collaboration with THA)

2.iii. Research on Propagation and Cultivation Methods of Selected Indigenous Medicinal Plants for Human and Livestock Diseases – US\$256,400 (AAU Department of Biology in collaboration with EARO)

2.iv. Formulation Studies: Phytomedicine Extraction, Standardization, Safety, and Efficacy Testing, Dosage Determination and Formulation – US\$1,083,200

(a) Faculty of Veterinary Medicine (FVM), AAU – US\$271,000 (FVM in collaboration with NPC, AAU)

(b) Department of Drug Research (DDR), Ethiopian Health and Nutrition Research Institute (EHNRI) – US\$305,100 (DDR in collaboration with AAU Faculty of Medicine)

(c) School of Pharmacy (SOP), AAU – US\$507,100 (SOP in collaboration with NPC, AAU)

2.v. Development of National Medicinal Plant Database – US\$169,400

Project Component 3: *In-situ* Conservation and Sustainable Use of Medicinal Plants in Bale Mountains Area - US\$2.003 million (IBCR lead implementing agency)

3.i. On-Site Management – US\$674,000

(a) In-depth Socio Economic Survey and Assessment to: (i) identify villagers/users having greatest impact on wild populations of medicinal plants through harvesting and other activities; and (ii) identify villagers/farmers for on-farm pilot propagation and cultivation trials of medicinal plants to remove pressure on wild populations – US\$274,200

(b) In-depth Biological Survey and Assessment of *In-situ* and *Ex-situ* Conservation, Zoning of Key Areas Within the Park and Strengthening Park Management in Collaboration with WWF-Dutch Project – US\$399,800

3.ii. Development and Implementation of Appropriate Management Options and Guidelines for Sustainable Harvesting of Medicinal Plants and Their Products – US\$376,300

3.iii. Monitoring to Assess: (a) preliminary impact of harvesting of medicinal plants in permit areas; (b) impact of management interventions & harvesting guidelines in the park; (c) project interventions in protecting threatened/rare medicinal species; (d) market and threatened/rare medicinal plant species; (e) market and THP surveys to determine levels of use: (i) locally; and (ii) nationally of plants harvested from Bale Mountains National Park – US\$215,300

3.iv. Piloting of Farmer Based Cultivation Trials for a Selected Number of Threatened and Indigenous Medicinal Plant Species in Home Gardens, and Boundary and Buffer Zones of the National Park – US\$319,000

3.v. Training of : (a) relevant personnel in the Conservation and Management of Medicinal Plants in the Park and Adjacent Forests; and (b) Farmers for Pilot Propagation and Cultivation and Management – US\$206,700

3.vi Public Education and Mass Awareness Campaigns of the Relevance of Conservation and Management Programs of Medicinal Plants and Importance in Ethiopia's Bio-diversity and Long Term Health Care Needs – US\$212,100

Annex 3: Estimated Project Costs

Ethiopia: Conservation and Sustainable Use of Medicinal Plants

Project Cost By Component	Local	Foreign US \$ '000	Total
1. Institutional Strengthening, Human Resource Development, and Project Monitoring and Evaluation	564.2	421.4	985.5
2. Studies, Research and Data Base Development	712.4	1,010.1	1,722.5
3. <i>In-situ</i> Conservation and Sustainable Use in Bale Mountains Area	1,079.0	675.9	1,755.0
Total Baseline Costs	2,355.6	2,107.4	4,463.0
Physical Contingencies	184.1	187.2	371.3
Price Contingencies	150.8	101.0	251.9
Total Project Costs	2,690.5	2,395.6	5,086.1

Project Cost By Category	Local	Foreign US \$ '000	Total
1. Goods:			
Vehicle	265.5	217.3	482.8
Equipment	197.6	750.5	948.0
2. Consultant Services:			
National Consultants	340.2	37.8	378.0
International Consultants	8.5	76.4	84.8
3. Training and Workshops:			
Local Training	193.1	21.5	214.5
Overseas Training	34.5	310.2	344.6
Workshops	108.3	27.1	135.3
4. Studies and Research:			
Surveys/Studies	416.9	278.0	694.9
Research	183.8	183.8	367.6
Publication & Documentation	84.5	36.2	120.7
5. Incremental Operating Costs^{1a}:	522.8	168.8	691.6
Total Baseline Costs	2,355.6	2,107.4	4,463.0
Physical Contingencies	184.1	187.2	371.3
Price contingencies	150.8	101.0	251.9
Total Project Costs	2,690.5	2,395.6	5,086.1

^{1a} Includes costs for: vehicles & equipment operation and maintenance, incremental salaries, per diem & allowances, office & laboratory supplies, utilities, telephone and communication.

Annex 4: Incremental Costs and Global Environmental Benefits

Ethiopia: Conservation and Sustainable Use of Medicinal Plants

Overview:

1. In Ethiopia the per capita share of public expenditure on health is approximately US \$0.16, one of the lowest in the world. This figure only takes into account the formal market for conventional healthcare and does not consider the informal market that accounts for the traditional healthcare administered. If the majority of the rural population were to lose their culturally viable and affordable source of healthcare, it would be impossible for the MOH to provide a comparable service at affordable prices. The situation is no different for livestock healthcare. The majority of rural stockholders are far from veterinary stations, and those that have access may not be able to pay for services. Exploitation of traditional animal health services is regarded by veterinarians as a possible alternative or complementary option. Ethiopia has committed to protect its natural resources and to preserve its biodiversity under its 1997 Conservation Strategy. At the same time, the MOH is committed to the integration of traditional and modern health systems and strengthening research priorities that ensure the safety and efficacy of traditional herbal remedies. The IBCR is embarked on a program of ensuring that the use of medicinal plant genetic resources is scientifically sound and ecological sustainable. This project aims to provide safe and efficacious healthcare relying on traditional medicines and medicinal plants while protecting the resource base.

The Country Context and Broad Development Goal:

2. One of Ethiopia's major development objectives is sustained rapid growth with poverty reduction. The Government has a strong rural support base and a keen sense of the importance of improving the welfare of rural residents. Nevertheless, the bulk of the rural poor that are most vulnerable in terms of health live in remote areas isolated by the difficulty of access to roads. The Government is aware that more than 80% of the rural population depend on medicinal plants for their basic healthcare needs and that many of these plants are being harvested on an unsustainable basis from natural and protected areas. Medicinal plants will continue to have an important role to play in the health and productivity of the rural population. The conservation, management and sustainable use of medicinal plants is crucial to achieving natural resource, food security and health development goals.

Baseline

3 At present several government agencies implement activities that can be regarded as contributing to the conservation of medicinal plants and to their sustainable use. They include: the Environmental Protection Agency, the Institute of Biodiversity Conservation and Research (IBCR). The National Herbarium, Department of Biology and the Faculty of Veterinary Medicine of Addis Ababa University. In the absence of GEF facilities, GOE would be expected to allocate approximately US \$1.0 million to cover capital expenditures for medicinal plant conservation and management through the government agencies. However, the commitment of resources would continue to be low, in view of the more pressing environmental priorities of drought, deforestation, and agricultural expansion throughout the country.

4. The National Herbarium (NH) is the primary source of information regarding the identification, distribution and possible status of Ethiopia's medicinal flora. The national medicinal plant database will be centered at the NH. **NH research funds** are estimated to be US \$60,000. The Faculty of Veterinary Medicine (FVM) has recently initiated a program to cultivate three medicinal plants used by pastoralists for the control of endoparasites. They have also started a program to document ethnoveterinary medicinal plants used in the Oromya Region. **FVM's research funds** are approximately US \$21,700.

5. **IDA's** commitment to the conservation, management and sustainable use of medicinal plants is through institutional strengthening, human resource development and project monitoring and evaluation. In addition, support will be provided for the identification of 6 medicinal plants, for the treatment 3 human diseases and 3 livestock diseases; testing of safety and efficacy, formulation studies and registration; the development of cultivation methods; and establishment of a national medicinal plant database. The cost of these initiatives is estimated to be **US \$4.7 million**. The IDA components are not specifically focused on Bale Mountains National Park needs, however both the IDA and GEF initiatives complement, and will benefit from each others activities.

6. The **WWF-Dutch ICDP project** in the Bale Mountains/Hareenna Forest has two major objectives: (i) to strengthen institutional capacity to manage the country's important protected areas, with an emphasis on forests; and (ii) to conserve and sustainably manage the Bale Mountains National Park and the adjacent Hareenna Forest. The park is under significant threat from settlement, forest clearance, livestock and coffee cultivation. The project will work with the national park authorities to strengthen their capacity to conserve key areas within the park management zone. The project will also work in the buffer zones to achieve consensus-based agreements with local people to conserve remaining intact ecosystem areas within the forests. The **Dutch commitment** to the Bale Mountains project is **US \$2.0 million** over 5 years. This work will complement the proposed GEF project. The **Park Administrative commitment** is estimated to be **US \$200,000** over 5 years for a total **US \$2.2 million**

7. The Baseline Scenario is therefore estimated to cost **US \$7.98 million**. It is based on a realistic assessment of available resources and is consistent with the existing institutional capacity and national development goals.

Global Environmental Objective

8. The global environmental goal of the project is to conserve the medicinal flora of the Bale Mountains through achieving the following objectives over and above the Baseline Scenario: (i) support on-site management, including zoning for appropriate use, protection and traditional harvesting; (ii) develop management guidelines for sustainable harvesting of medicinal plants; (iii) monitoring and evaluation of harvesting and management interventions; (iv) on-farm pilot cultivation trials to grow medicinal plants to take the pressure off wild populations; (v) training of park staff and farmers; and (vi) education and mass awareness campaigns for medicinal plant conservation and sustainable use.

GEF Alternative

9. As part of the GEF *in-situ* conservation and sustainable use component the GEF alternative will build on the Baseline Scenario by strengthening on-site management, including support for the socio-economic and biological assessment of medicinal plants harvested, status (threatened, rare), and their habitats in the Bale Mountains National Park. This information will be used to derive appropriate zoning and management regimes within the park and will complement park protection activities initiated by WWF-Dutch ICDP. The cost of implementing **GEF alternative** over the five year period is estimated to **US \$0.5 million**.

10. In an effort to regulate the harvesting of medicinal plants and/or parts thereof, the GEF alternative would actively link the development of sustainable management guidelines for harvesting with community demand for such products. Communities would identify management and enforcement criteria and be expected to play a major role in protecting *in-situ* medicinal plant resources. Estimated cost is **US \$0.4 million**.

11. Monitoring and evaluating the status of key threatened/rare medicinal plants as indicators of ecosystem health and human demand in the Bale Mountains National Park is estimated at **US \$0.2 million**.

12. The establishment of pilot farmer-based cultivation trials outside the Bale Mountain National Park would utilize farmer and medicinal plant user knowledge to ensure a sustainable supply of medicinal plants and/or parts. The GEF alternative would also intensify current efforts to capture traditional knowledge, and expand knowledge of the botany of medicinal plants and their use in Ethiopia. Estimated cost is **US \$0.3 million**.

13. The project will support the development of training programs that focus on park conservation and management and identification and application of cultivation methods by farmers. Estimated cost is **US \$0.2 million**.

14. The project will finance education and public awareness to generate public support for the management and sustainable use of the importance of medicinal plants in human and livestock healthcare. And, to encourage the acceptance of management guidelines which would aid the sustainability of the conservation efforts. Estimated cost is **US \$0.2 million**.

Incremental Costs

15. Total financing of the GEF alternative is **US \$9.78 million** over the period 1999-2003. The GEF is requested to fund **US \$1.8 million** which is the incremental cost or difference between the Baseline Scenario (US \$7.98) and the GEF alternative (US \$9.78). The details of the Baseline and the GEF alternative are presented in the attached Incremental Cost Matrix.

Incremental Cost Matrix:

Component	Cost Category	US\$ Million	Domestic Benefit	Global Benefit
1. Institutional Strengthening, Human Resource Development, and Project Monitoring and Evaluation: 1. a. Institutional strengthening	Baseline	1.75	Increased institutional capacity of the Institute of Biodiversity Conservation and Research (IBCR) (Lead national institute) Increased technical and research capacity of relevant institutes - Department of Drug Research (DDR), School of Pharmacy (SOP) and Faculty of Veterinary Medicine (FVM) for phytomedicine related scientific research.	Increased public sector capacity to manage biodiversity.
	With GEF Alternative	1.75	Same as above.	Same as above.
	Incremental	0.0		
1.b. Human Resource Development	Baseline	2.46	Increased efficiency and long-term effectiveness of the implementation of biodiversity conservation and management, and medicinal plants utilization initiatives.	
	With GEF Alternative	2.46	Same as above.	
	Incremental	0.0		
1.c. Project Coordination, Monitoring and Evaluation	Baseline	0.68	Increased capacity to coordinate, implement, monitor and evaluate project activities aimed at long-term conservation and sustainable use of medicinal plants.	
	With GEF Alternative	0.68	Same as above.	
	Incremental	0.0		
2. Studies, Research and Data Base Development: 1.a. Studies (Medicinal Plants Related Socio-Economic Studies)	Baseline	0.2	Increased understanding of the role medicinal plants play in national human and livestock healthcare (e.g. through collection and analysis of information on utilization of medicinal plants, economic benefits derived in the country).	
	With GEF Alternative	0.2	Same as above	
	Incremental	0.0		
2.b. Research (Research on Safety, Efficacy and Dosage Levels; and Research on Propagation and Cultivation Methods)	Baseline	1.48	Establishment of safety, efficacy and dosage levels of the 6 commonly used remedies (used for the control of 3 major human diseases and 3 livestock diseases) derived from native plants species. Improved scope for popularizing phytomedicines and integrating them into national healthcare system. Development of propagation and cultivation methods and piloting of <i>ex-situ</i> cultivation of selected medicinal plants used for the treatment of 3 major human diseases	
	With GEF Alternative			
	Incremental			

			(tapeworm infections, bronchopneumonia, hypertension) and three livestock diseases (tapeworm infections, mastitis, dermatophilosis).	
	With GEF Alternative	1.48		
	Incremental	0.0		
2.c. Database Development	Baseline	0.74	Identification, documentation and development of a national database of indigenous medicinal plants including the plants used for the control of 3 major human and three livestock diseases, as well as the medicinal plants identified (from biological survey) in the Bale Mountains National Park.	
	With GEF Alternative	0.74	Same as above.	
	Incremental	0.0		
3. In-Situ Conservation and Sustainable Use in Bale Mountains Area:	Baseline			
3.a. On Site Management		2.2	Strengthen conservation and management of protected areas with emphasis on large mammal conservation.	
	With GEF Alternative	2.7	Documentation of status and usage of medicinal plant species, including threatened/rare species from Bale Mountains National Park areas. Improved park management and zoning.	Improved conservation of rare and threatened medicinal plants and sustainable management in unique Afromontane ecosystems.
	Incremental	0.5		
3.b. Preparation and Implementation of Management Plans and Sustainable Harvesting Guidelines	Baseline	0.0		
	With GEF Alternative	0.4	Development of management regimes for sustainable harvesting of medicinal plants in appropriate zones in and around Bale Mountains areas. Participatory schemes for sustainable management and harvesting of medicinal plant resources.	Best practice guidelines for management and sustainable harvesting of medicinal plants and their products.
	Incremental	0.4		
3.c. Monitoring and Evaluation	Baseline	0.0		
	With GEF Alternative	0.2	Effective management and harvesting of medicinal plants in Bale Mountains area.	Effective management of investments aimed at conserving globally significant biodiversity in protected areas and promoting sustainable use of plant resources.
	Incremental	0.2		
3.d. Piloting of Farmer-Based Ex-Situ Cultivation Trails	Baseline	0.0		
	With GEF Alternative	0.3	Development of propagation and cultivation methods and piloting of ex-situ cultivation of medicinal plants around Bale Mountains area.	Reduced collection of threatened/rare medicinal plants from the wild including protected areas.
	Incremental	0.3		
3.e. Training	Baseline	0.0		
	With GEF Alternative	0.2	Increased knowledge and management skills of Park staff, rangers and local communities- for biodiversity conservation and management activities in Bale Mountains area.	Long-term sustainability of conservation efforts through increased local capacity for biodiversity conservation and management.
	Incremental	0.2		

3.f. Public Awareness and Education	Baseline	0.0		
	With GEF Alternative	0.2	Increased public awareness of issues related to biodiversity and medicinal plants conservation.	Sustainability of conservation efforts related to globally important biodiversity. Increased understanding of the role biodiversity plays in sustainable development.
	Incremental	0.2		
Total	Baseline	9.51		
	With GEF Alternative	11.31		
	Incremental	1.8		

Annex 5: Financial Summary
(US\$ '000)

Ethiopia: Conservation and Sustainable Use of Medicinal Plants

	Implementation Period					Total
	Year 1	Year 2	Year 3	Year 4	Year 5*	
Project Costs						
Investment Costs	2256.6	922.8	553.7	379.4	155.6	4268.1
Recurrent Costs	174.8	185.5	169.2	179.1	109.3	817.9
Total Project Costs	2431.4	1108.3	722.9	558.5	264.9	5086.0

* For GEF component only.

Financing Sources						
IDA	1402.4	771.4	176.2	157.0	0	2507.0
GEF	688.6	211.2	394.0	338.6	169.6	1802.0
Government	340.4	125.7	152.7	62.9	95.3	777.0
Total Project Financing	2431.4	1108.3	722.9	558.5	264.9	5086.0

Annex 6: Procurement, Disbursement and Financial Management Arrangements

Ethiopia: Conservation and Sustainable Use of Medicinal Plants

Procurement

1. All goods and services financed under the IDA Credit and GEF Grant would be procured in accordance with IDA guidelines of goods and services [Guidelines: Procurement under IBRD Loans and IDA Credits, January 1995 as revised in January and August 1996 and September 1997 (Goods and Works Guidelines), and Guidelines: Selection and Employment of Consultant by World Bank Borrowers, January 1997 (Consultants Guidelines)]. Contracts to supply goods and equipment, vehicles and consulting services would be processed and awarded by the project management. The Project Coordinating and Monitoring Unit (PCMU) which would be staffed with procurement proficient staff would carry out all procurement.

Procurement of Goods and Equipment

2. Goods (including vehicles) estimated to cost equal or more than US\$ 100,000 equivalent per contract will be procured by International Competitive Bidding. Goods and Services estimated to cost US\$50,000 equivalent per contract, up to **an aggregate amount not to exceed US\$600,000** equivalent may be procured by National Competitive Bidding (NCB) procedures, acceptable to IDA. Contracts under US\$50,000 for the procurement of items that cannot be grouped into bulk procurement and for readily available off-the-shelf goods would be procured by comparing price quotations obtained from at least three local suppliers. **Procurement by this methods should not exceed the total sum of US\$300,000 over the project's life.** The PCMU would be required to prepare a computer-based system to monitor that the aggregate amounts agreed upon would not be exceeded during project implementation. IDA's prior review procedures would apply to all purchases for which the contract value is equivalent or in excess of US\$50,000 for goods and services.

Consultants' Services

3. Consultants' services shall be procured in accordance with the provisions of the Introduction and Section IV of the guidelines: "Selection and Employment of Consultants by World Bank Borrowers" published by the Bank in January 1997 (the Consultant Guidelines) and the following provisions of this Section I.

3.1 Quality- and Cost-based Selection

Except as otherwise provided in paragraph 3.2 below, consultants' services shall be procured under contracts awarded in accordance with the provisions of section II of the Consultant Guidelines, paragraph 3 of Appendix 1 thereto, Appendix 2 thereto, and the provisions of paragraphs 3.13 through 3.18 thereof applicable to quality- and cost-based selection of consultants.

The following provisions shall apply to consultants' services to be procured under contracts awarded with the provisions of the preceding paragraph. The short list of consultants for services such as technical assistance, studies, support for local communities to promote biodiversity conservation, training of beneficiaries, public education and awareness activities, and preparation of technical documents estimated to cost less than US\$50,000 equivalent per contract, may comprise entirely national consultants in accordance with the provisions of paragraph 2.7 of the Consultants Guidelines.

3.2. Other Procedures for the Selection of Consultants

- a) Least-cost Selection. Services for audit and advisory services estimated to cost less than US\$50,000 equivalent per contract may be procured under contracts awarded in accordance with the provisions of

paragraphs 3.1 and 3.6 of the Consultant Guidelines.

- b) **Selection Based on Consultants' Qualifications.** Services for technical and logistical support to producers groups for propagation and multiplication/cultivation trails of medicinal plants, biodiversity conservation, feasibility studies, and extension estimated to cost less than US\$50,000 equivalent per contract, may be procured under contract awarded in accordance with provisions of paragraphs 3.1 and 3.7 of the Consultant Guidelines.
- c) **Individual Consultants.** Services for tasks that meet the requirements set forth in paragraph 5.01 of the Consultant Guidelines shall be procured under contracts awarded to individual consultants in accordance with the provisions of paragraphs 5.1 through 5.3 of the Consultant Guidelines.

3.3 Review by the Bank of selection of Consultant

- a) **Selection Planning** Prior to the issuance to consultants of any requests for proposals, the proposed plan for the selection of consultants under the Activities shall be furnished to the Bank for its review and approval, in accordance with the provisions of paragraph 1 of Appendix 1 to the Consultant Guidelines. Selection of all consultants' services shall be undertaken in accordance with the provisions of said paragraph 1.
- b) **Prior Review** (i) With respect to each contract for the employment of consulting firms estimated to cost the equivalent of US\$100,000 or more, the procedures set forth in paragraphs 1, 2 (other than the third subparagraph 2 (a)) and 5 of the Appendix 1 to the Consultant Guidelines shall apply. (ii) With respect to each contract for the employment of individual consultants estimated to cost the equivalent of US\$50,000 or more, the qualifications, experience, terms of reference and terms of employment of the consultants shall be furnished to the Bank for its prior review and approval. The contract shall be awarded only after said approval shall have been given.

3.4 Post Review

With respect to each contract not governed by paragraph 1 of this Part, the procedures set forth in paragraph 4 of Appendix 1 to the Consultant Guidelines shall apply.

Disbursement

Disbursements would be made against standard IDA documentation using traditional disbursement procedures during the first 18 months after effectiveness of the project. The IDA-LIL support for the project is expected to be completed over a four-year period and the credit is expected to be closed by June 30, 2005; and GEF component is expected to be completed over a five-year period and the Grant is expected to be closed by December 31, 2006.

Use of Statements of Expenditures (SOEs):

1. Disbursements would be fully documented except for contracts below the equivalent of US\$50,000 for individual consultants and US\$100,000 for goods and consulting firms as well as for all operating costs including local and foreign training. For such contracts borrower would be allowed to submit withdrawal applications based on Statement of Expenditures (SOEs). All supporting documents for such applications would be retained by the PCMU and made readily available for review by periodic IDA supervision missions and external auditors. All expenditures related to contracts above the equivalent of US\$50,000 for individual consultants, and US\$100,000 for goods and consulting firms would be fully documented (no SOE use).

Special Account:

2. To facilitate payment of expenditures by the project, Special Accounts (separate accounts for IDA and GEF) in US dollars would be established in the National Bank of Ethiopia or in a commercial bank acceptable to IDA. The Authorized Allocation to the Special Account is US\$ 350,000. IDA would make initial estimated deposit of US\$175,000 from Credit immediately after effectiveness.

Flow of funds.

3 All expenditures would be paid from the Special Account, except for expenditures greater than 20% of the outstanding Special Account advance which could be made directly by IDA.

Project Accounts/Counterpart Account.

4. Project Accounts (separate accounts for IDA and GEF) and Counterpart Accounts would be both opened at the National Bank of Ethiopia or at a commercial bank under terms and conditions satisfactory to IDA.

PCMU would ensure that disbursements are effected in accordance with Bank procedures. PCMU would have financial monitoring responsibility.

The counterpart funds received from the advance payments would be credited to the account open by the GOE at the National Bank of Ethiopia or at a commercial bank. The account would operate under the responsibility of the Ministry of Economic Development and Cooperation (MEDAC).

Financial Management

Existing Financial Management System of the Institute

The implementing agency IBCR, like other ministries and commissions, obtain its annual budget from the Federal Government of Ethiopia, Ministry of Finance (MOF). The cash basis of accounting is used by the Institute. The receipts of cash and withdrawals are recorded in standardized journal. No annual accounts are prepared by the Institute. The Ministry of Finance is responsible for the compilation of annual accounts.

Currently, the Institute is administering a Global Environment Facility (GEF) Fund amounting to US\$2.4 million. The institute quarterly reports to the financier on a standardized format in a very simplified way.

The Institute has a finance division comprising of 7 staff, some of them are diploma holders from the Commercial College. The practical experience for most of them is the cash basis of accounting based on the MOF standard formats.

Internal Control

The institute has an Internal Audit Division consisting two staff who are diploma holders. The division usually conducts pre-audit activities. There is a strong push from the MOF to engage the internal auditors in the post audit activities. This department could perform some post audit activities on the project financial transaction in the future.

LACI Capability

The capacity of the Institute to handle LACI procedures as outlined in the LACI handbook is limited as discussed above and a decision has been reached between the Bank and the Institute to establish a Project Coordinating and Monitoring Unit (PCMU) to undertake the day to day activities of the project. In the unit an Accounting and Disbursement Specialist will be employed to look after the financial affairs. Thus, as the establishment of the PCMU is at its very early stage, the IBCR is not ready for PMR based disbursement based on the LACI guidelines of the Bank. Disbursements will begin using the traditional disbursement procedures which is currently in place in the Bank, and will continue upto approximately 18 months. Under the existing disbursement procedures, payments could be made by direct payments special commitments and SOE procedures. Detailed guidance could be obtained from the Disbursement Handbook and

training will be given at the project launch workshop. The following steps should be undertaken before the IBCR is able to meet PMR based disbursements:

- Appointment of a Project Accountant (Before effectiveness)
- Development of a financial manual (within 6 months of effectiveness)
- Development of a financial reporting format acceptable to the Bank (within 6 months of effectiveness)
- Definition of a clear cut flow of funds (by negotiation)
- Evaluation of the IBCR capacity by the Bank staff to determine compliance with the LACI guidelines (12 months of effectiveness)
- Preparation of draft PMR for initial review (15 months of effectiveness)
- Production of PMRs (21 months of effectiveness)
- Amendment of the DCA in line with LACI Requirements (18 months of effectiveness)

Provided these steps are taken, it is expected that the IBCR should be LACI capable 18 months from the date of effectiveness. Once the IBCR and the PCMU are assessed to be LACI compliance, the Credit Agreement will be amended to reflect that disbursements will be made on the basis of PMR. A detailed note on LACI is included in the PIP.

Annex 6, Table A: Project Costs by Procurement Arrangements¹
(in US\$'000 equivalent)

Expenditure Category	Procurement Method				Total Cost (including contingencies)
	ICB	NCB	Other	N.B.F	
1. Goods:					
Vehicle	550.5 (302.8)				550.5 (302.8)
Equipment	1,077.9 (965.6)				1,077.9 (956.6)
2. Consultant Services:					
National Consultants			395.7 (395.7)		395.7 (395.7)
International Consultants			87.3 (87.3)		87.3 (87.3)
3. Training and Workshops:					
Local Training			252.0 (252.0)		252.0 (252.0)
Overseas Training			398.2 (398.2)		398.2 (398.2)
Workshops			160.2 (160.2)		160.2 (160.2)
4. Studies and Research:					
Surveys/Studies			757.8 (757.8)		757.8 (757.8)
Research			436.6 (436.6)		436.6 (436.6)
Publication & Documentation			151.8 (151.8)		151.8 (151.8)
5. Incremental Operating Costs^{1a}:			818.8 (401.5)		818.0 (401.5)
Total	1,628.4 (1,268.4)		3,457.7 (3,041.1)		5,086.1 (4,309.5)

Note: N.B.F. = Not Bank-financed (includes elements procured under parallel cofinancing procedures, consultancies under trust funds, any reserved procurement, and any other miscellaneous items). The procurement arrangement for the items listed under "Other" and details of the items listed as "N.B.F." need to be explained in footnotes to the table or in the text.

Figures in parenthesis are the amounts to be financed by the IDA credit and GEF grant.

¹ For details on presentation of Procurement Methods refer to OD11.02, "Procurement Arrangements for Investment Operations." Details on Consultant Services can be shown more easily in the Table A1 format (additional to Table A, where applicable).

^{1a} Includes costs for: vehicles & equipment operation and maintenance, incremental salaries, per diem & allowances, office & laboratory supplies, utilities, telephone and communication.

Annex 6, Table B: Thresholds for Procurement Methods and Prior Review²

Expenditure Category	Contract Value (Threshold)	Procurement Method	Contracts Subject to Prior Review
	US \$ thousands		US \$ millions
1. Goods	Equal or more than US\$100,000	ICB	Equal or more than US\$100,000
	Up to US\$100,000	NCB	
	Less than US\$50,000	Shopping	
2. Services			Equal or more than US\$50,000 for individuals and equal or more than US\$100,000 for firms All TORs (firms and individuals)
3. Miscellaneous			

Overall Procurement Risk Assessment:

High	<input type="checkbox"/>
Average	<input type="checkbox"/>
Low	<input checked="" type="checkbox"/>

Frequency of procurement supervision missions proposed: One every 12 months (includes special procurement supervision for post-review/audits)

² Thresholds generally differ by country and project. Consult OD 11.04 "Review of Procurement Documentation" and contact the Regional Procurement Adviser for guidance.

Annex 6, Table C: Allocation of IDA Credit and GEF Grant Proceeds

Expenditure Category	IDA Credit	
	Amount in US\$	Financing Percentage
1. Goods:		
• Vehicles	140,000	100% FC, 85%LC
• Equipment	800,000	100% FC, 85%LC
• Furniture & Materials	5,000	100% FC, 85%LC
Sub Total Goods:	945,000	
2. Specialist Services:		
• Consultants	300,00	100% of total
• Training	440,000	100% of total
• Studies	320,000	100% of total
Sub Total Specialist Services:	1,060,000	
3. Incremental Operating Costs :	270,000	80% of total
4. Unallocated:	232,000	
Total	2,507,000	

Expenditure Category	GEF Grant	
	Amount in US\$	Financing Percentage
1. Goods:		
• Vehicles	130,000	100% FC, 85%LC
• Equipment	60,000	100% FC, 85%LC
Sub Total Goods:	190,000	
2. Specialist Services:		
• Consultants	615,000	100% of total
• Training	240,000	100% of total
• Studies	480,000	100% of total
Sub Total Specialist Services:	1335,000	
3. Incremental Operating Costs:	95,000	80% of total
4. Unallocated:	182,000	
Total	1,802,000	

Annex 7: Project Processing Budget and Schedule

Ethiopia: Conservation and Sustainable Use of Medicinal Plants

Project Schedule	Planned (At final PCD stage)	Actual
Time taken to prepare the project (months)	4	4
First Bank mission (identification)	11/02/1998	11/07/1998
Pre-appraisal mission departure	05/05/1999	05/05/1999
Negotiations	09/10/2000	10/12/2000
Planned Date of Effectiveness	12/01/2000	07/01/2001

Prepared by: Institute of Biodiversity Conservation and Research (IBCR)

Preparation assistance: GEF PDF (A & B) grant: US\$ 0.11 million

Bank staff who worked on the project included:

Name	Specialty	
Project Team:		
Berhane Manna	Task Team Leader	AFTR2
Devendra Bajgain	Agricultural/Natural Resources Management Specialist	AFTR2
John Lambert	Medicinal Plant Specialist	AFTR2
Kathy MacKinnon	Senior Biodiversity Specialist	ENV
Palitha M. Wijesinghe	Senior Disbursement Officer	LOAAF
Solange Alliali	Senior Counsel	LEGOP
Lucie Houng-Giang Tran	Operations Analyst	AFTR3
Soulemane Fofana	Operations Analyst	AFTR2
Samuel Haile Selassie	Procurement Officer	AFMET
Eshetu Yimer	Financial Officer	AFMET
Remi Kini	Environmental Economist	AFTE1
Shimwaayi Muntemba	Social Scientist	AFTE1
Zenobia Raghunandan	Team Assistant	AFTR2
Quality Assurance Team:		
Joseph Baah-Dwomoh	Sector Manager	AFTR2
Jaime M. Biderman	Lead Specialist	AFTQK
Francesco Sarno	Principal Procurement Specialist	AFTQK
Elizabeth Otubea Adu	Principal Counsel, Operations	LEGOP
Peer-Reviewers:		
Jan Bojo	Senior Environmental Economist	AFTE1
Nadim Khouri	Senior Agriculturist	SASRD

Annex 8: Documents in the Project File*

Ethiopia: Conservation and Sustainable Use of Medicinal Plants

A. Project Implementation Manual – October 5, 2000

B. Bank Staff Assessments

1. Bank Identification Mission Aide-Memoire, dated December 21, 1998
2. Environmental Data Sheet
3. Bank Pre-Appraisal Mission Aide-Memoire, dated June 1, 1999
4. Technical Discussions, Minutes, dated March 17, 2000
5. Negotiations, Minutes, October 12, 2000

C. Other

*Including electronic files.

Annex 9: Status of Bank Group Operations in Ethiopia (Operations Portfolio)
As Of January 8, 2001

Closed Projects 62

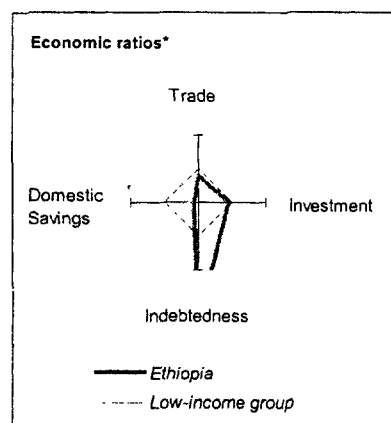
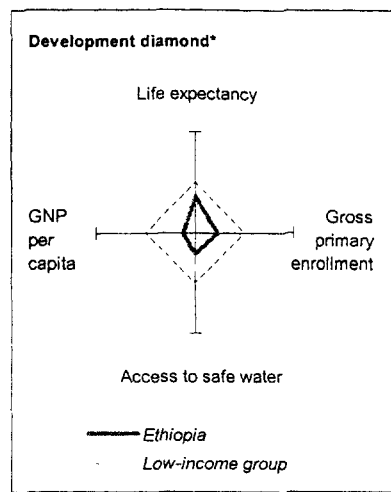
Project ID	Project Name	Last PSR			Original Amount in US\$ Millions					Difference Between Expected and Actual Disbursements	
		Supervision Rating b/		Fiscal Year	IBRD	IDA	GRANT	Cancel.	Undisb.	Orig.	Frm Rev'd
		Development Objectives	Implementation Progress								
P000733	AG. RESEARC & TRAIN	HS	S	1998	0	60	0	0	46.6	9.7	0
P000758	CALUB ENERGY DEV. PROJECT	U	U	1994	0	0	0	0	0	0	0
P073196	Demobilization and Reintegration Project	#	#	2001	0	170.6	0	0	172.7	0	0
P000732	EDUCATION SECTOR INVESTMENT	S	U	1998	0	100	0	0	67.6	22.6	0
P067084	EMERGENCY RECOVERY PROJECT	#	#	2001	0	230	0	0	232.8	0	0
P000736	ENERGY II	S	S	1998	0	200	0	0	142.1	36.1	0
P000771	ESRF 1	S	S	1996	0	120	0	11.5	46.5	63.2	36.9
P069886	MULTISECTORAL HIV/AIDS PROJECT	#	#	2001	0	60	0	0	60	0	0
P000756	HEALTH SECTOR	S	U	1999	0	100	0	0	76.2	27.3	0
P000753	NAT. FERTILIZER PROJ	S	S	1995	0	120	0	0.1	19.9	26.7	0
P000752	NATIONAL SEEDS PROJECT	S	S	1995	0	22	0	0	10.5	12.3	0
P000734	ROAD REHABILITATION	S	S	1993	0	96	0	0	28.6	34.4	0
P000755	ROAD SEC. DEV. PROG.	S	S	1998	0	309.2	0	0	231.8	130.5	0
P000764	WATER SUPPLY DEV&REH	S	S	1996	0	35.7	0	0	17.2	21	0
P050342	WOMEN'S DEVELOPMENT INITIATIVES PROJECT	#	#	2001	0	5	0	0	5	0	0
TOTAL					0	1628.5	0	11.6	1157.5	383.9	36.9

Annex 10: Ethiopia at a Glance

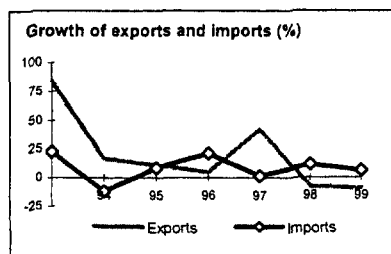
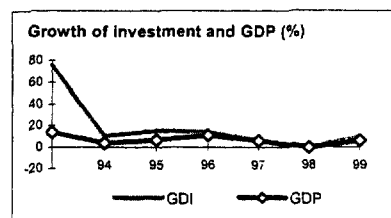
Ethiopia at a glance

8/21/00

POVERTY and SOCIAL	Ethiopia	Sub-Saharan Africa	Low-income	
1999				
Population, mid-year (millions)	62.8	642	2,417	
GNP per capita (Atlas method, US\$)	100	500	410	
GNP (Atlas method, US\$ billions)	6.5	321	988	
Average annual growth, 1993-99				
Population (%)	2.7	2.6	1.9	
Labor force (%)	2.3	2.6	2.3	
Most recent estimate (latest year available, 1993-99)				
Poverty (% of population below national poverty line)	45	..	..
Urban population (% of total population)	17	34	31	
Life expectancy at birth (years)	43	50	60	
Infant mortality (per 1,000 live births)	107	92	77	
Child malnutrition (% of children under 5)	..	32	43	
Access to improved water source (% of population)	27	43	64	
Illiteracy (% of population age 15+)	63	39	39	
Gross primary enrollment (% of school-age population)	43	78	96	
Male	55	85	102	
Female	31	71	86	
KEY ECONOMIC RATIOS and LONG-TERM TRENDS				
	1979	1989	1998	1999
GDP (US\$ billions)	..	8.1	6.6	6.5
Gross domestic investment/GDP	..	13.5	17.2	17.8
Exports of goods and services/GDP	..	9.2	15.8	13.7
Gross domestic savings/GDP	..	7.9	5.3	2.7
Gross national savings/GDP	..	9.8	9.3	7.1
Current account balance/GDP	..	-3.6	-7.9	-10.4
Interest payments/GDP	..	0.9	1.6	1.2
Total debt/GDP	..	96.8	149.5	141.9
Total debt service/exports	6.2	40.2	3.1	17.6
Present value of debt/GDP	120.5	..
Present value of debt/exports	751.5	..
	1979-89	1989-99	1998	1999
<i>(average annual growth)</i>				
GDP	0.9	4.2	-1.0	5.8
GNP per capita	-1.9	0.9	-4.2	3.3
Exports of goods and services	2.8	5.6	-7.8	-9.3



STRUCTURE of the ECONOMY	1979	1989	1998	1999
<i>(% of GDP)</i>				
Agriculture	..	48.5	52.3	52.3
Industry	..	14.2	11.1	11.1
Manufacturing	..	8.5	7.0	7.0
Services	..	37.3	36.5	36.5
Private consumption	..	73.5	80.4	81.3
General government consumption	..	18.7	14.2	16.0
Imports of goods and services	..	14.8	27.7	28.8
	1979-89	1989-99	1998	1999
<i>(average annual growth)</i>				
Agriculture	-0.4	2.5	-10.3	4.2
Industry	1.2	4.6	6.3	7.6
Manufacturing	-0.9	4.8	5.8	4.9
Services	2.8	5.8	10.4	8.2
Private consumption	-0.3	3.4	-2.4	4.7
General government consumption	4.4	2.7	30.6	18.5
Gross domestic investment	3.4	9.9	0.1	9.5
Imports of goods and services	2.5	4.0	11.7	6.2
Gross national product	0.7	4.2	-1.8	5.9

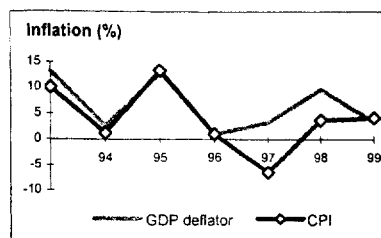


Note: 1999 data are preliminary estimates.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

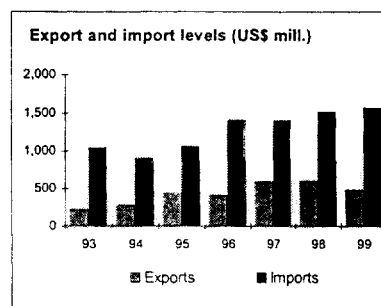
PRICES and GOVERNMENT FINANCE

	1979	1989	1998	1999
Domestic prices				
(% change)				
Consumer prices	16.0	9.6	3.7	4.2
Implicit GDP deflator	..	4.3	9.7	3.3
Government finance				
(% of GDP, includes current grants)				
Current revenue	..	23.2	18.0	17.5
Current budget balance	..	0.6	2.3	-0.1
Overall surplus/deficit	..	-10.9	-6.5	-7.3



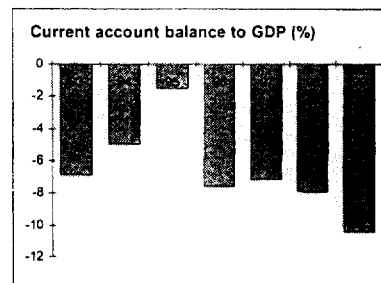
TRADE

	1979	1989	1998	1999
(US\$ millions)				
Total exports (fob)	360	444	602	484
Coffee	..	303	420	281
Hides	..	60	51	57
Manufactures	..	..	..	..
Total imports (cif)	589	1,020	1,519	1,570
Food	..	186	172	172
Fuel and energy	..	103	246	194
Capital goods	..	397	569	651
Export price index (1995=100)	..	82	97	79
Import price index (1995=100)	..	117	104	101
Terms of trade (1995=100)	..	70	93	79



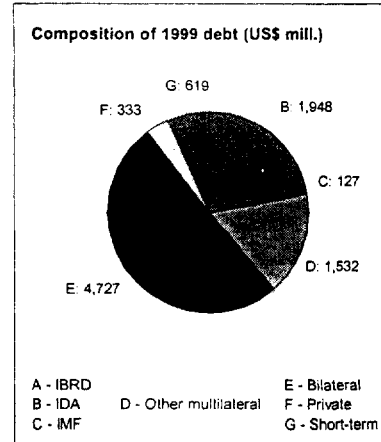
BALANCE of PAYMENTS

	1979	1989	1998	1999
(US\$ millions)				
Exports of goods and services	455	752	1,037	894
Imports of goods and services	660	1,201	1,815	1,866
Resource balance	-205	-449	-778	-972
Net income	-3	-83	-91	-85
Net current transfers	83	238	349	374
Current account balance	-124	-294	-520	-683
Financing items (net)	79	284	650	633
Changes in net reserves	45	10	-129	49
Memo:				
Reserves including gold (US\$ millions)	319	123	412	434
Conversion rate (DEC, local/US\$)	2.1	2.1	6.9	7.5

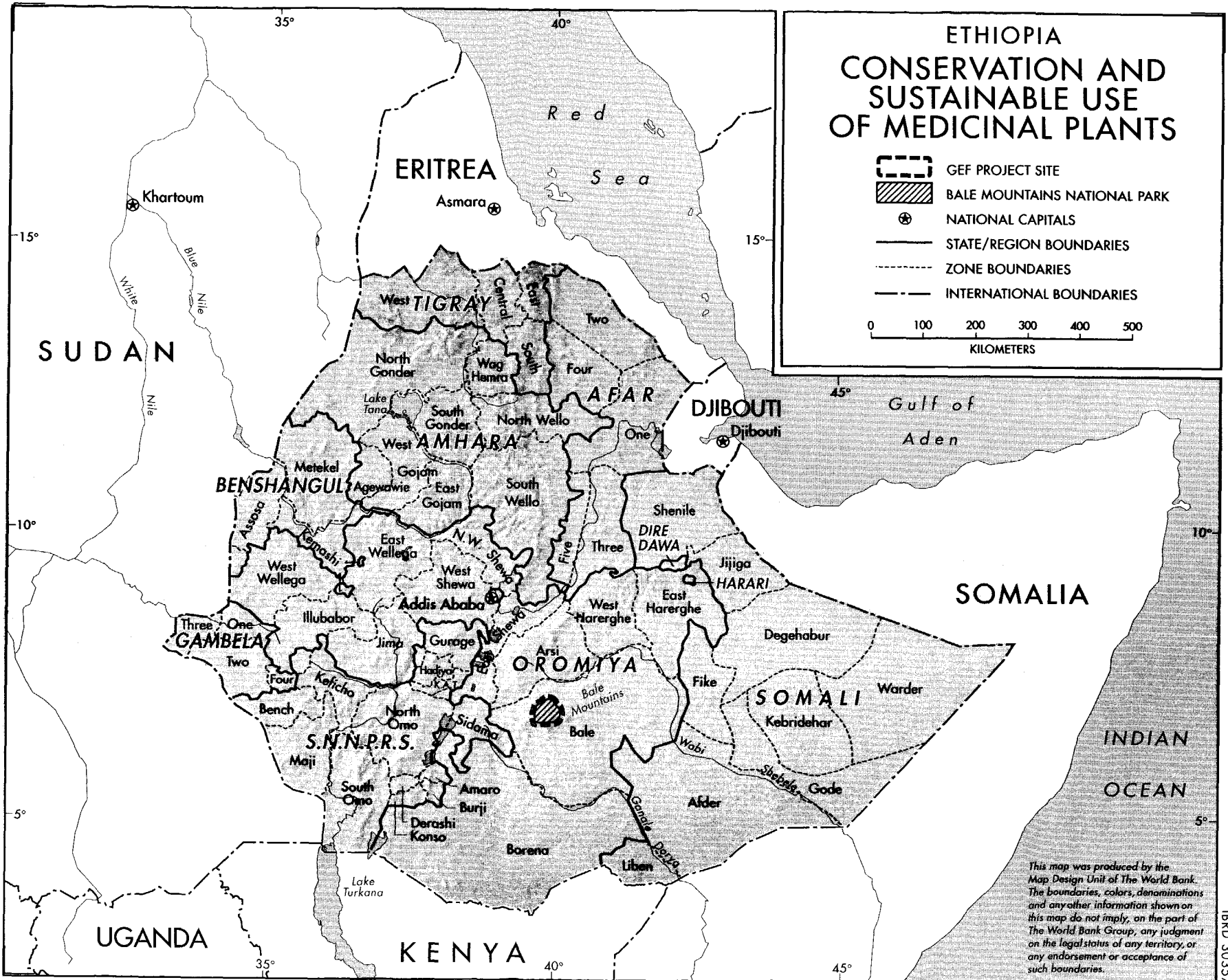
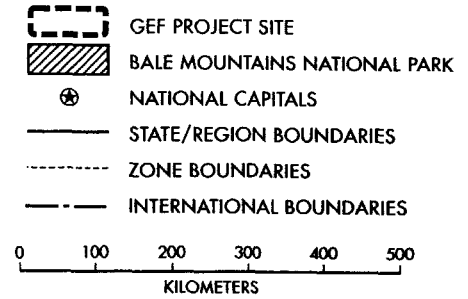


EXTERNAL DEBT and RESOURCE FLOWS

	1979	1989	1998	1999
(US\$ millions)				
Total debt outstanding and disbursed	740	7,842	9,812	9,286
IBRD	59	31	0	0
IDA	221	718	1,586	1,948
Total debt service	29	304	33	160
IBRD	9	13	0	0
IDA	2	9	28	31
Composition of net resource flows				
Official grants	..	..	418	..
Official creditors	95	402	-209	-267
Private creditors	6	-70	-6	-10
Foreign direct investment	..	..	4	..
Portfolio equity	..	..	0	..
World Bank program				
Commitments	0	72	609	160
Disbursements	47	70	72	148
Principal repayments	4	14	17	19
Net flows	43	56	56	129
Interest payments	7	8	11	12
Net transfers	36	48	44	117



ETHIOPIA CONSERVATION AND SUSTAINABLE USE OF MEDICINAL PLANTS



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