EASTERN NILE SUBSIDIARY ACTION PROGRAM (ENSAP)

EASTERN NILE TECHNICAL REGIONAL OFFICE (ENTRO)

WATERSHED MANAGEMENT PROJECT

Project Implementation Plan
Volume 1 – Main Report

Halcrow Group Limited
in association with
Metaferia Consulting Engineers

Eastern Nile Regional Technical Office (ENTRO)

Integrated Watershed Management (Ethiopia)
Watershed Project, Fast-Track Project
Detailed Project Preparation

Project Implementation Plan
Volume 1 – Main Report

December 2007

Halcrow Group Limited

in association with
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Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Signed
01	00	Draft final report submitted to ENTRO	16 Nov 2007	MFW pp JA Gartner
02	01	Final report submitted to ENTRO	24 December 2007	MFW pp JA Gartner
03	02	Exec summary added	27 December 2007	MFW pp JA Gartner

This report is presented in four volumes as listed below:

Volume 1: Project Implementation Plan

Volume 2: Annexes A-E

A. Project area description

B. Unit cost guidelines

C. Project cost estimates

D. Economic and financial analysis tables

E. Guidelines for community action planning and implementation

Volume 3: Annex F

F. Social and environmental assessment

Volume 4: Annexes G-K

G. Training plan

H. Terms of Reference for project staff

I. Monitoring and evaluation indicators

J. Financial management plan

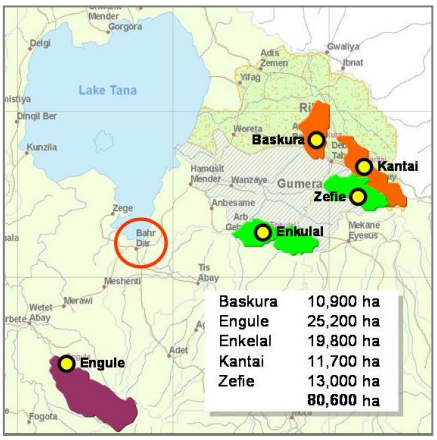
K. Action plan for the first 18 months

Executive Summary

This report presents the findings of a year-long study conducted in 2007 to prepare a fast-track Integrated Watershed Management Project (IWMP) for the Eastern Nile Regional Technical Office (ENTRO). The study was conducted in three phases with a workshop in Bahir Dar held at the end of each phase.

The proposed project is set in the context of the Eastern Nile Subsidiary Action Plan of the Nile Basin Initiative and is one of several programmes be taken up under ENSAP's Integrated Development of the Eastern Nile project to demonstrate doable projects with basin-wide significance that could be replicated beneficially in the future.

The IWMP, which is an integral part of the Tana Beles Integrated Water Resources Development Program, has been formulated recognising the inter-dependence of sustainable growth in livelihoods with enhanced natural resource management (and reduced erosion). The IWMP therefore has a specific **goal** of sustainable livelihoods and natural resource management systems in the Eastern Nile watershed through community participation and a **development objective** of *improving the livelihoods of rural households living in upper catchments of Ribb, Gumera and Jema Watersheds through enhanced productivity and promotion of sustainable land use practices*.



The **project area** comprises five development clusters of micro-watersheds totalling some **80,600ha** and split roughly equally between the Ribb, Gumera and Jema watersheds, which each flow into Lake Tana in Ethiopia. Each development cluster has at its nucleus a micro-watershed selected as being representative of the development issues faced throughout the area and at which a **participatory planning process** has been undertaken as part of the project preparation. The project will continue and extend this process throughout each development cluster to develop and implement over a **five-year period** a set of interventions that bring tangible improvements to livelihoods and sustainable enhancements to land use management.

The **project components** are arranged in **three mutually supportive themes**. Theme A (Livelihoods) has four components directed at improving livelihoods through better communications, increased productivity and enhanced income generation. Theme B (Natural Resources) has two main components covering soil and water management and forestry and agro-forestry targeted at creating a sustainable landscape that both limits erosion and creates a more productive basis for livelihood generation. Theme C (Capacity Building and Project Management) addresses the immediate constraints in capacity to

implement the project and sustain the outcomes through more robust community and government institutions.

The project will be implemented at catchment level through **three Catchment Project Coordination Offices** established under the project. Each CPCO will be supported by a recruited Catchment Implementation Team of experts who will work closely with and through the relevant kebele and wereda offices under the oversight of a Catchment Project Steering Committee chaired by the concerned Chief Zonal Administrator. Overall project planning, coordination and quality assurance will be undertaken by a **Project Coordination Unit** (PCU) attached to the Bureau of Agriculture and Rural Development (BoARD) and established in Bahir Dar. The activities of the PCU will be overseen by a **Project Steering Committee** co-chaired by the **Ministry of Water Resources (MoWR)** and **BoARD**. The MoWR will have responsibility for overall fund management and liaison as needed at federal level.

The estimated cost of the IWMP is **ETB 447.8 million** (with a base cost exclusive of contingencies and recurrent costs of ETB 300 million), equivalent to US$ 48.5 million and US$ 32.5 million respectively. The project will **benefit approximately 180,000 people** in the three catchments, almost double future net farm returns, significantly reduce both poverty and food insecurity and establish a foundation to better managed landscape with reduced erosion.

The **EIRR of the project is 20.5%** with a NPV of Birr 314 million and a B:C ratio of 2.24:1 at a discount rate of 10%.

Contents

Acronyms

ACSI	Amhara Credit and Savings Institute
AfDB	African Development Bank
AIMO	Industrial Association of Mozambique
AMAREW	Amhara Micro Enterprise, Agricultural Research, Extension and Watershed Management Project
ANRS	Amhara National regional state
ARARI	Amhara Regional Agricultural Research Institute
BoARD	Regional State Bureau of Agriculture and Rural Development
BoFED	Bureau of Finance and Economic Development
BoWRD	Bureau of Water Resources Development
BP	Bank Policy (of the World Bank)
CAD	Computer Aided Design
CAP	Community Action Plan
CIT	Catchment Implementation Team
COOPI	Cooperazione Internazionale
CPCU	Catchment Project Coordination Office
CPSC	Catchment Project Steering Committee
DA	Development Agent
DAP	Dia ammonium phosphate (chemical fertilizer)
EA	Environmental assessment
EIA	Environmental impact assessment
EMP	Environmental management plan
ENSAP	Eastern Nile SAP
ENTRO	Eastern Nile Technical Regional Office
EPA	Environmental Protection Authority
EPLAUA	Environmental Protection, Land Administration and Use Authority
ETB	Ethiopian Birr
FAO	Food and Agriculture Organisation
FTC	Farmer training centre
GEF	Global Environment Fund
GIS	Geographic Information System
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HH	Household
IDEN	Integrated Development of the Eastern Nile
IFAD	International Fund for Agricultural Development
ILRI	International Livestock Research Institute
IWMP	Integrated watershed management project
JICA	Japan International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau
KWC	Kebele watershed committee
LFA	Logical Framework Approach
LFM	Logical Framework Matrix
M&E	Monitoring and Evaluation
MCA	Multi-Criteria Assessment
MERET	Managing Environmental Rehabilitation in Transition to Sustainable Livelihoods

MoARD	(Federal) Ministry of Agriculture and Rural Development (in Ethiopia)
MOV	Means of Verification
MoWR	(Federal) Ministry of Water Resources (in Ethiopia)
MSC	Multi-Selection Criteria
MSF	Medecin sans Frontieres
NBI	Nile Basin Initiative
NELSAP	Nile Equatorial Lakes SAP
NGO	Non-Government Organization
NILE-COM	Nile Council of Ministers
NPV	Net present value
NRM	Natural Resources Management
NTFPs	Non-Timber Forest Products
O&M	Operation and maintenance
O&M	Operations and Maintenance
OARD	Offices of Agriculture and Rural Development
OP	Operational Policy (of the World Bank)
ORDA	Organisation for Rehabilitation and Development in Amhara
OVIs	Objectively Verifiable Indicators
P&IWMD	Participatory and Integrated Watershed Management and Development
PC	Project Coordinator
PCU	Project Coordination Unit
PDO	Project Development Objective
PIPs	Project Implementation Plans
PLUP	Participatory Land Use Plan
PRA	Participatory Rural Appraisal or Participant Response Analysis
PSC	Project Steering Committee
PWS	Public water supply
SAP	Subsidiary Action Plan
SIDA	Swedish International Development Agency
SMS	Subject matter specialist
SWC	Soil and water conservation
SWHISA	Sustainable Water Harvesting and Institutional Strengthening in Amhara
TBIWRDP	Tana Beles Integrated Water Resources Development Project
TOR	Terms of Reference
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
WB	World Bank
WBISPP	Woody Biomass Inventory and Strategic Planning Project
WFO	World Football Organisation
WFP	World Food Programme
WSS	Water supply and sanitation

Preface

Project preparation

The studies and data collection for this project preparation were undertaken by Halcrow Group Ltd in association with Metaferia Consulting Engineers during the period 1 January to 31 December 2007 under contract to ENTRO. The MoWR provided technical support and guidance to ENTRO.

The preparation was conducted in three phases: Inception, project studies and design concept (Interim) and detailed design and PIP (draft final). A workshop was held in Bahir Dar at the end of each phase to discuss the emerging issues. This final report reflects the findings of each workshop and takes into account the numerous written comments received.

The Consultants express their thanks to ENTRO, MoWR, the workshop participants and the many stakeholders who have given up their valuable time to contribute to this report. In particular, the Consultants are grateful to the communities in the five study sites who actively participated in the shaping of the proposed interventions.

In addition to this report, a large amount of information, data, analyses and assessment have been assembled during the course of project preparation. These have been handed over to ENTRO and a summary listing is provided in Appendix 4 of the Main Report.

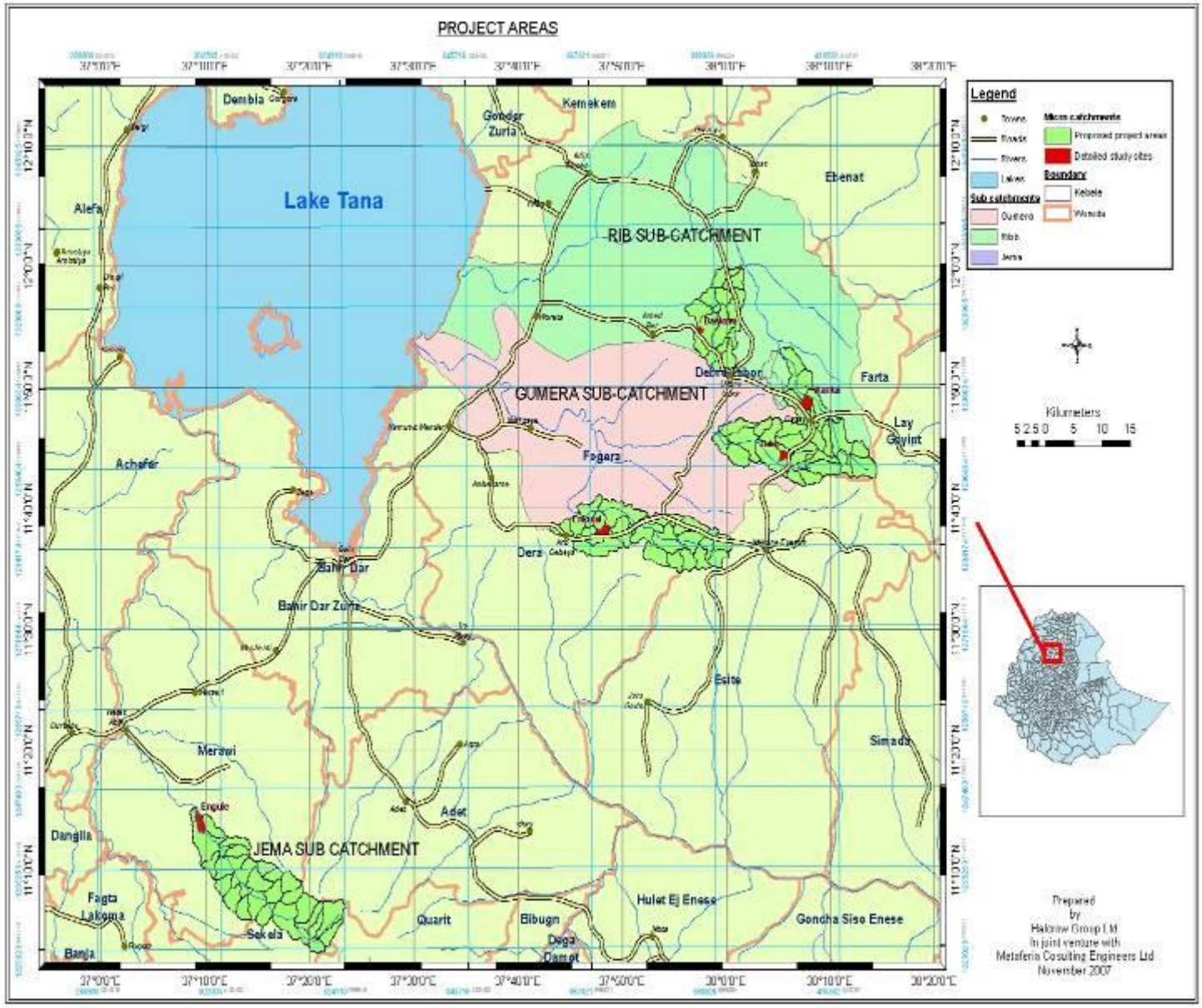
Terminology used in defining areas

In common with many projects of this nature, there is sometimes confusion over what the term “project area” actually refers to. In this report (the Project Implementation Plan main report and its annexes) the following terminology is used:

- The ***gross study area*** refers to the overall area identified in the three ***watersheds*** (sometimes referred to in the ToR as ***catchments*** or ***sub-watersheds***) within which the Water Management Project is to be taken up.
- The ***detailed study area*** is the five ***study sites*** within ***micro-watersheds*** selected during the course of project preparation for detailed assessment and which are proposed now to be the nucleus for the project’s development.
- ***Micro-watersheds*** are discrete hydrological units typically of about 1,000ha, themselves made up of ***mini-watersheds***, typically of 100-500ha, as represented by the ***study sites***.
- The ***Project area*** refers to the area to be developed under the investment project within the gross study area. As defined, the project area is made up of five ***development clusters*** around ***development nuclei***. The ***development nuclei*** are the same as the ***study sites*** where community action planning has already been advanced during the project preparation phase.

Currency

All financial prices are expressed in Ethiopian Birr at 2007 prices unless otherwise stated. Where converted to US dollars, a conversion rate of ETB 9.2400 / US$ 1.000 has been used.


PROJECT AREAS
Lake Tana
RIB SUB-CATCHMENT
GUMERA SUB-CATCHMENT
JEMA SUB CATCHMENT
Dembia
Gondar Zuria
Kemekem
Ebenat
Alefa
Debre Tabor
Farta
Lay Gayint
Fogera
Achafer
Bahir Dar
Bahir Dar Zuria
Dera
Esite
Simada
Merawi
Dangila
Adet
Engule
Fagta Lakoma
Sekela
Banja
Quarit
Bibugn
Hulet Ej Enese
Goncha Siso Enese
Legend
Towns
Roads
Rivers
Lakes
Micro catchments
Proposed project areas
Detailed study sites
Boundary
Kebele
Woreda
Sub catchments
Gumero
Rib
Jema
Kilometers
0 2.5 5 10 15
Prepared
by
Hakrow Group LM
In joint venture with
Metaferia Consulting Engineers Ltd
November 2007

1 Background to the project

1.1 Development setting

The Nile Basin Initiative (NBI) is a cooperative arrangement between nine Nile countries[1] to support better management of the Basin's resources. A Subsidiary Action Programme (SAP) has been organized into two sub-programmes: the Nile Equatorial Lakes (NELSAP) and the Eastern Nile (ENSAP). The latter corresponds approximately to the tributaries originating in the Eastern Nile Highlands located mostly in Ethiopia, which is the source of 86% of the Nile flow at Aswan. Approximately 62% of this flow comes from the Blue Nile or Abbay River.

ENSAP[2], has adopted a two-track approach: the first is a multi-purpose track to develop an overall strategy, undertake appropriate baseline studies, and properly plan a multi-purpose, multi-country investment programme; the second is a fast track process to identify doable projects for immediate implementation which can show the way forward and which may open the door to financing for other multi-purpose projects.

The Integrated Development of the Eastern Nile (IDEN) project, the first investment project of ENSAP has seven integrated components related to improved water resources management and use, one of which is the proposed *Integrated Watershed Management Project* (as described in this report). The IWMP will form an integral part of a larger development plan known as the Tana Beles Integrated Water Resources Development Program, which is being taken up to improve development and management of land and water resources of the Tana and Beles sub-basins. The IWMP is intended to bring about improved land management and contribute to socio-economic development through improved rural livelihoods in the Tana sub-basin.

1.2 Location of the project

The general location of the IWMP was determined in 2005 by ENTRO and MoWR following extensive consultation. The main requirements were that the selected areas should be appropriate to integrated watershed management development through a participatory approach and be capable of yielding early and demonstrable results on the ground.

Studies were undertaken throughout the highlands area of Ethiopia leading to more detailed review of three sub-basins, from which the Lake Tana sub-basin in Amhara Regional State was found most suitable on the grounds of development potential. Some 39 criteria were

[1] The NBI has nine member countries, Burundi , DR Congo, Egypt, Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda whose expressed aim is to "*to achieve sustainable socio-economic development through the equitable utilization of, and benefit from, the common Nile Basin water resources*".

[2] This programme has implications for three of the NBI countries: Egypt, Ethiopia and Sudan

established and used to identify the study area for the project, which was agreed to be within the Gilgel Abbay-Jema, Gumera and Ribb watersheds around Lake Tana (see frontispiece).

ENTRO's brief for the project proposes a 5-year project covering approximately 75,000ha (split equitably between the three watersheds) as a first phase of a longer term programme, and that it should be focussed on areas where greatest impact on land degradation can be achieved.

1.3 The project area

The selected *gross study area* lies in seven weredas (Dera, Estie, Farta, Fogera, Libokemkem, Mecha and Sekele) in the Amhara region, and includes some 121 kebele. The total watershed area is about 444,000 ha (Gumera 47%, Ribb 42% and Jema 11%). The population of the project area is about 0.95 million (Gumera 49%, Ribb 38%, and Jema 13%). Population densities, whilst averaging 2.15 per ha, are observed to exceed 6.0 per ha in some areas. The selected areas for development, the *project area*, cover some 80,602ha with an estimated population of 180,189.

Table 1.1 Area and population statistics of gross study area and selected project area

	Gross area ha	No. of villages	No. of households	Total population	Household size	Population per ha
Gross study area						
Gumera	210,332	1,220	103,167	467,319	4.53	2.17
Ribb	184,530	1,012	70,339	360,606	5.13	1.95
Jema	48,797	191	24,785	127,374	5.14	2.61
Total	**443,659**	**2,423**	**198,291**	**955,299**	**4.82**	**2.15**
Project area						
Gumera	22,560	131	11,065	50,126	4.53	2.22
Ribb	32,763	180	12,489	64,066	5.13	1.96
Jema	25,279	99	12,840	65,996	5.14	2.61
Total	**80,602**	**409**	**36,394**	**180,189**	**14.80**	**6.79**

1.4 Development needs

Settlements in the watersheds date back over 70 years or more and there is evidence of habitation in some areas stretching back to the 15th and 16th centuries.

The growth in population has not been matched by increases in productivity. Over the last 20 years or so, the capacity of the land resource to provide for the burgeoning population with the technologies available has become overstretched. The consequences have been:

- In the struggle to maintain food security, expansion of the cultivated areas into the less productive areas on steep slopes with fragile soils, prompting widespread land degradation, most notably on the hill sides;
- Greater runoff during the rains, with less retained within the soil and aquifers, diminishing the water resources and per capita water availability, both in terms of access to safe water supplies and to underpin agricultural production;

- Reduction in forest areas, causing increased erosion and reducing natural energy resources with attendant hardships for the community;
- Reduction in grazing areas for economically significant livestock production, prompting overgrazing, land degradation and reduced productivity.

Combined with limited public investment in basic services (safe water supply, health and education) and in access to markets and distant public services, the condition of the communities is very poor. Food shortages occur for part of most years and household cash incomes are extremely low (c$200/year on average and less than $100/year for female-headed households).

1.5 Development challenges and vision

In the Ethiopian highlands, annual crop production of staples like teff, wheat and barley is constrained by a uni-modal, rainfall pattern with growing periods ranging from 90 to I80 days. A farmer has only one chance per year to grow staple crops to feed his family. The problem is exacerbated by between year and within season variability in the rainfall, the consequence of which is either feast or famine. Furthermore, with an average of less than 1.0 ha of land available to each household for annual crop farming, there is little capacity to tolerate any level of crop failure. The result is that most families experience a hunger period of up to four months a year.

The communities' response to this problem has been to expand their area under cultivation by moving to the higher slopes and cutting the forest, first for timber and fuel, and then clearing the land completely for cultivation. With generally only degraded land or protected forest land remaining and with the cultivated land losing fertility and susceptible to further erosion, their only remaining strategy to cope with food shortages is to reduce the number and size of meals taken each day.

Since the climate cannot be changed, what must be changed are the patterns of land use in association with the diversification of livelihoods to provide alternative or additional sources of income to cover any shortfall in staple food. The underlying strategy for the project is therefore to promote a significant shift to permanent agriculture which makes better use of variable rainfall than annual agriculture as it is presently practised.

The vision is of a landscape with permanent tree crops and improved perennial pastures above its keyline[3] with lower slopes used for annual crops and pasture leys. The keyline would be demarcated by cut-off drains leading to ponds in the principal waterways which provide water for livestock high in the landscape and which act as silt traps. These ponds would also slow down the rate at which water leaves the landscape.

[3] The "keyline" is one word to describe the line in the landscape where the slope changes significantly

Above the keyline, forestry and agro-forestry can contribute significantly in two ways to bring about a beneficial change to the landscape. The first is to enrich and/or expand remnants of natural forests and to replant severely degraded areas strategically with appropriate species for soil and water conservation purposes as well as the provision of livelihood elements such as the collection of fuel wood, medicinal plants and the selective harvesting of construction timbers. The second is to develop agro-forestry systems which will enhance soil and water conservation measures as well as supply products for human consumption and sale and quality livestock feed throughout the cycle of the seasons.

This is the beginning of protecting the lower slopes used for annual cropping. The keyline provides the guide for ploughing these slopes on the contour. A pasture ley or strip crop can provide another break for the downward movement of water after heavy rain, which is an important foundation to rebuilding and maintaining soil fertility for annual food crops. Once the crop lands are securely protected from soil erosion of any type, farmers should feel more confident in investing in fertilizer of the right sort to enhance productivity from a smaller area of crop land. In this situation, high-yielding varieties of greater yield stability also can be introduced. When this point is reached farmers will be less likely to use any land they can to cultivate food crops.

Many farmers operate farming systems with a mix of crops and livestock. The primary purpose of cattle is to provide oxen for ploughing. There is a shortage for purchase (i.e. high price) and for hire (at a high rent, and good timing is at risk due to availability). This affects low-income families and female-headed households particularly. Otherwise, cattle and small ruminants like sheep and goats are the primary source of income for families (particularly needed to meet health, educational and social commitments). Moreover, they can be sold according to need. The primary problem the farmers face is that the loss of one animal in a small population is a significant loss of capital. Interacting with animal health as a constraint is the shortage of feed relative to the number of animals held.

The shortage of cattle feed will be relieved when they have access to quality forage in the uplands as well as high quality pasture leys in the crop production areas. Well-fed cattle can be mated earlier and have shorter calving intervals. Allied with the delivery of a basic animal health system, the result will be more and stronger oxen available for ploughing.

If all the Project activities are seen in the context of this dynamic vision the end result will be a diverse landscape producing crops, livestock and money as well as happy, healthy productive people at an equilibrium level substantially above what it is now. This is the direction which must be taken “to improve directly the livelihoods of Ethiopia’s rural communities through improved land productivity, increased food security, livelihood diversification and improved access to water and biomass fuels”

1.6 Development aims and agenda

The complementary aims of the project are to lift the communities out of the poverty trap they are in by raising their productivity whilst promoting sustainable use of the landscape

and natural resources. This in turn is expected to lead to reduced erosion to the benefit of downstream users (both nationally and in the context of the Nile Basin as a whole). This wider significance underscores a further aim of the project to develop both sustainable and replicable processes.

The project components are arranged therefore in three mutually supportive themes:

- Theme A (Livelihoods) has four components directed at improving livelihoods through better communications, increased productivity and enhanced income generation.
- Theme B (Natural Resources) has two main components covering soil and water management and forestry and agro-forestry. The aim of Theme B is to create a sustainable landscape that both limits erosion and creates a more productive basis for livelihood generation
- Theme C (Capacity Building and Project Management) addresses the immediate constraints in capacity to implement the project and sustain the outcomes through more robust community and government institutions.

Themes, Components and Interventions in proposed project

Theme A: Livelihoods

Community entry points
- Access and communications
- Renovation of public buildings

Crop production
- Farmer training centres
- Demonstrations

Livestock production
- Animal health posts
- Feed supply
- Dairy production and processing
- Sheep demonstrations
- Poultry
- Animal fattening

Non-farm income generation
- Community flour mills
- Technology and innovation fund
- Micro-credit facility

Theme B: Natural Resources

SWC, WSS and irrigation
- Soil and water conservation work on 15 land classes
- Water supply and sanitation
- Irrigation

Forestry and agro-forestry
- Agro-forestry demonstrations
- Nurseries

Theme C: Capacity Building and Project Management

Training
- User groups
- Community organisations
- Kebele and wereda staff

Capacity building
- Upgraded facilities at local level
- Technical assistance

Project management
- Project coordination team
- Field support teams

1.7 Design considerations

Given these aims and the importance of achieving sustainable solutions, the project has been designed with the following considerations:

- Community and individual assets are sustained where they are sufficiently valued by the community and individuals and there is the technological and financial capacity to maintain them.
- Asset value reflects both a sense of ownership (either legal and/or having been involved in the development of the asset) and the returns of that asset on investment (cash or kind).
- Most improvements to the landscape require some degree of cooperation amongst the community and sustainability hinges also on the institutional capacity within the community to manage and maintain a shared asset.

- Households have too little cash to consider anything beyond meeting their most immediate needs and the reality is that their labour is the only investment that is practically available to them. However under prevailing cultural and socio-economic conditions, labour is a scarce resource and household and community investment choices will be primarily determined based on the returns to their labour.
- Given the significance of labour, measures to increase labour availability and productivity through improved health will contribute to the overall project aims (with obvious wider impacts on the communities' well-being as well).
- The community, individually or collectively, have the greatest stake in developing their own livelihoods and must be in the driving seat from the outset in determining what should be done to improve their lot (aided by sound advice and within the project's mandate).
- Notwithstanding this central role of community, replicability will hinge on the public sector's ability to manage the investment programme and transfer the processes and lessons learnt from one watershed to the next.

1.8 Principles adopted in project design

Building from these considerations, the project has been designed with the following principles in mind:

(i) The project will support and promote, principally through demonstration and training, those economically viable activities that the community are readily willing to contribute their time due to the evident quick returns. The activities undertaken will be designed to contribute towards improved soil and water conservation, but are prioritised on the basis of their income generation (eg improved husbandry and improved perennial pastures)

(ii) The project will invest in and support those economically viable infrastructure developments which have a substantial impact on soil and water conservation and which the community are capable of maintaining at their own cost under conditions of moderate productivity improvement, but for which absorption of the capital cost is not financially viable under such conditions (eg forestry, check dams and gulley control)

(iii) The project will identify economically viable infrastructure developments which have a substantial impact on soil and water conservation but for which the sustainability is in doubt due to high maintenance costs and low returns to labour under conditions of moderate productivity improvement, but which in the medium term (beyond the project lifetime) could be expected to become viable with a substantial improvement in productivity, occasioned by improved marketing and farm technologies (eg reclamation of highly degraded lands with terracing, etc).

(iv) The project will invest in and support activities that will directly result in improved labour availability and a significant transformation of productivity that would render

viable the more expensive soil and water conservation measures as described above (eg improved access to safe water supplies, access roads, strengthened operation of local institutions).

(v) The project will identify through facilitation of community action plans other development activities that will contribute towards overall livelihood improvement which would be appropriate for funding from other sources (eg credit services)

(vi) The project will support through technical assistance, provision of equipment, training and community mobilisation the development of sustainable institutions, at village level to maintain and build upon the project's investments, at kebele and wereda level to continue the programmes within their areas after the project, and at regional level to promote replication in other areas.

(vii) The project will also support a monitoring and evaluation programme that will assess the physical progress and the achievement of outcomes and which will generate lessons learnt and appropriate corrective actions both during and at conclusion of the project.

The principles above are embodied in the financing arrangements described in Section 3.

1.9 Project design process

The project areas lie within the nominated three sub-catchments (determined in 2005), which together comprise a total study area of about 444,000ha. Five study sites within micro-watersheds, each of approximately 300ha, were selected for detailed study on grounds that they were representative of conditions throughout the study area. Baseline surveys and two rounds of detailed consultation were conducted in each detailed study area, leading first to an identification of the communities' view of their development needs and priorities and secondly to a discussion of the different options for addressing those needs. In parallel, data were assembled on conditions throughout the study area.

Investments were first determined for the entire project area based on the requirements of the communities expressed through the consultation process augmented by any additional needs to stabilise the landscape beyond those requirements brought forward by the communities. The communities' needs were ranked by the communities themselves (see box) and highlighted a range of important problems they believed to be limiting their ability to improve their livelihoods.

Rank	Problems
1	Lack of access to safe water supply
2	Shortage of inputs
3	Access to grinding mills
4	Roads and bridges
5	Gulley erosion
6	Access to Irrigation
7	Lack of access to credit
8	High school/school
9	Shortage of land
10	Lack of access to health facility
11	Shortage of equipment and oxen
12	Crop pests and disease
13	Animal disease
14	Lack of alternative employment opportunities
15	Low crop yield
16	Population growth

These needs were reviewed and a set of interventions were identified to address these problems. These were discussed with the communities and ranked by them (see box). They inevitably focussed on the immediate problems faced by the community and further interventions were identified by the team to address the wider problems of longer term reduction in landscape degradation. The apparent low ranking of "access" may have reflected that the study sites enjoy better access than most of the project area.

Ranking of development sectors by communities

1 Cropland
2 Human Health
3 Water Supply
4 Education
5 Off-Farm Activities
6 Livestock
7 Access
8 Forestry

This comprehensive set of interventions was then further developed by the team to extend over the entire project area and cost estimates were prepared. In the case of soil and water interventions, designs follow the principles and guidelines established by MoARD under the MERET programme.

The proposed investment project area was delineated using the five study sites as nuclei for development (facilitating a rapid start to the investment project) and recognising that the investment area should be expanded contiguously from these nuclei on grounds that this will facilitate meaningful assessment of impacts on sediment flows, logistical efficiency in implementation and demonstration of impacts from one community to the next.

Investments were first identified for the entire project area based on the requirements of the communities expressed within the five study sites through the consultation process augmented by measures to stabilise the landscape beyond the communities' proposals. These were extrapolated across the entire investment area using spatial analysis of physical and socio-economic data. The initial investment package was then subjected to multi-criteria assessment (MCA) and ranked in terms of overall score per investment cost (see Annex A, Appendix 2). This then provided a basis for identifying those investments which should be included within a first phase of an overall programme.

In parallel to the above, assessments were made of the institutional capacity to implement and sustain the project, of stakeholders and of baseline socio-economic conditions. These have led to the proposed implementation arrangements and social and environmental management plans. The bases for extrapolating the cost estimates for the entire investment area were (i) detailed estimates prepared on the five study sites, (ii) a comparative spatial analysis of topography throughout the investment area and a review of land use, and (iii) socio-economic data collected for the area as a whole.

2 Detailed project description

2.1 The goal

The project goal is defined as:

Sustainable livelihoods and natural resource management systems in the Eastern Nile watershed through community participation

The project is a component of the Tana Beles Integrated Water Resources Development Project and its design is to be formulated as a fast track integrated watershed management project.

2.2 Development objective

Government policy highlights the requirement that rural agricultural development projects be prioritised on areas delineated within discrete watersheds. Experience has shown that areas of some 400 to 1000ha, defined as micro-watersheds, are the most suitable sized areas for implementation of natural resources management systems. The present project is therefore focused around interventions within the three priority sub-catchments of the Ribb, Gumera and Jema watershed areas. Emphasis will be on the implementation of improvements in 82 micro-watersheds divided roughly equally between each of these sub-catchments.

The development objective of the proposed project is:

Improvement of livelihoods of rural households living in upper catchments of Ribb, Gumera and Jema Watersheds through enhanced productivity and promotion of sustainable land use practices

The project is to be implemented over a five year period and is organised around the basic themes of sustainable livelihood and natural resources development supported by a complimentary capacity building and project management component as described below.

2.2.1 Sustainable Livelihoods Theme

This theme covers those interventions that will directly support immediate improvements to the livelihoods of the beneficiaries and will include components for social services, crop production, livestock production and non farm income generation.

(a) Community entry points

Community entry points are measures that directly and immediately respond to community needs as expressed through the participatory planning at micro-catchment level. In providing

this response, the project is able to make a rapid start on livelihood regeneration as well as gaining the confidence of the communities.

A strategically important component in this regard will be the upgrading of rural feeder roads to improve access to and within the project micro-watershed areas. The road alignments take off from existing all weather roads and generally follow watershed crests. The roads will be gravelled surface with side drainage to ensure all weather access. No land acquisition or relocation of buildings is envisaged. Roads desired by the community but involving land acquisition or resettlement will be identified as and when and will be promoted for implementation under other projects.

Existing strategic internal access paths and tracks within a micro-watershed, which at present are badly gullied and a source of soil erosion, will be upgraded with an improved surface profile and drainage. Where important river or gully crossings are required a footbridge will be provided. As these improvements will be within the existing access boundaries no land acquisition is required.

Potable water supplies will be improved by both the provision of new hand dug pump wells and the development of existing and new springs within the micro-watersheds. The project criteria being to ensure that there is one public water supply point to service every 250 people and there is not more than 1.5km between individual water points.

At the kebele level improvements will be provided to the infrastructure at existing health posts and to local primary and secondary school facilities. An example of improved sanitation facilities to be promoted will be demonstrated by constructing an enhanced toilet facility at the local health posts. A telephone communication post will be provided if a Kebele does not already possess one.

(b) Crop production

This component will focus on improvements in productivity and profitability for the staple food crops of teff, wheat, barley and maize as well as support crops of nugg, potatoes and various pulses. Demonstrations of high-yielding crop varieties and new crops will be provided incorporated with on-farm demonstrations of improved cultural practices, fertilizer applications and seed supplies. Introduction to better crop storage, processing and market delivery methods will reduce losses and improve the quality of the produce reaching the markets.

The level and quality of agricultural services and capacity at the Kebele level will be enhanced by improving the office facilities for the Development Assistants and properly equipping the farmer training centres, This to include provision of appropriate transport such as a motorbike or mule, tools and equipment required for conducting field activities and demonstrations, training curricula and materials and regular training courses to refresh and enhance skills and knowledge.

(c) Livestock Production

An important component will be to first improve the rate of output of work, food or money from the existing livestock production systems. This will be achieved through improved facilities at the animal health posts and training to the Veterinary Assistants and Village Livestock Agents. The project criteria being to have a properly equipped post for every three Kebeles and be within three kilometre walking distance for each livestock owner. This input will be complimented by programmes and demonstrations into making gains in animal fattening and productivity through improved systems of feeding and management. This will include the introduction of better pasture and forage species and control of animals on communal grazing lands through physical enclosures or introduction of stall feeding.

The potential for increased dairy production will be promoted through giving extension advice on the development of local cattle breeds and their cross breeding with improved bulls. Demonstrations into the opportunities for improved sheep, poultry and bee breeding and associated stock management will also be undertaken to promote both meat, egg and honey production.

(d) Non-farm Income Generation

The project will investigate means by which to improve micro-credit within the community and has provision for a revolving fund to support micro-credit lending targeted at community needs that are not met by current facilities (eg extended repayment periods for perennial crop production). Consideration will be given to setting up the fund within an established lending programme (eg ASCI) so as to ensure its availability beyond the project lifetime.

Opportunities for non-farm income generating activities such as grinding mills, the starting up of small business enterprises and petty trading (i.e. handicraft, business, transport), managing a guest house and piece-work on the project will be promoted), especially among landless and female-headed households. Advice on facilitating and obtaining appropriate credit facilities will be given to individuals or enterprise groups.

A technology and innovation fund will be established to promote different technologies relevant to the wider project aims, and in doing so, to promote investment opportunities for community members with the aid of the micro-credit facility. The appropriate technology specialist will be responsible for establishing a plan for use of the technology and innovation fund under the project. The broad intent of the fund is to demonstrate technologies that will contribute to the overall project aims and objectives, and to promote their take up through the micro-credit facility.

The range of technologies may include, but will not be limited to improved farm tools and implements, mini-tractors (prime movers) and attachments (eg carts etc), solar and wind power, ram pumps, micro-hydropower, improved cooking stoves, and processing, preservation and storage equipment and facilities.

2.2.2 Sustainable Natural Resources Management System Theme

This theme addresses the specific issues of soil erosion, water scarcity, and loss of natural flora and fauna within the overall problem of land degradation in the Ribb, Gumera and Jema river catchments. A specific purpose is to reduce the sediment loads in these three rivers, especially during the rainy seasons. Physical and biological conservation activities will be undertaken as developed with the beneficiaries through the medium of Community Action Plans.

(a) Soil and water management component

The soil and water management component will undertake the:

- detailed study of the micro-watersheds including:
- problem ranking by sector and proposed solutions
- preparation of participatory land use plans in conjunction with the communities
- mapping of land development units within the micro-watersheds based on the above and indicating the associated problems
- assessment of the proposed interventions against the physical parameters (agro-ecology, soil, slope) of each land development category
- costing of appropriate soil conservation and land management interventions

The environmental protection measures will also include land management interventions to improve crop production taking into account where feasible the development of small scale irrigation. The soil conservation and land management interventions will be undertaken with reference to the Community Based Participatory Watershed Development Guidelines (MoARD 2005). The actual interventions to be implemented will be discussed with the communities involved as part of the participatory planning approach and it is the communities themselves who will decide which interventions they will implement.

As a component of water management within the catchments water harvesting interventions will be promoted. The objective being to conserve as much of the rainfall for domestic purposes at the household level and to retard and collect runoff flows from the sloping lands as livestock drinking points and to assist groundwater recharge. At the household level water harvesting will take the form of collecting and storing rainwater from sheet metal roofs provided as part of the beneficiary's contribution to the improvement of their own homesteads. For dealing with runoff flows the focus will be on promoting construction of small ponds in the agricultural areas and check dams in natural watercourses.

The development of small scale irrigation potential will be encouraged through construction of masonry check weirs across minor perennial streams incorporating a gated off take to command areas up to 5ha. Where land adjoins a major river pumped irrigation will be

promoted through the provision of small diesel pumps and associated pipe work to command areas up to 2ha.

(b) Forestry and agro-forestry component

The forestry and agro-forestry objectives will include activities involving the partial closure of degraded lands and steep slopes to allow reforestation; preservation of natural forests and trees, and the establishment and protection of agro-forestry systems on sites which are first agreed with the farmers. To control free grazing, area closure will be instigated on steep slopes and degraded grazing and forest lands in association with the planting of multi-purpose trees, shrubs and perennial pastures to increase ground cover, animal feed supply, and wood production for fuel and construction. Planting will continue around homesteads, along field boundaries and in reclaimed gullies. An increase in flowering trees and shrubs will be promoted to enable farmers to expand bee keeping.

2.2.3 Capacity building component

Capacity building objective will be achieved through undertaking institutional and technical strengthening and community capacity building. The institutional and technical strengthening will comprise activities to improve the technical and administrative capacity of ANRS institutions to provide effective agricultural research and extension services to the project and to make cooperative connections with rural communities and the private sector.

The community capacity building will comprise activities to improve the technical knowledge (in human and agricultural terms) and administrative and financial management skills of micro-watershed communities. Sometimes both sets of beneficiaries will be involved in combined activities so that they may better understand each other's points of view. Activities will include training, awareness building and local experience-sharing tours. As well, it will be essential, as appropriate, to strengthen wereda and kebele offices through provision of quality accommodation, vehicles, office furniture and computers as well as the development of skills in accounting and monitoring and evaluation.

2.3 The Project Area

The geographical location of the project is in the upper reaches of the Ribb, Gumera and Jema River sub-watersheds, covering the more degradable watershed conditions existing in these areas. Within these three river sub-watersheds, five project areas (two sub-catchments each in the Ribb and Gumera and one in the Jema) were selected which characterized the typical environmental and social conditions present. Within each project area individual micro-watersheds have been defined. These are based on the location where each subsidiary stream joins the main river and the corresponding micro-watershed boundary delineated by the catchment area that drains through this confluence point. Figure 1 shows the general project location and Figures 2 to 5 the details of the three project sub-catchments and the 82 micro-watersheds identified within them. The total investment project area covers 80,602ha.

Table 2.1 Project Area Details

PROJECT	UNIT	RIBB	GUMERA	JEMA	TOTAL
Sub-Catchment Area	Ha	22,559	32,764	25,279	80,602
Micro-watersheds	No	21	34	27	82
Kebeles Involved	No	12	13	10	35
Weredas Involved	No	Farta	Farta, Dera, Este	Mecha, Sekela	5

2.3.1 Gross study area

The Ribb and Gumera project sub-catchments are contiguous and are situated within the mid to upper agro-ecologic zone ranging in height from 1900m to 3700m above sea level. Physiographically the catchments are similar dominated by a dissected basin with high level plateau remnants separated by deeply incised rivers with steep slopes. Rainfall ranges from 1200mm to over 1600mm per year and is unimodal with a single secure cropping season. Land cover is predominantly cultivated interspersed with grass land with afro-alpine vegetation in the higher areas. There are small areas of natural woodland and eucalyptus plantations, being more extensive in the Ribb catchment. Farming systems range from teff-wheat-pulses systems in the lower elevations, through wheat-barley-pulses systems in the higher middle catchment to one dominated by barley in the upper catchment above 2,900m. Draught oxen, cows, sheep and goats are the dominant livestock in all the farming systems. The most visible evidence of soil erosion is that of gullies, often associated with areas of communal grazing, and sheet erosion with the exposure of stones and rocks on previously cultivated steep upper slopes. Existing soil conservation measures include occasional in-field rock and earth bunds and attempts to control gully erosion using local timber check dams and loose stone. The Ribb catchment appears to have more conservation measures than in Gumera.

The Jema project sub-catchment ranges in altitude from 2000m to 3500m, with the downstream portion of the catchment being relatively flat, and the upper southern sector being more typical of the highlands' rolling to steep topography. Rainfall is slightly higher than the Ribb and Gumera catchments and is unimodal with a single secure cropping season. Land cover, farming systems and existing soil conservation measures are similar to the Ribb and Gumera catchments.

2.3.2 Study sites

In order to test an implementation methodology, five study sites, one in each sub-catchment area, were selected as being representative of the problems faced in each overall catchment. A summary of the characteristics of these detailed study areas within the five micro-watersheds are indicated below, with full details presented in Annex A.

Table 2.2 Location of study sites

Watershed	Sub Micro-watershed	Location	Wereda	Kebele	Detailed Study Area (ha)
Ribb	Baskura	10km W of Debre Tabor	Farta	Koley Dangores	137
	Kantai	3km W of Gasay	Farta	Jura	384
Gumera	Zefie	3km S of Gasay	Farta	Menet	229
	Enkulal	34km E of Anbesame	Dera	Galwedewose	350
Jema	Engule	22km S of Merawi	Merawi	Lehulum Selam	319

Table 2.3 Study site land use and AEZ

Catchment	Sub Micro-watershed	Mean Altitude (m)	AEZ	Land Use (%)			
				Cultivated	Grazing	Eroded	Forest
Ribb	Baskura	2315	Moist Weyna Dega/Dega	60	32	6	2
	Kantai	2780	Moist Dega	63	17	16	4
Gumera	Zefie	2855	Moist Dega	64	16	15	5
	Enkulal	2390	Moist Dega	63	16	16	5
Jema	Engule	2045	Moist Weyna Dega	61	31	6	2

Baskura

The Baskura micro-watershed is characterised by a relatively large area of communal grazing land in the centre of the area which shows evidence of overgrazing and gullying. Upslope of this the headwaters of the Baskura stream have been treated with gabions and check-dams as part of a GTZ demonstration project. Steep slopes to the south of the road are terraced and cultivated and land to the north of the road is also cultivated. An area of enclosed and fenced regeneration forest occurs in the west of the mini-watershed. Soil and water management is the priority sector for the community highlighting erosion and land degradation problems.

Kantai

The Kantai micro-watershed is characterised by areas of very severely eroded ‘badlands’ which are now used as grazing lands but which were arable 30 years ago. These badland areas generate runoff that is concentrated into gullies that are actively eroding arable land downslope. The community has recently introduced stone terracing into areas of arable land on gentle slopes. Soil and water management is the priority sector for the community highlighting erosion and land degradation problems.

Zefie

The Zefie micro-watershed is characterised by a series of steep basalt ridges which cut across the area interspersed by intensively cultivated flatter areas. The mini-watershed's northern boundary is a severely eroded ridge separating it from surrounding mini-watersheds but the western and eastern boundaries are social boundaries demarcated by streams.

This severely eroded ridge was also arable land in the past and was part of a GTZ rehabilitation project but the bunds were destroyed by the community who felt it had been imposed on them. As in other micro-watersheds, soil and water management is the priority sector for the community, highlighting erosion and land degradation problems.

Enkulal

The Enkulal micro-watershed is characterised both by a stand of dense natural forest forming the border of the upper catchment and areas of severely eroded 'badlands' where the topsoil has been stripped down to the bedrock. This area corresponds to areas of communal grazing lands although it was cultivated in the recent past (10-15 years ago) and was forested up to 1975. Other areas of erosion with active gullies also occur on the eastern slopes.

Many cultivated areas have been recently bunded with soil and stone bunds but soil and water management is still the priority sector for the community with particular emphasis on the rehabilitation and prevention of further encroachment of the severely eroded areas.

Engule

The Engule micro-watershed is characterised by wooded, rocky and stony hills forming the upper slopes of the eastern boundary, a large area of arable land on gently undulating terrain towards the Jema river and severe gully erosion associated with areas of communal grazing in the northeast of the area. The runoff from the hills is channelled into gullies which are a problem to the community. Flooding and river bank erosion are also indicated as priority constraints.

However in contrast to the other micro-watersheds, access is the priority sector for the community indicating the area's relative inaccessibility. Soil and water management is the second priority sector for the community, with erosion and land degradation problems. In addition, Engule is the only micro-watershed where the community remains to be convinced of the project's aims, citing land requisition and resettlement associated with Koga Dam as worries.

2.3.3 The project area

The project area comprises five development clusters within the three catchments based on the five study sites, each study site considered a development nucleus for the concerned cluster. The estimated population data for the project area is summarised below.

Table 2.4 Project area population estimates

	Gross area ha	No. of villages	No. of households	Total population	Household size	Population per ha
Project area						
Gumera	22,560	131	11,065	50,126	4.53	2.22
Ribb	32,763	180	12,489	64,066	5.13	1.96
Jema	25,279	99	12,840	65,996	5.14	2.61
Total	**80,602**	**409**	**36,394**	**180,189**	**14.80**	**2.24**

The five clusters overlap with five wereda and some 57 kebeles. However, many of the kebeles have only a small overlap and it is estimated for costing purposes that approximately 35 kebeles will require support from the project, as shown in Table 2.5 and further elaborated in Annex A.

Table 2.5 Overlap with Wereda and kebeles

	Total number of kebele overlapping project area	Kebele equivalents for costing purposes
Kebeles completely within Project area	11	11
Kebeles mostly within Project area	26	22
Kebeles partly within Project area	20	2
	57	**35**
By catchment		
Ribb	24	12
Gumera	22	14
Jema	11	9
	57	**35**
By Wereda		
Farta	33	20
Estie	7	4
Dera	6	2
Mecha	7	6
Sekela	4	3
	57	**35**
By development cluster		
Baskura	11	4
Kantai	13	8
Zefie	12	8
Enkulal	10	6
Engule	11	9
	57	**35**

As discussed in Section 3, It is proposed that the project support teams be based at Farta, Esti and Mecha.

Extensive data have been compiled for the gross study, study site and project areas and these are summarised in Appendix 4 (and are available with ENTRO).

Table 2.6 overleaf summarises the land category areas of each study site (development nuclei) and part of the project area (development cluster).

Table 2.6 Land categories in study sites and project development areas

		RIVER CATCHMENT		RIBB				GUMERA				JEMA		TOTAL AREAS			
		Total project area (ha)		22,558				32,643				25,402		80,602			
		Project Development Area		Baskura		Kantai		Zefie		Enkulal		Engule		Study area		Project Area	
		Development area (ha)		10,865		11,693		12,893		19,750		25,402		80,602			
Land Slope	Land class	Land use	Unit	Study area	Project Area	Study area	Project Area	Study area	Project Area	Study area	Project Area	Study area	Project Area	Study area		Project Area	
				ha	ha	ha	ha	ha	ha	ha	ha	ha	ha	ha	%	ha	%
<8%	1c	Cultivated	ha	23	3,418	75	4,732	24	3,573	57	8,954	8	5,702	186	13%	26,379	33%
	1g	Grazing	ha	12	1,785	21	1,299	6	912	15	2,306	4	2,997	57	4%	9,298	12%
>8% and <15%	2c	Cultivated	ha	24	1,898	89	1,938	49	2,447	81	3,136	53	4,003	295	21%	13,422	17%
	2g	Grazing	ha	13	1,026	25	533	12	626	21	811	25	1,929	96	7%	4,925	6%
	2e	Badlands	ha	4	315	41	896	18	908	36	1,394	6	479	106	7%	3,992	5%
>15% and <30%	3c	Cultivated	ha	31	1,231	70	1,251	56	2,278	76	1,818	107	4,319	340	24%	10,898	14%
	3g	Grazing	ha	16	640	19	343	14	582	20	469	56	2,246	125	9%	4,280	5%
	3e	Badlands	ha	2	91	13	233	8	340	14	329	6	258	44	3%	1,251	2%
>30% and <60%	4c	Cultivated	ha	6	176	7	91	17	519	7	88	27	1,713	64	4%	2,586	3%
	4g	Grazing	ha	3	93	2	25	4	133	2	23	14	891	25	2%	1,164	1%
	4e	Badlands	ha	1	29	3	42	4	109	3	39	3	207	14	1%	426	1%
	4f	Forestry	ha	3	80	16	215	10	311	17	213	6	402	52	4%	1,220	2%
>60%	5	Cultivated/Grazing/Degraded	ha		4		3	3	45		1		256	3	0%	309	0%
	Gullies	Gully Reshaping	ha	1	80	3	90	2	113	3	169	2	0	11	1%	452	1%
				137	**10,865**	**384**	**11,693**	**228**	**12,893**	**350**	**19,750**	**319**	**25,402**	**1,418**	100%	**80,602**	100%
		Land use sub-totals:															
		Cultivated	ha	83	6,724	241	8,013	146	8,816	220	13,996	195	15,737	885	62%	53,285	66%
		Grazing	ha	44	3,543	66	2,200	37	2,252	57	3,608	100	8,064	303	21%	19,667	24%
		Forestry	ha	3	80	16	215	10	311	17	213	6	402	52	4%	1,220	2%
		Cultivated/Grazing/Degraded	ha	0	4	0	3	3	45	0	1	0	256	3	0%	309	0%
		Badlands	ha	7	435	58	1,172	30	1,357	53	1,763	16	943	163	12%	5,669	7%
		Gullies	ha	1	80	3	90	2	113	3	169	2	0	11	1%	452	1%
		Totals	ha	**137**	**10,865**	**384**	**11,693**	**228**	**12,893**	**350**	**19,750**	**319**	**25,402**	**1,418**	100%	**80,602**	100%
		Slope category sub-totals															
		<8%	ha	34	5,203	95	6,031	31	4,484	71	11,260	12	8,699	243	17%	35,677	44%
		>8% and <15%	ha	40	3,239	155	3,367	79	3,980	138	5,341	84	6,411	497	35%	22,339	28%
		>15% and <30%	ha	50	1,961	103	1,828	78	3,200	109	2,617	170	6,823	509	36%	16,429	20%
		>30% and <60%	ha	12	377	28	373	36	1,070	29	363	51	3,213	155	11%	5,395	7%
		>60%	ha	1	84	3	93	5	158	3	170	2	256	14	1%	761	1%
		Totals	ha	**137**	**10,865**	**384**	**11,693**	**228**	**12,893**	**350**	**19,750**	**319**	**25,402**	**1,418**	100%	**80,602**	100%
		No. of microcatchments			10		11		14		20		27			**82**	
		Average microcatchment area	ha		**1,087**		**1,063**		**921**		**987**		**941**			**983**	

2.4 Key project assumptions and risks

2.4.1 Specific Assumptions Risks

Delays in programme implementation are likely to occur from one of several possible causes. These causes include inadequate capacity and shortage of funds for programme implementation. The programme has made adequate provisions for capacity building and institutional development for all levels of the hierarchy including farmers, *kebele* personnel, *wereda* staff and regional officers and federal officials. To avoid undue delays in programme implementation every effort needs to be made to execute the capacity building component of the programme according to schedule. With regard to funds, the successful implementation of the programme presupposes the availability of the required funds. Therefore, it is imperative that the government secures the commitment of prospective donors as early as possible.

A big risk to the programme would be the unwillingness of the beneficiaries to participate in project activities and provide contributions (labour or cash) for the construction of SWC measures and other rural infrastructure. Furthermore, to ensure the sustainability of project interventions, beneficiaries must also be willing to maintain the infrastructure following completion of the project.

Effective participation of prospective beneficiaries therefore holds one of the keys to project success. Given the risk-averse nature of farmers, they should be convinced about programme benefits through consultative participatory approaches and training for which the programme has made provisions. Such an approach will entice them into participating in the planning, implementation and operation of the project, thus enabling them to become project owners. This includes women heads of households, who will be encouraged and assisted to establish their farm, earn a living, make decisions and join water management committees.

To realise the full benefits of the project, it has also been assumed that project farmers are willing to adopt improved cropping systems and better livestock husbandry practices. In addition, beneficiaries would be encouraged to invest in non-farm enterprises. To minimise the risk-adverse nature of farmers and significantly enhance household incomes, considerable resources will be therefore be focused on improving agricultural and livestock production, as well as non-farm income generation, as part of the livelihoods theme which is one of the key pillars of the project.

Another risk to the successful implementation of the project is the lack of collaboration and co-operation between the relevant government and non-government organisations engaged in project activities which will seriously impede the delivery of equipment, materials and services. This risk has been address in the formulation of the institutional framework for the project which is designed to ensure that that all stakeholders play an active role in project organisation and management.

2.4.2 Institutional

An important aspect is the inadequacy of technical support and training that need to be provided with respect to processes and designs. For sustainable utilization of soil and conservation measures, the beneficiaries should be presented with a range of alternative techniques so that they can choose solutions that are well adapted to their specific conditions. However, appropriate training, guidance arid construction supervision needs to be provided to ensure the desired quality of workmanship in construction and maintenance. Therefore, suitable technical assistance for the design, construction, operation and maintenance of soil and water conservation measures needs to be made available to all implementers, DAs and beneficiary farmers.

2.4.3 Environmental

Possible negative environmental impacts pose a risk. The spread of water-borne diseases, lack of food security and contaminated soil degradation are the major negative environmental impacts associated with the programme. To ensure programme sustainability, measures mitigating negative environmental impacts should be introduced, once the problem has been identified and quantified. Above all, training and raising awareness on preventive measures need to be given early, before situations get out of control.

2.4.4 Project Base Costs

The cost estimates for the soil and water management, water supply, irrigation and community entry point components have been prepared based on the detailed study undertaken of the sample micro-watersheds selected within the Ribb, Gumera and Jema river sub-catchments. For each sample micro-watershed the interventions identified have been costed individually at either a Birr/ha or Birr/km rate, or as an individual cost item. The work norms provided in the MoARD Guidelines (based on the WFP/MERET watershed development programme) have been principally used in order to work up the cost rates. These particular apply to the costs for soil and water conservation, rainwater harvesting and rural infrastructure measures which are dependent on the amount of free labour that is provided by the beneficiaries. It is envisaged that cash for work will apply to a substantial part of the soil and water interventions, but a lower wage rate will be applied to provide for an element of beneficiary contribution.

The typical cost estimates for the five study micro-watershed areas for both the livelihood and natural resources components were averaged out on a cost per hectare or kebele basis for each of the three river sub-catchment areas. Based on these, the cost estimates of the various components of the proposed project integrated watershed management programme were then scaled up separately for each sub-catchment to derive costs covering the total project area of 80,602 ha. This took into account the details from the estimates prepared on the five project study sites, a comparative spatial analysis of topography throughout the investment area including a review of land use and socio-economic data collected for the area as a whole. The cost estimates for the 82 project micro-watersheds covering the three river sub-catchments for the Ribb, Gumera and Jema were scaled up from the rates and cost estimates derived from the study of the five mini-catchments at Baskura, Kanti, Zefie,

Enkulal and Engule. Table C1 relates to the soil conservation work cost estimates covering a total area of 80,602 ha. Table C2 gives the cost estimates for the water harvesting, irrigation, access and communications, health, education and non-farm income generation components.

The cost for management operation and maintenance of the project components is estimated at 3% of the investment cost of implementation. The cost estimates are based on 2007 constant values with an exchange rate of US$1.00 = Birr 9.24. Support tables for the base costs are presented in Annex B. A summary of the estimated base costs and the proposed project costs are given in Table 2.4 and 2.5 overleaf.

(a) Livelihood Development

Some Birr 90.8 million (US$9.8M) excluding recurrent costs and contingencies is to be provided to finance the livelihood development components. This will comprise of funds to finance support for crop and livestock production within the three sub-catchments, improved rural access and communications, upgrading of social infrastructure at kebele level, and seed funds to encourage non-farm income generation and the adoption of appropriate technologies and innovations.

(b) Natural Resources Development

Some Birr 153.2 million (US$16.6M) excluding recurrent costs and contingencies is to be provided to finance the natural resources component. This is made up of funds to support the soil and water conservation works, water supply/sanitation interventions and irrigation development within the micro-watersheds. The protection of existing badly degraded areas and their improvement through development of forestry and agro-forestry programmes is also included.

(c) Institutional Strengthening

Some Birr 56.0 million (US$6.1M) excluding recurrent costs and contingencies is to be provided to finance the capacity development and project management component. This is made up of funds to support both wereda and kebele level institutional capacity building, improvements to office infrastructure and provision of funds for training kebele staff, SMSs and DAs. At the regional level it will support a project coordination unit, consultancy costs and monitoring and evaluation requirements.

Summary of estimated base costs

(Birr '000)

PROJECT COMPONENTS	Proposed project investments			
	Total Cost (Birr '000)		Community Contribution (Birr '000)	Government + Donor cost (Birr '000)
SWC, WSS and IRRIGATION				
A. Soil and Water Conservation Works				
Land Class 1 (< 8% slope)	20,777	7%	17,660	3,117
Land Class 2 (8% - 15% slope)	27,956	9%	13,413	14,543
Land Class 3 (15% - 30% slope)	45,950	15%	691	45,259
Land Class 4 (30% - 60% slope)	5,207	2%	544	4,663
Land Class 5 (> 60% slope)	436	0%		436
Other Works	9,049	3%		9,049
Sub-total Soil and Water Conservation Works	**109,375**	**36%**	**32,309**	**77,066**
B. Water Supply and Sanitation	25,280	8%	7,745	17,535
C. Irrigation	8,259	3%	6,195	2,065
Sub-totals	**142,914**	**48%**	**46,248**	**96,666**
COMMUNITY ENTRY POINTS				
A. Access and Communications	50,318	17%	2,635	47,683
B. Renovation of public buildings	875	0%	70	805
C. Not used				
Sub-totals	**51,193**	**17%**	**2,705**	**48,488**
CROP PRODUCTION				
A. Farmer Training Centres	1,216	0%		1,216
B. Demonstrations	2,730	1%	546	2,184
C. DA Crop production	1,789	1%		1,789
Sub-totals	**5,734**	**2%**	**546**	**5,188**
LIVESTOCK PRODUCTION				
A. Animal Health Posts	2,806	1%	221	2,585
B. Feed supply	2,379	1%	476	1,903
C. Dairy Production	1,021	0%	104	917
D. Dairy processing	578	0%	55	523
E. Sheep Demonstrations	842	0%	69	772
F. Poultry	1,692	1%	138	1,554
G. Animal Fattening	1,786	1%	69	1,717
H. DA Livestock	1,789	1%		1,789
Sub-totals	**12,893**	**4%**	**1,133**	**11,760**
FORESTRY AND AGRO-FORESTRY				
A. Agroforestry Demonstrations and Nurseries	8,500	3%	1,700	6,800
B. DA Natural Resources	1,789	1%		1,789
Sub-totals	**10,289**	**3%**	**1,700**	**8,589**
NON-FARM INCOME GENERATION				
A. Community flour mills	1,750	1%	438	1,313
B. Technology and innovation fund	1,250	0%	313	938
C. Micro-credit facility	18,000	6%		18,000
Sub-totals	**21,000**	**7%**	**750**	**20,250**
CAPACITY DEVELOPMENT AND PROJECT MANAGEMENT				
A. PCU Office	2,458	1%		2,458
B. PCU staff and consultants	10,024	3%		10,024
C. Government Salaries and Allowances	947	0%		947
D. Training	4,105	1%		4,105
E. Monitoring and Evaluation	3,500	1%		3,500
F. Wereda Offices	7,175	2%		7,175
G. Community Watershed Management Teams	27,775	9%		27,775
Sub-totals	**55,984**	**19%**		**55,984**
Overall total base costs	**300,008**	100%	**53,083**	**246,925**
	100.0%		17.7%	82.3%

Summary of proposed project costs

Expressed in Birr '000	Proposed project investments			
PROJECT COMPONENTS	**Total Cost** (Birr '000)		**Community Contribution** (Birr '000)	**Government and donor Contribution** (Birr '000)
Theme A: Livelihoods				
1 Community entry points	51,193	11%	2,705	48,488
2 Crop production	5,734	1%	546	5,188
3 Livestock production	12,893	3%	1,133	11,760
4 Non-farm income generation	21,000	5%	750	20,250
Theme B: Natrural resources				
5 SWC, WSS and irrigation	142,914	32%	46,248	96,666
6 Forestry and agro-forestry	10,289	2%	1,700	8,589
Theme C: Capacity development				
7 Capacity development and project management	55,984	13%		55,984
Overall total base costs	**300,008**	**67%**	**53,083**	**246,924**
			Approx split between heads	
Recurrent costs	30,180	7%	*15,476*	*14,705*
Physical contingencies	33,019	7%	*6,856*	*26,163*
Sub-total *(excl. price contingencies)*	**363,207**	**81%**	***75,414***	***287,792***
Price contingencies	84,616	19%	*17,569*	*67,047*
Total project cost	**447,823**	100%	**92,984**	**354,839**

2.4.5 Project benefits

The main economic benefits of the proposed project are:

(i) increased crop production and improved livestock productivity,
(ii) expansion of agricultural surpluses and higher farm household incomes;
(iii) enhanced sustainability of future agricultural development due to mitigation of land degradation and improved soil fertility;
(iv) greater fuel wood production;
(v) increased off-farm income;
(vi) enhanced human and capital resources resulting from improved economic and social infrastructure.

Increased crop production will primarily derive from improved productivity. A small increase in the cropping intensity, due to the expansion of irrigated land, is also envisaged. Under the full soil and water conservation programme, it is anticipated that the area of cultivated land

will remain unchanged at around 43,525 ha. However, under the proposed project (i.e. with limited hillside terracing and forestry on very steep slopes), the cultivated area is expected to decline by 0.25% per annum in the future with project situation and by 0.5% per annum in the future without project situation.

Future cropping patterns will still be dominated by cereal production (e.g. teff, wheat and barley) which currently account for 78% of the cultivated area. However, significant increases in the yields of these staple foods will be critical to meeting household food requirements as well as growing market demand. Furthermore, the project will promote the production of fruit and vegetables. An expansion in the area of pulses will also play an important role in enhancing soil fertility. As a consequence of project interventions, the annual production of cereal, pulse and oilseed crops is expected to rise by 42%. In addition, there will also be substantial increases in the production of potatoes, vegetables and fruit crops.

Livestock productivity is expected to significantly increase with the adoption of improved husbandry practices, particularly with respect to nutrition and animal health. The economic benefits of the forestry component mainly comprise the additional value of fuel wood and construction poles resulting from the agro-forestry activities.

With respect to public services, the benefits of improved access and communications, as well as water supply/sanitation, health and education facilities, have not been quantified. It is, however, implicit in the analysis that these improvements to rural infrastructure are critical to achieving the direct economic benefits generated by the sustainable development of crop, livestock and forestry production within the project area. For example, improved access and communications will be essential for the marketing of the additional agricultural surpluses, while improved water supply and sanitation facilities will significantly enhance human health and labour availability.

2.4.6 Financial Analysis

Financial analysis was undertaken to determine the likely impact of project interventions on net household income as well as to assess whether the financial benefits are sufficiently attractive to encourage the full participation of farmers in project interventions and subsequent maintenance activities.

Based on a typical farm with a cropped area of 1.0 hectare, the results of this analysis indicated that annual net farm returns would rise by an average of Birr 3,132 (from Birr 4,005 to around Birr 7,137 per annum). This increase is very important because the overwhelming majority of rural households depend upon crop and livestock production for their food security as well as household income. Furthermore, the incremental net farm returns far exceed the costs of maintaining the soil and water conservation works and other rural infrastructure (estimated at about Birr 200/hectare), so farm households and local communities will have a strong incentive to ensure that the physical works are maintained in a satisfactory manner.

Annual Net Farm Returns by Sub-catchment (Birr per farm)

Sub-catchment	Present	Future Without Project	Future With Project
Jema	3,859	3,450	6,689
Gumera	4,125	3,774	7,287
Ribb	4,043	3,713	7,185
Overall Project	**4,005**	**3,642**	**7,137**

2.4.7 Economic Analysis

Economic Costs: In the derivation of project's economic costs, import duties and taxes were first omitted from the financial costs. The standard conversion factor of 0.90 was then applied to the costs of local materials, machinery/equipment and skilled labour. The cost of unskilled construction labour was also reduced by applying a shadow wage rate factor of 0.63. The financial cost of foreign goods and services remained unchanged. In total, the economic cost of the project (including 10% physical contingencies) was estimated at Birr 266 million.

Annual recurrent costs for each component were also included in the economic analysis as these costs will have to be incurred if the future benefits of the capital investment are to be sustained. Economic recurrent costs were estimated at Birr 11.1 million per annum.

Economic Benefits: As a result of improved productivity, net agricultural benefits are estimated to rise by Birr 80 million per annum (from Birr 119 million to Birr 199 million per annum). It is envisaged that future with project agricultural benefits would be fully attained 5 years after project implementation. After achieving the levels of productivity envisaged, it was then assumed that net benefits would increase by 1.0% per year. The potential for intensifying and diversifying agricultural production will be clearly demonstrated by the crop and livestock extension activities.

Economic Viability: The results of the economic analysis indicate that the EIRR of the project is **20.5%** with a NPV of Birr 314 million and a B:C ratio of 2.24:1 (NPVs and B:C ratio were calculated at a discount rate of 10%). These results show that the proposed project investment is fully justified on economic grounds.

2.4.8 Sensitivity Analysis

Sensitivity analysis indicated that the project is robust to adverse changes in costs and remains viable with increases in capital and recurrent costs of up to 124%. Similarly, with respect to changes in project benefits, incremental benefits would have to reduce by 56% for

the project to become uneconomic. It should, however, be noted that the project's economic viability is sensitive to not achieving the expected crop yields. This clearly underlines the critical importance of integrating the soil and water conservation and rural infrastructure interventions with an agricultural extension and training programme to ensure that potential benefits are fully realised.

Full details of the financial and economic analyses are presented in Annex D

3 Institutions and their responsibilities for project implementation

3.1.1 Background

The Nile Basin Initiative (NBI) is a cooperative arrangement between ten countries to support better management of the Basin's resources with a focus on water and related resources based on a common vision: *"to achieve sustainable socio-economic development through the equitable utilisation of, and benefit from, the common Nile Basin water resources."*

This common vision is to be realised through a Strategic Action Plan which consists of a Shared Vision Programme and a Subsidiary Action Programme (SAP) involving basin-wide and sub-basin projects. The SAP is organised into the Nile Equatorial Lakes (NELSAP) and Eastern Nile (ENSAP) areas, approximately corresponding with the two major sub-basins of the Nile, originating from the Nile Equatorial Lakes Region and tributaries originating from the Eastern Nile highlands. The Eastern Nile Subsidiary Action Programme (ENSAP) is identifying investment programmes, which offer common benefit for the Eastern Nile countries (i.e. Ethiopia, Sudan and Egypt). The Integrated Development of the Eastern Nile (IDEN) project is the first investment project of the ENSAP and it has seven components that are mostly related to water resources management and use (i.e. irrigation, drainage, hydro-power generation and transmission, and flood management).

Watershed degradation, which is primarily occurring in Ethiopia, leads to increased run-off and spate flows (flooding) as well as sediment loads, which reduce reservoir life and the lives of other water related investments. Therefore, watershed management is a key to the long-term effectiveness of the other components of the IDEN project. At the same time, watershed management also offers opportunities to directly improve the livelihoods of Ethiopia's rural communities through improved land productivity, increased food security, livelihood diversification as well as improvements in access to water and biomass fuels.

To ensure that watershed management is directly linked with the envisaged investments in water development infrastructure, the Eastern Nile Integrated Watershed Development Project, hereinafter called the "Project", has been conceived as an essential sub-project and an integral part of the Tana Beles Integrated Water Resources Development Project (TBIWRDP), whose development objective is *"to improve development and management of land and water resources of the Tana and Beles sub-basins in order to contribute to accelerated growth and sustainable socio-economic development"* to be achieved through (a) physical investments and institutional arrangements for optimal development and management of land and water resources; and (b) building synergies with relevant on-going and planned initiatives in the sub-basins. The Project would provide for the investments in improved land management and contribute to socio-economic development by helping to improve rural livelihoods in the Tana sub-basin. In addition, the Project would also reduce

erosion and sediment transport to Lake Tana and thus support investment in water resources development.

3.2 Proposed institutional framework for project implementation

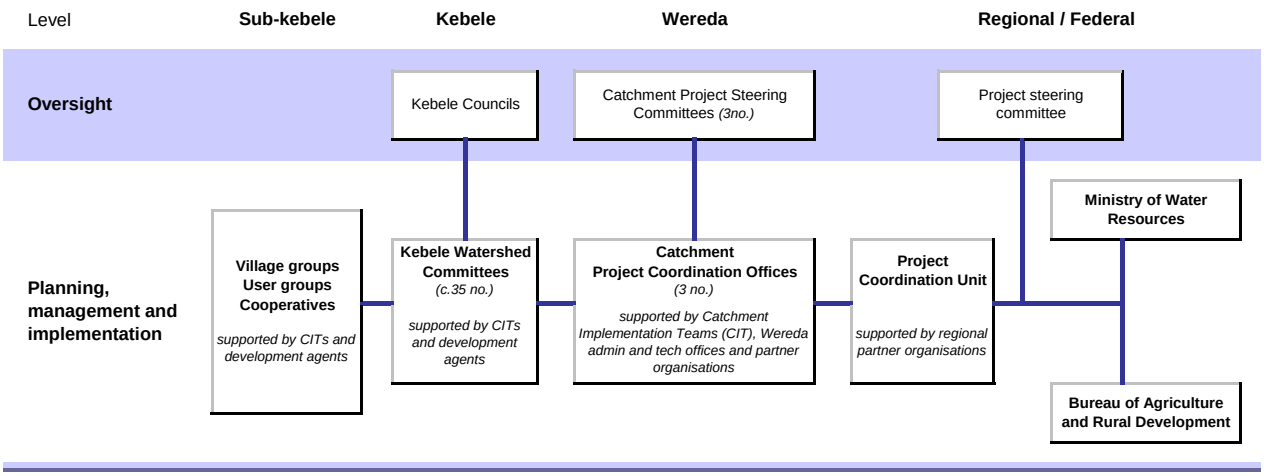
Due to its relevance to improved water resources management, in the context of both the potential for replication across Ethiopia and the potential impacts within the Nile Basin as a whole, the project will come under the overall responsibility of the Ministry of Water Resources.

However, it is recognised that the ultimate success of the project relies upon the communities' willingness to both participate in and sustain the outcomes of the project. The project therefore will be based upon a participatory process at kebele and sub-kebele (community) level facilitated by investment decisions made at wereda level.

To ensure overall quality, to identify opportunities for subsequent replication and continuity and to provide a central point for the main investors, overall project management and coordination will be set at regional level. Thus the Bureau of Agriculture and Rural Development in Amhara State will be the major executing agency.

Overall direction will be provided by a Project Steering Committee co-chaired by MoWR and BoARD. Oversight for field level operations in each of the three catchments in which the Project is located will be provided by a Catchment Project Steering Committee chaired by the Zonal Chief Administrator. At Kebele level, the Kebele Council will play an active role in overseeing local level planning.

Proposed institutional framework



The proposed institutional framework is illustrated above and the principal roles and responsibilities of each entity are summarised overleaf.

The framework embodies the principles of separation of oversight and implementation as well as the necessary engagement of the different levels of the Government in appropriate ways.

Further details of the responsibilities and roles of these key organisations are elaborated below and further details of the financial management plan are given in Annex J.

3.2.1 Community level (sub-kebele)

Communities exist across the project area loosely built on village communities, notwithstanding the fragmented nature of the settlements. There are typically 3-4 villages within each kebele, each generally within a discrete hydrological part of a micro-watershed. The community participates in various group activities according to circumstances, which may involve for instance sharing use of communal lands and property, membership of cooperatives and joint operation of water supplies and very small irrigation systems. Although mostly these groups are relatively informal, the closeness of the community forges relatively strong alliances. As in other parts of the world, the communities are generally represented by elders and/or those held in high esteem.

Notwithstanding the general informality of sub-kebele organisations, it is at this level that the project planning commences and that successful implementation and sustainability of outcomes depend upon. The project recognises that user groups are the fundamental institutional building block.

Their natural partners in development outside of the local government system are the NGOs working within the area and the private sector with whom they trade and purchase supplies from.

3.2.2 Kebele level

(a) Kebele Watershed Committee

To ensure coordination and supervision between the different micro-watersheds located within the boundaries of the Kebele, a Kebele Watershed Committee (KWC) will be established at Kebele level as the main focal point for the project support.

Proposed members of the KWC

- Chairman of the Kebele Council
- Kebele Council member responsible for rural development/water;
- Kebele Manager;
- Religious head of Kebele;
- One male and one female representative from each micro-watershed;
- Representative of the youth;
- Chairman of Land Administration Committee;
- Chairman of Cooperative (if any);
- Chairman of Water Management Committee (if any);
- Chairman of Forest Protection Committee (if any);
- Chairman of Women's Association (if any);
- One community elder (*Yehager Shimagile*);
- Head/Principal of Primary School;
- Head of Health Post; and
- DA Coordinator.
- CIT Project Coordinator

To ensure that the KWC is established as an effective and representative institution with sufficient authority, the KWC will be chaired by the Chairman of the Kebele Council with wide representation from the community and local government bodies (see box).

Based on the Guidelines for Community-Based Participatory Watershed

Principal roles and responsibilities

Level	Key institution	Summary role and responsibilities
Sub-kebele	Village groups (informal) *comprising social/interest groups*	Participation in CAP preparation (facilitated by Development Agents) Participation in investment planning (facilitated by Development Agents) User group formation (facilitated by Development Agents)
	User groups (informal)	Implement project programmes Management and maintenance of community assets improved under project
	Water management committees	As above for water supply
	Water user associations	As above for community irrigation
	Cooperatives	Input supply, processing and marketing
Kebele	Kebele Council	Review and recommendation of PLUPs and CAPs Review and recommendation of detailed project investment plans Mobilisation of mengistawi budin (work teams)
	Kebele Watershed Committee *supported by CIT and Development Agents*	Preparation of PLUPs and CAPs Preparation of detailed investment proposals Coordination and reporting on project activities
Wereda	Catchment Project Steering Committees (3 no.) *chaired by Chief Zonal Administrator(s)*	Approval of PLUPs and CAPs Review and recommendation of cacthment annual work plans and budgets Monitoring and review of project progress in each catchment
	Catchment Implementation Teams *supported by Wereda adminstration office and technical offices*	Review and recommendation of PLUPs and CAPs Prepare and recommend of project annual work plans (incl budgets) Approval of kebele investment proposals under project (within AWP) Technical support to kebele watershed committee and teams (incl. DAs) Technical support in design and implementation of project investments Design and implementation of demonstration and promotional programmes Coordination and reporting on project activities, including M&E Disbursement of project funds in accordance with agreed plans
Regional	Project Steering Committee *Co-chaired by MoWR and BoARD*	Oversight and compliance with project agreement Approval of mandates and funding criteria Approval of project annual work plans and reports Coordination between Bureaux
	Bureau of Agriculture & Rural Development *through Project Coordination Unit*	Overall project coordination and reporting Establishment of planning, implementation and expenditure guidelines Technical guidance and quality assurance Compilation of overall workplans and budgets Approval of Wereda annual work plans (incl budgets) Monitoring, evaluation and assessment Addressing replicabilty issues Allocation, disbursement and accounting of project funds
Federal	Ministry of Water Resources	Oversight of all activities Coordination with other Ministries, ENTRO etc Overall provision and management of project funds

Development[4], the roles and tasks of the KWC should be as follows:

- to ensure watershed planning is organised in each micro-watershed;
- to set priorities based on needs and watershed logic;
- to coordinate interventions that concern more than one micro-watershed or two Kebeles;
- to oversee the preparation of Participatory Land Use Plans (PLUP) and Community Action Plans (CAP);
- to allocate resources;
- to assist in quality control;
- to settle disputes and provision of support on specific issues, such as land certification;
- to assist in monitoring and evaluation (M&E), compilation of reports, organisation of training and field days as well as sharing of experiences within and between Kebeles; and
- to hold two-weekly or monthly meetings to review the progress made as well as to plan activities for next two weeks or month.

(b) Kebele Council

The Kebele Council is the lowest administrative unit, which is established by the government with formal rules and regulations, duties and responsibilities. The Kebele Council is elected democratically by the community members and usually has 10 executive and 7 judicial members with the following responsibilities: a) administrative management and judicial services; b) implementation of government policies and strategies; c) collection of taxes and registration of population; d) conflict resolution; and e) awareness creation. The Kebele Council takes all decisions related to political, social, economic and security issues. Furthermore, the Kebele Council is formally responsible for the management of communal land, including the communal grazing land and any community-managed forest.

As the formal government institution at the lowest administrative level responsible for the administration of the Kebele, it is crucial that the Kebele Council is fully involved in the planning, design and implementation of interventions in its area of jurisdiction. Thus to ensure transparency and accountability to its electorate, the Kebele Council will oversee the activities of the Kebele Watershed Committee and will be responsible for

Kebele Implementation Partners

- Development Agents (DA);
- Health extension staff;
- Land Administration Committee;
- Cooperatives (if any);
- Forest Protection Committee (if any);
- Water Management Committee (if any); and
- Work groups (Mengistawi Budin).

4 MoARD: Community Based participatory Watershed Development, A Guideline (Part 1), January 2005: p.25

reviewing and recommending all Participatory Land Use Plans and Community Action Plans, Annual Work Plans and related budgets to the Catchment Project Steering Committee.

(c) Kebele Implementation Partners

Implementation partners are organisations (at whatever level) that can take relevant actions to support achievement of the project aims. As such implementation partners are important participants in the project, though not necessarily directly involved in line management of the project.

The implementation partners at Kebele level are shown in the box above and would assist the KWC in performing its duties under the Project. Development Agents will have a particular important role in the interface between the project and the communities and, together with health extension staff, will receive training from the project as well as, where required and justified, direct support in the form of improved offices, equipment and transport.

Disposition of Catchment Implementation Teams

CIT	Wereda	Project Development Areas	Estimated Kebeles
Ribb	Farta	Baskura	4
		Kantai	8
Gumera	Farta	Zefie	7
	Estie	Zefie	2
		Enkulal	3
	Dera	Enkulal	2
Jema	Mecha	Engule	6
	Sekele	Engule	3
Totals	**5**	**5**	**35**

3.2.3 Wereda level

The main inputs from the project in terms of implementation support will be delivered at Wereda level.

(a) Catchment Project Coordination Offices

Three Catchment Project Coordination Offices will be established at Wereda level each with a Catchment Implementation Team. The teams will be responsible for day-to-day implementation of the project at individual watershed level. One team will be based in each watershed (it is suggested they should be based at Farta, Esti and Mecha) and will be responsible for the development areas as illustrated in the adjacent table.

Each team will have a Catchment Project Coordinator with overall responsibility for each team's activities. In each Wereda, the Council will designate a person or persons to act as a *Project Focal Point*. Their responsibility will be to be the main point of day-to-day contact between the project and the concerned Wereda, and to proactively support the project in terms of accessing relevant data, information and contacts.

The responsibilities of each Catchment Implementation Team will include:

- Delivery of all project support to communities to achieve the overall aims and objectives of the project within their designated Project Development Areas;
- Supporting the preparation of PLUPs and CAPs through community mobilisation, motivation and technical support;

- Facilitating the preparation of annual work plans and investment plans at Kebele level and subsequently at catchment level;
- Technical support in the design and implementation of project-funded activities;
- Disbursement and management of project funds in accordance with agreed procedures and budgets;
- Monitoring progress and routine progress reporting;
- Assisting with monitoring and evaluation (M&E) and financial audits;

Catchment Implementation Teams

Staff	No. of staff	Months per staff	Total p-m
Project management staff			
Catchment Project Coordinator	3	60	180
Finance officer	3	60	180
Accountant	2	60	120
Office Manager	3	60	180
Office support staff	5	60	300
Key technical staff			
Soil and Water Specialist	6	60	360
Agronomist	3	60	180
Livestock Expert	3	60	180
Water Harvesting and Irrigation Expert	3	60	180
Socio economics and Gender Specialist	3	60	180
Community Mobilisers	18	60	1,080
Grand Total	**52**		**3,120**

The teams will be recruited on a basis agreed with the Project Steering Committee, which may include open invitation and/or recruitment from local NGOs with established track record within the locality.

The make up of the three teams is expected to be as shown here. Further details of each post are given in Annex H.

(b) Wereda Administration Office and implementation partners

To ensure that the Project is also implemented in an integrated manner at Wereda level, it is proposed that the Catchment Implementation Teams will work closely with the Wereda Administration Office. The Wereda Administration Office will facilitate the involvement of the proposed Wereda implementation partners (see box).

Wereda Implementation Partners

- Wereda Office of Agriculture and Rural Development (ARD);
- Wereda Office of Water Resources Development (WRD);
- Wereda Office of EPLAUA
- Wereda Office of Health;
- Wereda Office of Women's Affairs;
- ACSI Sub-Branch Office(s);
- NGOs; and
- Private sector.

The CIT will work closely with Subject Matter Specialists from the different Wereda offices above and will provide them with training to facilitate their active and knowledgeable engagement with the project activities and to enable them to provide appropriate continuing support to the communities after the project.

The CIT will work closely also with the Development Agents (especially livestock, agriculture and forestry) with the intention that the DAs should act as the principal interface with the

communities. The project will provide training and improved facilities and transport for the DAs where needed and justified.

(c) Catchment Project Steering Committees

Three Catchment Project Steering Committees will be established, each under the chairmanship of the Zonal Chief Administrator(s). The main responsibility of the Committee will be to oversee the project activities within each catchment. The proposed membership of each Committee is shown in the adjacent box.

The general responsibilities of the Catchment Project Steering Committee will be:

- Regular review of project activities and reports prepared by CIT and identification of corrective actions where merited;
- Approval of PLUPs and CAPs;
- Review and recommendation of consolidated Annual Work Plans and related budgets at catchment level;
- Review of monitoring and evaluation reports and development of recommendations to enhance the impact of project activities in achieving the project's goal and development objective;
- Other activities as determined from time-to-time as appropriate and in the interests of effective implementation of the project.

3.2.4 Regional Level

The main responsibilities at regional level are overall coordination and management of the project, establishing and supervising quality control, monitoring and evaluation and providing technical support to the CIT where needed.

The National Regional State Bureau of Agriculture and Rural Development (BoARD) will be the main executing agency at regional level for the project, given its breadth of capabilities in watershed management. BoARD will establish a Project Coordination Unit (PCU), which will have responsibility for the coordination and management of all project activities. BoARD, together with the Ministry of Water Resources will co-chair the Project Steering Committee, which will be the main decision-making body for the project.

Proposed membership of the Catchment Project Steering Committees

- Zonal Chief Administrator , and representatives from
- Wereda Administration Office
- Wereda Office of Agriculture and Rural Development (ARD);
- Wereda Office of Water Resources Development (WRD);
- Wereda Office of EPLAUA
- Wereda Office of Health;
- Wereda Office of Women's Affairs;
- ACSI Sub-Branch Office
- Kebele Watershed Management Committee
- CIT Project Coordinators

(a) Project Coordination Unit

The Project Coordination Unit will be established in Bahir Dar with funding support from the project (including

office, equipment and transport). The Unit will be headed by a national Project Coordinator (PC). The main responsibilities of the Unit will be:

- Overall project coordination and reporting
- Recruitment and mobilisation of Catchment Implementation Teams
- Establishment of planning, implementation and expenditure guidelines
- Procurement of major items and contracts
- Technical guidance and quality assurance
- Compilation of overall workplans and budgets
- Approval of Wereda annual work plans (incl budgets)
- Monitoring, evaluation and assessment
- Addressing replicability issues
- Allocation, disbursement and accounting of project funds
- Preparation of reports and papers for the Project Steering Committee

The team will be recruited through open competition on an individual basis in accordance with criteria agreed by the Project Steering Committee.

Project Coordination Unit staffing

Staff	No. of staff	Months per staff	Total p-m
Long-term national staff			
Project coordinator	1	60	60
Training Manager	1	60	60
M&E expert	1	60	60
Agricultural specialist	1	60	60
SWC specialist	1	60	60
GIS and database applications	1	60	60
Senior administrator	1	60	60
Administrative support staff	2	60	120
Short-term national staff			
M&E specialist	1	18	18
Forestry specialist	1	24	24
Contracts/procurement specialist	1	10	10
Financial specialist / auditor	1	10	10
Micro-credit specialist	1	10	10
Physical planner	1	6	6
Appropriate technology specialist	1	12	12
Subject matter specialists	5	12	60
Short-term international staff			
Subject matter specialists	2	2	4
Totals	**23**		**694**
Summary			
Long-term national staff	9		540
Short-term national staff	12		150
Short-term international staff	2		4
Grand Total	**23**		**694**

The expected composition of the PCU is as shown here. Further details of each post are given in Annex H.

(b) Project Steering Committee

The Project Steering Committee will be the main decision-making body for the project. It will be co-chaired by MoWR and BoARD. The proposed membership of the Committee is as shown. Others who may be invited to join may include:

- Bureau of Women's Affairs (BoWA) regarding the mainstreaming of gender issues
- Bureau of Health (BoH) concerning hygiene and sanitation as well as malaria control and prevention; and
- Rural Road Authority with regard to the construction of access roads.

In addition, ENTRO may be invited as an observer of committee deliberations.

Propose membership of Project Steering Committee

- Ministry of Water Resources
- Ministry of Agriculture and Rural Development
- Bureau of Agriculture and Rural Development
- CPA
- Environmental Protection Land Administration and Use Authority
- Amhara Region Agricultural Research Institute,
- Zonal Administration
- Bureau of Water Resources
- Project Coordinator
- Others as required

The principal responsibilities of the Committee are as follows:

- to review and adopt the annual work plans of the Project;
- to review and approve the annual budget of the Project;
- to monitor the implementation of the Project according to the adopted annual work plans;
- to review and approve the annual report and financial statements;
- to approve the procurement of equipment and vehicles beyond set limits;
- to put forward suitable solutions to facilitate Project implementation;
- to provide policy support and advice as required for the Project; and
- to coordinate and supervise the implementation of the partnerships between the Project and the relevant agencies.

3.2.5 Federal Level

The NBI is managed by the Nile Council of Ministers (NILE-COM), which brings together the Ministers responsible for water in the Nile Basin countries. Within Ethiopia, the responsible Ministry is the Federal Ministry of Water Resources (MoWR). A Watershed Management Coordination Office (WMCO) within the MoWR has been established, which is assisted by a technical committee with members from different relevant federal institutions, including the MoWR, Ministry of Agriculture and Rural Development (MoARD) and Environmental Protection Authority (EPA). The MoWR through the WMCO will have regular contact with the Eastern Nile Technical Regional Office (ENTRO) in order to provide information about the progress with regard to the implementation of the Project.

The principal responsibilities of MoWR with respect to the project will be:

- Oversight of all activities
- Coordination with other Ministries, ENTRO etc

- Overall provision and management of project funds

3.2.6 Other important institutions and organisations

(a) Financial Institutions

The Commercial Bank of Ethiopia has branch offices in most but not all Weredas situated in the three Project areas. However, the most relevant financial institution in the rural areas with more than 180 sub-branch offices in all the Weredas across the Amhara State is the Amhara Credit and Saving Institution (ACSI). Established in 1995 as a non-bank financial institution, the primary mission of ACSI is to improve the economic situation of low-income, productive poor people in the Amhara region through increased access to lending and saving services.

ACSI should have the administrative capacity to manage a revolving fund to be used for the provision of short- and medium-term loans to individuals, groups and local institutions at Kebele level within the three Project areas.

(b) Non-Governmental Organisations

One of the potential Non-Governmental Organisations (NGOs) with the capacity to provide training services and technical assistance is the Organisations for Rehabilitation and Development in Amhara (ORDA), which has gained relevant experience in the fields of crop production and protection, horticulture, livestock development, SWC, nursery development and management, seedling production and planting, rural water supply and sanitation, small-scale irrigation, promotion of new irrigation technologies (i.e. drip system), water harvesting, promotion of income-generating activities and energy-saving stoves, mainstreaming of gender as well as capacity building of government staff and other NGOs.

In addition to ORDA, a large number of international, national and regional/local NGOs implement activities in various fields, such as health, education, water supply and sanitation, food security and nutrition, agriculture, disaster management as well as water development, including Ethiopian Orthodox Church (EOC), Amhara Development Association (ADA), Green Horizon, GOAL, World Vision, CARE Ethiopia, Save the Children, OXFAM, MSF, COOPI, German Agro Action (GAA), Food for the Hungry International (FHI), Catholic Relief Service (CRS), CONCERN, ActionAid and SOS Sahel.

The Food Security and Disaster Prevention Coordination Office is responsible for the coordination of NGOs that are operational in Amhara State.

(c) Government-Owned and Private Suppliers

In the field of agricultural input supply, a number of enterprises are active in Amhara State, including the Ethiopian Seed Enterprise with a seed farm processing plant in Bahir Dar, the Agricultural Input Supply Corporation and Pioneer Hi-Bred Seeds Ethiopia Plc. There are also companies, such as AIMO Engineering and ACME Engineering and Trading Plc., which are manufacturers and suppliers of various types of equipment, including agricultural implements, potable water supply equipment, (pedal) pumps, drip and sprinkler systems, green houses and beehives.

(d) Contractors

The construction of rural roads, irrigation systems and PWS schemes is normally undertaken by (private) contractors, who are contracted by the Rural Road Authority, BoWRD or development projects.

(e) Cooperative societies

Cooperative societies are established with the support of the Cooperative Promotion section within the Wereda Office ARD. Membership is voluntary and any community member is eligible to become member by paying a registration fee and purchasing at least one share. The major objectives of a cooperative are the provision of agricultural inputs and farm equipment, marketing of agricultural produce, operation of flour mill, sale of consumer goods and credit supply. A cooperative is a profit-oriented enterprise and any profit will be distributed among the shareholders in accordance with their number of shares.

A substantial number of cooperatives have been established in the Wereda located within the Project area. These are listed in Appendix 3 along with their main areas of interest..

3.2.7 Relevant projects and programmes

A significant number of internationally-funded development projects and programmes are or will be implemented in the Amhara National Regional State (ANRS). The Project should use as much as possible the training curricula and materials, extension packages as well as technologies that have been developed by these development projects and programmes. The most relevant development projects and programmes are listed in Appendix 3.

3.3 Arrangement between borrower and implementing agencies

The arrangements between the borrower and implementing agencies will be formalised once the arrangements between the prospective donor(s) and the Government have been established, including any special conditions or covenants that may be incorporated in the financing agreement.

3.4 Institutional and Technical Strengthening

3.4.1 Overview

Institutional strengthening is required at all levels (other than Federal) to support implementation and sustain the project outcomes. This follows the assessments of current capacity and reflects both the need to embrace an integrated development approach in a participatory manner and the lack of facilities at local levels.

The measures taken to build institutional capacity are focussed on the roles each organisation has to take on during and after project implementation. The principal elements of the capacity building are outlined below.

(a) Wereda and Kebele levels

Being at the forefront of the implementation process, the effectiveness of the project's interface with the communities and user groups is of paramount importance. The government agencies lack facilities and capacity to manage this interface. The project therefore will provide additional office space, furniture and equipment, transport (one car and 4 motorcycles per catchment) and temporary accommodation[5] in the project area to facilitate a project presence close to the communities.

The effectiveness of the interface with the communities depends upon the capacity of Development Agents (DA) supported by SMS from relevant partner organisations at Wereda level. There will be a massive upswing in their workload during the project. This will not persist at the same level after the project. The project will therefore provide additional resources in each wereda in the form of the Catchment Implementation Teams. These will operate in support of the DAs principally at kebele level.

Training will be provided to kebele staff, SMS and DAs in topics including community mobilisation techniques, technical subjects etc. A substantial provision has been made also for user group training as a follow up to the variety of interventions planned.

(b) Regional level

The Bureau of Agriculture and Rural Development will be supported by a small Project Coordination Unit to assist the Bureau in managing the project. The PCU will be headed by a national project coordinator externally recruited though an open process.

3.4.2 Training

A detailed training needs assessment will be conducted at the outset of the project by the Training Manager in the Project Coordination Unit. Provision has been made at this stage for the following training to be delivered.

(a) Training of Development Agents and kebele staff including kebele watershed committees

Training for Development Agents and kebele staff is expected to focus in three areas. Firstly they need to be briefed on their role in the project, their responsibilities and the procedures that they will be expected to follow.

Secondly, Development Agents and kebele staff will need to understand the choices that the different interventions offer to the communities, their merits and the implications they have for the commitments communities will need to make during implementation and thereafter to sustain the outcomes. Thirdly, they should be introduced to the techniques of community mobilisation and how the community action planning should work.

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[5] It is suggested that the provision of guesthouses for project staff and other visitors in the project area should be viewed as an opportunity to stimulate community income generation by using project funds to assist with construction and start-up costs of small hotels

(b) Kebele councils

Training for the kebele council should cover similar topics as above, but at a more general level. The main focus should be on the project process and procedures and ensuring the councils understand their specific roles and responsibilities

(c) Cooperatives

Cooperatives are an important institution within the project area and are able to enhance the availability and quality of input supplies and of marketing opportunities for community produce. Whilst acknowledging that there are opportunities for the private sector to directly promote their services to the communities, nevertheless the existing cooperatives have an important role to play. Thus the focus of training for cooperatives is to help them deliver a better service to their members through greater awareness of community needs in terms of the right mix of quality supplies, the opportunities to diversify products they support and for collective marketing in a manner to increase product value.

(d) Subject matter specialist staff (SMS)

The role of SMS staff drawn from the various agencies at wereda level is extremely important in introducing improved technologies and techniques to the communities. However, firstly they need to understand what the project's aims and objectives are and to appreciate the importance of their own contributions to these aims. Secondly, they need to be introduced to the specific measures that are likely to be taken up by the communities under the CAP process and be able to discuss these with the communities in a meaningful manner that will convince the communities that these are worthwhile activities to engage in and to sustain thereafter. Thus SMS will need to know not only about the technical aspects of their subjects, but also how to communicate the value of these in terms the community members will understand.

(e) Training of local contractors

Local contractors will be employed where the scope of works exceed the community's capacity to implement an intervention and/or where it is expedient to have contractors manage a construction programme. The focus of training for local contractors will be on construction techniques, improvements in planning and implementation efficiency, quality control and understanding the terms of contract offered to them.

(f) Training of user groups

User group training has been given a substantial provision in recognition that it is these groups who primarily will sustain the outcomes of the project. The nature of training will clearly reflect the activity which the user group will be involved in, but will generically cover the following.

- **Organisation**: Most user groups will be informal and do not require legal recognition. However, where it is considered beneficial for the group to have legal status, then the group needs to know how to achieve this. Whether formal or informal, nevertheless there is always a need to establish a sense of organisation within the groups and the

training in this area needs to help the groups arrive at solutions that best fit their particular aspirations and requirements.

- **Budgeting**: Groups operate by sharing activities within the membership, who are expected to contribute to the collective good either with cash, kind or their labour. The mix of these contributions depends upon the activity in question. The group needs to have in place arrangements satisfactory to all members that will ensure these contributions are both understood and forthcoming. Where cash is concerned, the need for bank accounts and appropriate accounting procedures has to be considered.
- **Techniques and procedures**: The third area of training needs to address the techniques and procedures adopted by the group in their chosen activity. The focus should be on driving value out of their contributions to the group in both the short and long terms. Thus, the concept of whole life costing needs to be introduced in terms that the group members can understand as well as introducing better ways of operating and maintaining their shared assets.

(g) Training of health extension workers

Health extension workers have an important role in the project to promote a healthier and more productive community that is more capable of sustaining the project outcomes. Refresher training will be provided focussing on basic hygiene improvement, the opportunities to and value of improved diets and malaria control.

(h) Training plan

Further details of the training plan, its programme and estimated cost are given in Annex G.

3.5 Funding Arrangement

3.5.1 Funding sources

The Project will be funded from the following three sources:

- Multi- and/or bilateral donor(s);
- Federal and Regional Government budgets; and
- Individual and groups of community members from the micro-watersheds located within the three Project areas.

Annex C sets out the assumptions made of the communities' contribution to each activity under the project. The split of public investment between the Government and donor(s) cannot be assumed until funding arrangements for the Tana-Beles programme have been worked out.

3.5.2 Funds Flow

MoWR will be responsible at federal level for the provision of project funds, which will be made available to the Project Coordination Unit on an annual budget basis.

The PCU will establish a Project Bank account(s) in accordance with procedures acceptable to the Government and donor(s). Separate imprest accounts will be held by each Catchment Implementation Team.

The PCU will establish project disbursement and accounting procedures to be approved by the Project Steering Committee.

Further details of fund management are given in Annex J.

4 Implementation plan

4.1 Sub-project cycle for micro-watershed development

In order to have a common, standardised and more effective approach within Ethiopia, MoARD has prepared the Community-Based Participatory Watershed Development Guideline. Based on the concepts of participatory and integrated watershed development, the Guideline aims to harmonise and consolidate planning procedures at the grass-root level by providing DAs and rural communities a workable and adaptable planning tool. Participatory (and integrated) watershed development is the key to understanding what needs to be done at various levels to sustain, improve and diversify production while developing and managing the natural resources base, promoting income generation opportunities, increasing access to basic services (i.e. roads, markets, schools, water) and making livelihood systems resilient to shocks (i.e. drought). Furthermore, it also aims to generate greater cohesion within the local communities and the society and to enable its poorest members to benefit from the various assets created and eventually to overcome their food insecurity.

A step-by-step approach to Participatory and Integrated Watershed Management and Development has been prepared after drawing on the Consultant's own experience and consulting the following documents:

- MoARD's Community-Based Participatory Watershed Development Guideline (2005);
- GTZ'S Guidelines for Participatory Land Use Planning (July 2003), from its Land Use Planning and Resource Management Project in Oromia Regional State;
- FAO's Resource Book on Participatory and Integrated Watershed Management in Nepal (2000);
- The participatory approach of the World Bank-funded Karnataka Watershed Development Project in India.

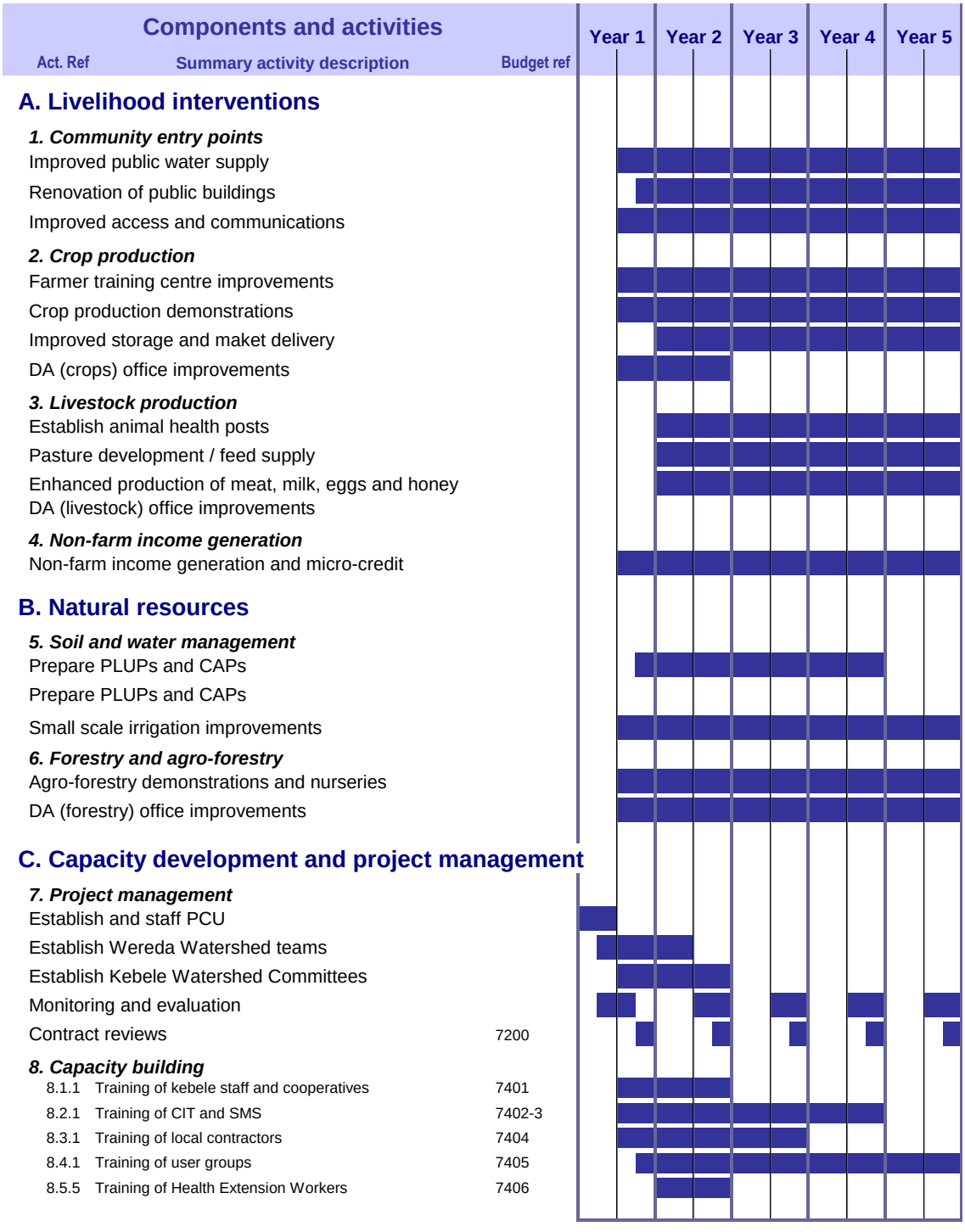
The outcome is the development of a 15-step module for use at micro-watershed level within the three Project areas. Its elements are described in Annex E.

4.2 Time bound implementation plans

The project is planned to be implemented over a five year period. The establishment and staffing of the Project Co-ordination Office in Bahir Dar will be the first task as well as the appointment of the Consultants, procurement of equipments and vehicles and other logistic supports required for the effective implementation of the project. World Bank procurement guidelines will be followed at all times.

A summary project implementation schedule showing all components is presented in Figure 4.1 and is presented in more detail in Appendix 5. Further details of the first 18 months of the programme are given in Annex K.

Figure 4.1 Summary Implementation Plan



Based on this schedule an annual disbursement allocation, with and without contingencies, has been prepared as shown in Annex C. According to this disbursement forecast, the annual disbursement requirement for the total project baseline costs are summarised below.

Project Period	1st year 2008/09	2nd year 2009/10	3rd year 2010/11	4th Year 2011/12	5th Year 201213	Total
Million Birr	38.9	58.9	63.0	73.9	65.3	300.0

4.2.1 Livelihood Component

(a) Community entry points

A priority during the first year will be to plan the establishment of a rural feeder roads programme within each of the three river catchments to facilitate easy access to the project areas. This will have an immediate impact on the livelihood development within the micro-watersheds. The feeder roads programme will focus on the upgrading of existing tracks and footpaths taking off from existing all weather roads where no land acquisition or resettlement is required to undertake the improvements. Where other feeder road alignments require land acquisition, these will be highlighted for other projects to take up.

A study will be launched by the PCU to determine the specific requirements for a technical innovation fund and a new micro-credit facility and arrangements will be made with an appropriate lending organisation to set up a revolving fund to meet project purposes. Procedures for fund management will be determined alongside lending terms.

Also during the first year the development of improved water supplies will be planned with the help of the Wereda Water Resources Department and non-governmental organisations. A start will be made in promoting social services improvements at the Kebele level. This will involve community entry improvements through upgrading the existing infrastructure and facilities at the Kebele health posts, including the provision of improved toilet facilities and an example of a more efficient cooking stove for demonstration purposes. For the local schools provision is made for improvements to the classroom facilities and where not already existing in the Kebele a solar panelled telephone post provided. As a priority, works will be started within those five micro-watersheds selected and studied already as part of this project preparation.

Other physical social services components will await the outputs from the first batch of capacity building at the Kebele level, and will therefore not start until year two. Thereafter as the community action plans are developed for each micro-watershed further interventions in respect of improved drinking water supplies, upgrading of internal access tracks including building new footbridges and the development of small scale enterprise developments will be instigated. A rolling implementation modality is planned.

(b) Crop Production

Crop production components will focus on demonstrations of improved cropping practices and systems. Some 546 separate demonstrations are proposed covering each micro-watershed and will phased over the 5 year project period. Important techniques to be demonstrated include: appropriate improved seed and fertilizer use; integrated pest management; contour ploughing; and stabilization of terraces and gullies with useful trees and shrubs, perennial pasture grasses and leguminous hedgerows for improved cut and carry fodder production. Good ground stabilizers to be introduced along the edge of earth or stone conservation bunds include Vetiver grass, which has a dense biomass with a strong root system but is less palatable to animals.

Important variations to be introduced within cropping systems to stabilize and even improve productivity will be alley cropping; intercropping; cover cropping in tree plantations or orchards; strip cropping; and pasture leys. Demonstrations of high-yielding crop varieties and new crops will be undertaken Possible high value crops to be demonstrated will be: new varieties of potato; malt barley; vegetables; multi-purpose bamboo; and perennial tree crops such as avocado and citrus according to the agro-climate of the area along with market promotion of the produce once the crop is established and accepted.

(c) Livestock Production

The livestock interventions within the micro-watersheds will not start in the field until year two after formation and training of the Wereda watershed teams and Kebele subject matter specialists. Thereafter a continuous programme over the next four years will focus on the establishment of animal health posts, pasture, dairy, sheep and poultry development, establishment of dairy processing and animal fattening programmes

Supporting all the above interventions will be components to strengthen the capacity and facilities available to the DAs and at the farmer training centres within each of the project Kebeles. The training of subject matter specialists within the weredas will provide the necessary technical support to the agronomy, horticulture, and livestock staff at the Kebele level.

4.2.2 Natural Resources Management Systems Component

(a) Soil and Water Management

Soil conservation and water harvesting interventions will commence towards the end of year one within those micro-watersheds identified and studied during the project preparation phase and after completion of their respective community action plans (CAP). At the same time the first batch of participatory land use plans (PLUP) for the adjacent micro-watersheds will be undertaken ready for implementation at the start of year two. The PLUP will categorise the land use within each micro-watershed principally using the degree of land slope with subsidiary classes to depict presently cultivated, grazing, forestry or totally degraded land (identified as badlands). Gullies are to be identified separately.

- Proposed intervention measures appropriate to the different land classes are selected in accordance with the Rural Land Administration and Land Use Proclamation No 456/2005 which requires that:
- Appropriate soil and water conservation measures are applied to all lands with a slope greater than 30%
- Free grazing in areas with soil and water conservation is prohibited
- Cultivation on slopes between 30 and 60% requires bench terracing
- Slopes greater than 60% cannot be used for either cultivation or grazing and area closure and afforestation is required

Further details on the proclamation are given in Appendix A1 of Annex A

In accordance with these guidelines the main interventions proposed according to the slope category are:

- For lands greater than 60% slope, land closure with vegetative fencing and planting of indigenous forestry species and agro forestry trees within micro-basins. A graded cut-off drain to be provide below the area leading runoff water to a suitably protected or existing stable water course
- For lands between 30 and 60%, bench terracing with vetiver hedgerows along the terracing edges and on grazing areas the planting of leguminous hedgerows along the contour together with a staggered closure policy. Badlands are to be closed off with agro forestry or leguminous grasses established. If there is no steeper land higher up the slope, then a graded cut-off drain to be provide above the area leading runoff water to a suitably protected or existing stable water course
- For lands between 15 and 30%, a similar catalogue of measures is proposed, but with appropriately spaced stone faced bunds on the contour along with leguminous hedgerows
- For lands less than 15% earth contour bunds are proposed associated with leguminous hedgerows
- Gullied areas are to be closed off with an upstream cut-off drain to divert water away to a stable watercourse. The gully bottoms and steep watercourses to be treated with appropriately spaced check dams to retard water velocities, retain silt and improve ground water infiltration.

Several other interventions will be introduced as part of the natural resources management component. The promotion of water harvesting at the micro-watershed level will focus at the household on facilities for the collection and storage of rainwater from the local house roofs. Besides improving the household living conditions and the need to carry domestic water long distances particularly in the dry season, it will provide a ready source of potable water and make available resources for the development of kitchen gardens. Roofing sheets will be

provided for the improved house structures with guttering and pipe work to enable water to be collected in for example 300 litre plastic tanks.

Within the micro-watershed areas low cost micro-ponds will be promoted to collect surface water from small catchment areas including the drainage flows from footpaths and cut-off drains. Water collected during the rainy season will be used for livestock and as a supplementary irrigation resource and will also have a secondary benefit in helping to retain residual moisture within the watersheds. Each pond will cover an area of some 50 sq m and be up to 3m deep with sloping sides protected with stone pitching.

Small scale irrigation is identified as an existing practice carried out by some farmers within the micro-watersheds. There is potential to improve these facilities by construction of small stone masonry check dams incorporating simple offtakes across the tributary streams to the main catchment rivers. Discharges in these streams usually range from a base flow of 100 l/sec in the rainy season down to less than 15l/sec at the end of the dry season. Stone lined canals are to be constructed to connect the offtake to the irrigation command area, which typically covers some 5Ha. For irrigated land adjacent to the three main Rivers of Ribb, Gumera and Jema small portable diesel pumps (5hp) are more applicable due to the potential damage to fixed structure from river flooding. An outlet plastic pipe will carry water from the river's edge to the irrigated areas which will be typically some 2ha in size.

To accord with the participatory implementation process all proposed interventions will be discussed with the beneficiaries before implementation in order to reach a consensus on the optimum methods to adopt. This will ensure that they take ownership of the works provided and help to promote their future sustainability. Training in the implementation and maintenance of the works proposed will also be given.

(b) Forestry and Agro-forestry

Forestry and agro-forestry developments are perceived from surveys undertaken during the project preparation study community consultations to be ranked very low in the priority sectors identified within each micro-watershed. There will therefore be a need to initially enter into a dialogue with farmers to establish the rules and regulations by which communities should manage natural forest remnants for different purposes, including bio-diversity, non-timber forest products and selective harvesting.

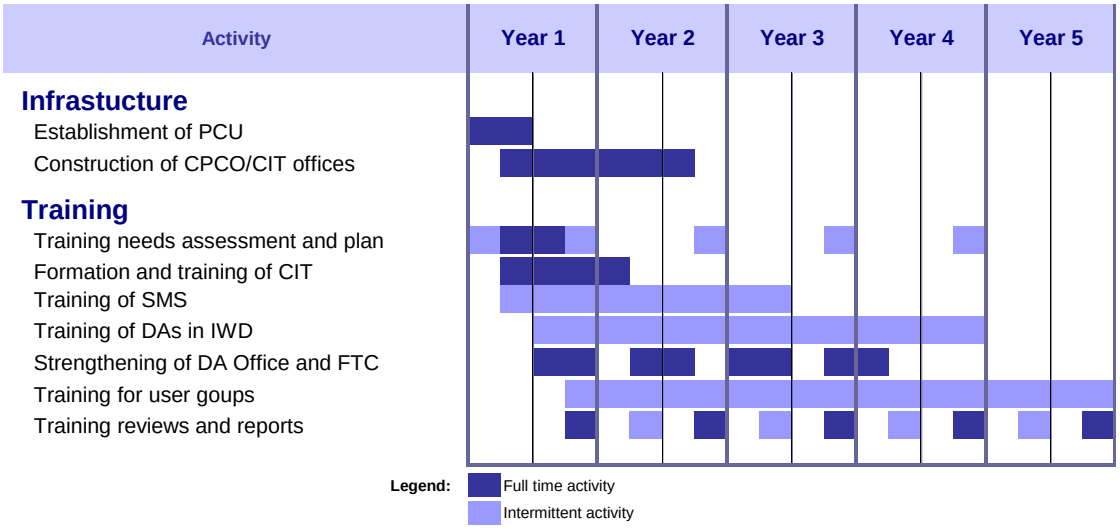
Once farmers have confidence in why and where the planting needs to be done, then the establishment of tree nurseries will be started. This is estimated to be in the second wet season after the commencement of the project unless it begins at the start of a dry season (November). If that is the case, there is a possibility of being ready for nursery establishment in the first wet season thereafter (June-October). Thereafter focus will be on getting the community agreement on areas for temporary closure, including staggered closure and areas for planting, and to create their interest in providing paid labour for further establishment, management and maintenance.

Once the community is convinced of the priority of starting early to prepare for reforestation and commercial agro-forestry, then it is anticipated that the process of nursery establishment, closures, planting, management and maintenance will be fully in place by the third year and continue thereafter to the end of the project period.

4.2.3 Institutional Strengthening

The tentative implementation schedule for institutional strengthening at Wereda and Kebele level is presented in the Table 4.2 below.

Table 4.2 Capacity building schedule



4.2.3.1 Wereda Level

At Wereda level, institutional strengthening comprises the following main activities:

- Establishment of the CIT for each of the five Weredas situated within the three Project areas by recruiting the key CIT staff either directly or through a NGO (i.e. ORDA) or a private company. It is anticipated that the CITs in Farta, Esti and Mecha Weredas will be formed during the second quarter of Year 1 of the Project implementation period.
- To prepare the newly employed CIT staff for their tasks and functions, the PCU will organise the provision of training in all necessary topics, including all aspects of participatory integrated watershed development. The three CITs will receive training from the third quarter of Year 1 onwards
- The SMS from the different Wereda Offices, which will be involved in the implementation of the Project, would receive training for about 30 days over a period of 1 year in accordance with the results of training needs assessments. The training of the 75 SMS in Farta, Dera and Mecha Weredas would start from the second quarter of Year 1, whereas the training of the remaining 50 SMS in Este and Sekele Weredas would commence in the first quarter of Year 2. In addition, refresher training courses would be conducted for about 10 days for all concerned SMS during the subsequent years.

4.2.3.2 Kebele Level

The proposed institutional strengthening activities at Kebele would include:

- Two-week training of the DAs from the 35 Kebeles in all aspects of participatory integrated watershed development, including their roles, functions and responsibilities;
- Provision of 5-day training each quarter for all DAs in various technical topics related to NRM, agriculture and livestock for a period of 3 years;
- Supply of furniture, equipment and tools to the DA Offices and FTCs in the 35 Kebeles;
- Provision of training budget to each DA Office in the 35 Kebeles for a period of 3 years;
- Provision of training to the 35 KWCs for 10 days and 35 Kebele Councils for 5 days; and
- Improvement of the management capacity of the existing cooperatives in the 35 Kebeles through the provision of training for about 20 days.

The institutional strengthening at Kebele level will be implemented in a staggered manner, starting with 11 Kebeles in three Weredas in Year 1. Subsequently, institutional strengthening activities will commence in another 12 Kebeles in the first quarter of Year 2 followed by the third batch of 12 Kebeles in the third quarter of Year 2.

4.3 Procurement Actions

Procurement of works, goods and services required for different components are to be managed in general as follows:

Description	**Method**
Works (construction)	Direct Contracting and NCB according to threshold values, or community participation procedures
Good (equip, vehicles etc)	International and National Competitive Bidding as appropriate
Trainings	NGO/Private Sector
Technical Assistance	Expatriate Consulting Firm through ICB and National Agencies through NCB

All procurement will follow the IDA procurement guidelines as revised in October 2006. The thresholds for procurement methods and prior review as prescribed by IDA will be followed. IDA standard bidding documents (SBD) for International Competitive Bidding (ICB) and National Competitive Bidding (NCB) as agreed by the Government of Ethiopia will be used.

4.3.1 Soil and Water Conservation Works

These works will be very small in nature, scattered throughout the Kebeles and 5 Weredas and scheduled at various times over the five year project period. The works will consist mainly of soil conservation interventions, environmental protection measures including gully remediation, small scale irrigation improvements, internal access path and low cost micro-pond installations. These works will only be implemented on demand and after agreement with the beneficiaries and on agreed cost sharing arrangements. The works will be implemented through the Project Co-ordination Office and the funds disbursed through the Wereda Finance Office to the Kebele Councils. The majority of the works will be executed through community participation procedures though single source direct contracting may be appropriate where a contract package can be formulated having a value of less than US$50,000. The direct contracting procedure will be used where it could be difficult to obtain different price quotations and they are not expected to reduce total costs, due to the reluctance of many contractors to working in the more remote areas.

4.3.2 Supporting Livelihood Components

These works will consist mainly of improved public water supplies, rural all weather access roads, foot bridges, and social service improvements at the Kebele level. Works estimated to cost more than US$50,000 per contract will be procured under contracts awarded on the basis of NCB procedures acceptable to the IDA. There may be however some works in the more remote locations, calling for direct contracting or alternatively direct local shopping procedures to be applied on the basis of quotations obtained from three qualified domestic contractors.

4.3.3 Equipment, Vehicles and Materials

The goods to be procured under the project include vehicles, office equipments and accessories as well tools, field equipment and spare parts. It is anticipated that only the procurement of the project vehicles and motorcycles will be through ICB procedures in accordance with IDA guidelines. All computers and peripherals, office equipment, furniture and training equipment for the Project Coordination Unit and CPCO Offices will be procured through NCB procedures in accordance with IDA threshold values. Direct Contracting procedures will be applied for the procurement of the Kebele level goods such as books, proprietary and field equipment and spares, and extension and publicity materials also in accordance with IDA threshold values per contract.

4.3.4 Consultancy Services

Staffing for the Project Co-ordination Unit and the CPCO (Catchment Implementation Teams) will be recruited through a process of open recruitment under guidelines established by the PCU. Such consultancy services as may be requiredwill be by direct appointment on a negotiated basis to ensure the most appropriate consultants are selected.

4.3.5 Training

For the training of the subject management specialists at the Regional level a procurement contract will be established with an appropriate local non-governmental organisation, or private

sector entity with participatory experience and considerable local knowledge in the Amhara region. It is proposed that the short list will not include consulting firms. As the training contract is likely to be less than US$100,000 single source selection will be appropriate, otherwise QCBS procedures in accordance with IDA guidelines will be adopted.

4.3.6 Procurement Planning and Contract Review

Prior to the issuance of any invitations to pre-qualify for bidding or to bid for contracts, the proposed procurement plan covering the initial project period of 18 months shall be furnished to IDA for its review and approval. Procurement of all goods and works shall be undertaken in accordance with the procurement plan and updated on an annual basis. In accordance with the procurement guidelines IDA will conduct a prior review of all procurement documents and after bids are received review the detailed report on the bid evaluation and recommendations for award. If there is a request to material extend a contract period or modify the conditions of a contract resulting in the increase in the contract amount by more than 15% then IDA are to be asked for their concurrence to proceed

4.4 Implementation of Environmental Management and Social Actions

The Environmental and Social Assessment of the proposed project, covering both the natural environment and the social/economic aspects, is given in a self standing document as Annex F of the Project Implementation Plan. The document outlines the procedures necessary for following the regulatory and institutional arrangements for environmental assessment in Ethiopia (specifically in the Amhara National Regional State) and also for projects managed by the World Bank.

4.4.1 Procedural Requirements for Environmental Assessment

The main conclusions of the review of regulatory requirements for environmental assessment for the proposed project are that, under the current Ethiopian system, the responsibility for following the procedures lies with the project proponent. It is envisaged that the project proponent will be the Bureau of Agriculture and Rural Development (BoARD) at the regional level. The whole of the project area falls within the boundaries of Amhara National Regional State and thus lies within its remit and not that of Federal Government. The regulatory function for reviewing and approving the environmental assessment work that is to be carried out by the project proponent lies with the Amhara Regional Environmental Protection, Land Administration and Use Agency. The framework for environmental assessment procedures in Ethiopia broadly conforms to international best practice and the Safeguard Operational Policies and Bank Procedures of the World Bank.

4.4.2 Environmental Scoping and Screening

The environmental assessment work carried out at the current stage of project formulation is given in Annex F and includes a baseline environmental profile of the project area, covering both the natural and human/social aspects. The main environmental constraints and risks to rural development have also been identified. Annex F also gives the results of the needs assessment work carried out with local people, including prioritisation of sectors for action, as

well as specific targeted interventions that they put forward. The proposed interventions have been screened for potential impacts (both adverse and positive) and the results are written up in Section 6 of Annex F.

The main natural and social risks and hazards that have been identified include:

- Erosion and Land Degradation (compounded by high human population densities)
- Unpredictable rainfall
- Food security
- Human disease
- Floods
- Storms in the highland areas

The key existing environmental issues that act as constraints to rural development in the area and have been taken into consideration when formulating the proposed interventions and include:

- Human population pressure
- Land degradation
- Climate and weather patterns
- Rural energy balance
- Livestock numbers and management
- Human health conditions
- Education levels
- Physical access (especially in the Jema sub-catchment)

The proposed interventions have been drawn up in response to the results of the needs assessment and include specifically targeted measures to address environmental issues in the project area. The results of the environmental screening of the proposed interventions indicate that there are no significant adverse impacts and there is the potential to achieve considerable environmental benefits. The main reason for this is that the interventions have been specifically designed to be environmentally pro-active. The main thrust of the environmental management objectives of the project should be to maximise environmental benefits whilst ensuring that no unexpected adverse impacts occur. Even if the objectives of the project were not to be fully met then the risk of adverse environmental impacts due to the project is minimal and would certainly result in less environmental degradation than if the project were not implemented.

4.4.3 Implications for World Bank Safeguard Policies and Procedures

The results of the environmental screening exercise indicate that there should be no need to invoke the special requirements of the following World Bank Operational Policies and Bank Procedures:

4.04 Natural Habitats

There are protected natural forests in the project area including one in one of the priority micro-watersheds (Enkulal on the southern side of the Gumera sub-catchment has an area of locally protected natural forest within it at its upstream end). As part of the interventions for the soil and water conservation component, designated forest areas will be subject to a closure policy to prevent grazing and incursion with the objective of allowing their condition to improve. The project will thus be beneficial for these existing important natural habitats.

4.09 Pest Management

The support programs for crop production will include promotion of appropriate pest management. It is highly unlikely that large quantities of agricultural chemicals will be used, partly for the reason that the prices of such chemicals are high, as they are imported.

4.10 Indigenous People

All of the people in the project area belong to the large Amhara ethnic group and there are no groups of minority indigenous people as defined by the World Bank.

4.11 Physical Cultural Resources

The oldest items of physical cultural resources in the project area are the churches which are located on hill tops and surrounded by small areas of protected natural forest and/or grassland. None of the proposed interventions will adversely impact these areas.

4.12 Involuntary Resettlement

None of the proposed interventions will require land acquisition (this was a pre-requisite of intervention formulation). The road improvement proposals are confined to existing alignments. As a result there will be no involuntary resettlement.

4.36 Forests

As with Natural Habitats, the proposed interventions are designed to strengthen the current management system of forest lands by instigating a policy of closure to allow them to regenerate. In addition there is a proposed programme for planting of trees, with an emphasis on indigenous varieties that will also provide economic and environmental benefits.

Under the World Bank's environmental assessment classification of different types of intervention, watershed management is a Category B (Section h) and does not require a full Environmental Impact Assessment. Other components have been rated and it would appear that none require a full EIA to be carried out, particularly as the interventions are small-scale. However care will need to be exercised over the potential for cumulative impacts (particularly for road improvement) and possible complex inter-related impacts when the interventions are replicated over wider areas.

Under the Ethiopia EIA Procedural Guideline of November 2003, Annex III Section 1 outlines the types of agricultural development that require a full EIA. It would seem that the implementation of the proposed interventions in the initial five micro-watersheds, each with an area of no more than 1,000ha, will not require a full EIA. However the wider program of around 80,000ha will need to be assessed once the detailed nature of the proposed interventions, specifically their locations and size, are formulated during the project implementation process.

4.4.4 Environmental Management Framework for the Proposed Interventions

The next crucial step in the environmental assessment process can only be taken once it is formally agreed who will be the project proponent. The recommendation is for this role to be entrusted to the Regional Bureau of Agriculture and Rural Development (BoARD). The proponent will then be responsible for arranging for an environmental assessment to be carried out following the requirements of the Regional Environmental Protection, Land Administration and Use Agency. The environmental assessment report given as Appendix F has been structured in such a way that it can be used as a basis for a report required to be produced by the project proponent. However discussions between the project proponent and the regional environmental regulatory agency will need to be held at an early stage to agree a procedure for environmental approval, taking into consideration the phased nature of the intervention program and the fact that the detailed location and size of interventions will not be fixed until the formulation process with local people has been carried out as part of the initial phase of the project implementation process.

4.4.5 Institutional Assistance and Strengthening for Environmental Management

It is envisaged that the existing regional level institutions will handle the environmental management and monitoring aspects of the proposed project. It is not intended that a separate project specific institutional structure will be established for this purpose. However it is considered necessary that the existing institutions (both the project proponent and the environmental regulatory authority) will require some assistance and strengthening to ensure that the project follows the required environmental management procedures. The objective is to avoid any potential delays to project implementation brought about by insufficient attention being paid to these requirements and the need for timely approval of permits.

4.4.6 Environmental and Social Monitoring

During and after project implementation there will be a need to monitor key environmental parameters to see if the project objectives are being met. These parameters are likely to include:

- Any changes in land degradation
- Sediment levels in the river system
- Household livelihoods, including health conditions and education levels
- Levels of agricultural production, including data on crops, forestry and livestock

A detailed monitoring programme can be drawn up once the precise nature of the interventions (specifically their location and size) has been fixed during the final intervention formulation process. The finalisation of detailed interventions should be completed in the initial part of the project implementation process.

5 Monitoring and evaluation

5.1 Logical Framework

This chapter presents the proposed approach to monitoring and evaluation of project activities and interventions and this approach has been based on the project's Logical Framework as presented in Appendix 1.

The logical framework approach provides a sound basis for the planning and management of development projects and is an indispensable tool for the monitoring and evaluation (M&E) of project performance and impact.

Project M&E comprises: (i) baseline surveys, (ii) participatory monitoring and the establishment of a management and information system (MIS), (iii) process monitoring and evaluation, (iv) environmental monitoring, and (v) impact evaluation.

5.2 Baseline Surveys

Physical and socio-economic baseline data has been collected from the five study micro-watershed (i.e. Baskura, Kantai, Zefie, Enkulal and Engule) and this information will provide the basis for the future monitoring and evaluation of project activities within these micro-watersheds. However, when the project extends to other micro-watersheds within the selected sub-catchments, further baseline surveys will have to be undertaken for these additional micro-watersheds.

It is also important to note that baseline data has not been gathered with respect to soil erosion, runoff and downstream sedimentation, so this will be undertaken during project implementation as part of the environmental monitoring programme.

5.3 Participatory Monitoring

MIS based participatory monitoring is designed to record the progress of the project in order to facilitate project management and supervision as well as to prepare project progress reports. The MIS would comprise the recording of technical and financial data related to the planning, decision making, approval, implementation and completion of all project activities being undertaken by participating communities within the selected sub-catchments. A participatory approach to performance monitoring will be adopted to ensure that beneficiary communities, with the support of the Community Watershed Management Teams (CIT), are fully involved in the provision of timely and reliable information to decision makers.

5.4 Process Monitoring and Evaluation

As the planning and implementation process will not be captured in the MIS, the project will also undertake independent process monitoring and evaluation which will comprise an assessment of:

(i) planning, submission and approval procedures for community action plans (CAPs) and project investments;

(ii) financing mechanisms and flow of funds;

(iii) effectiveness of the community participation in the planning, implementation and management of project interventions at kebele level;

(iv) organisation and management structure and institutional capacity at all levels of project management,

(v) linkages and interactions between implementing agencies at regional, wereda and kebele levels,

(vi) adherence to overall project plans and to safeguard policies as recommended in the social and environmental assessments.

Process monitoring will be conducted by an independent organisation such as a NGO or local consultant.

5.5 Environmental Monitoring

This will primarily focus on assessing the effectiveness of the different SWC measures with respect to reducing soil erosion, run off and downstream sedimentation. Environmental monitoring will be undertaken by PCU staff.

5.6 Impact Evaluation

During project evaluation, the overall impact of project interventions will be assessed. Comparisons will be made between the situation at the beginning of the project (based on the information gathered during the present study) and data collected at the time of evaluation. Evaluation of the project's outcomes and impacts with respect to achieving the outputs and development objectives of the project (as set out in the logical framework) will be undertaken by an independent organisation at the end of the implementation period.

Appendix

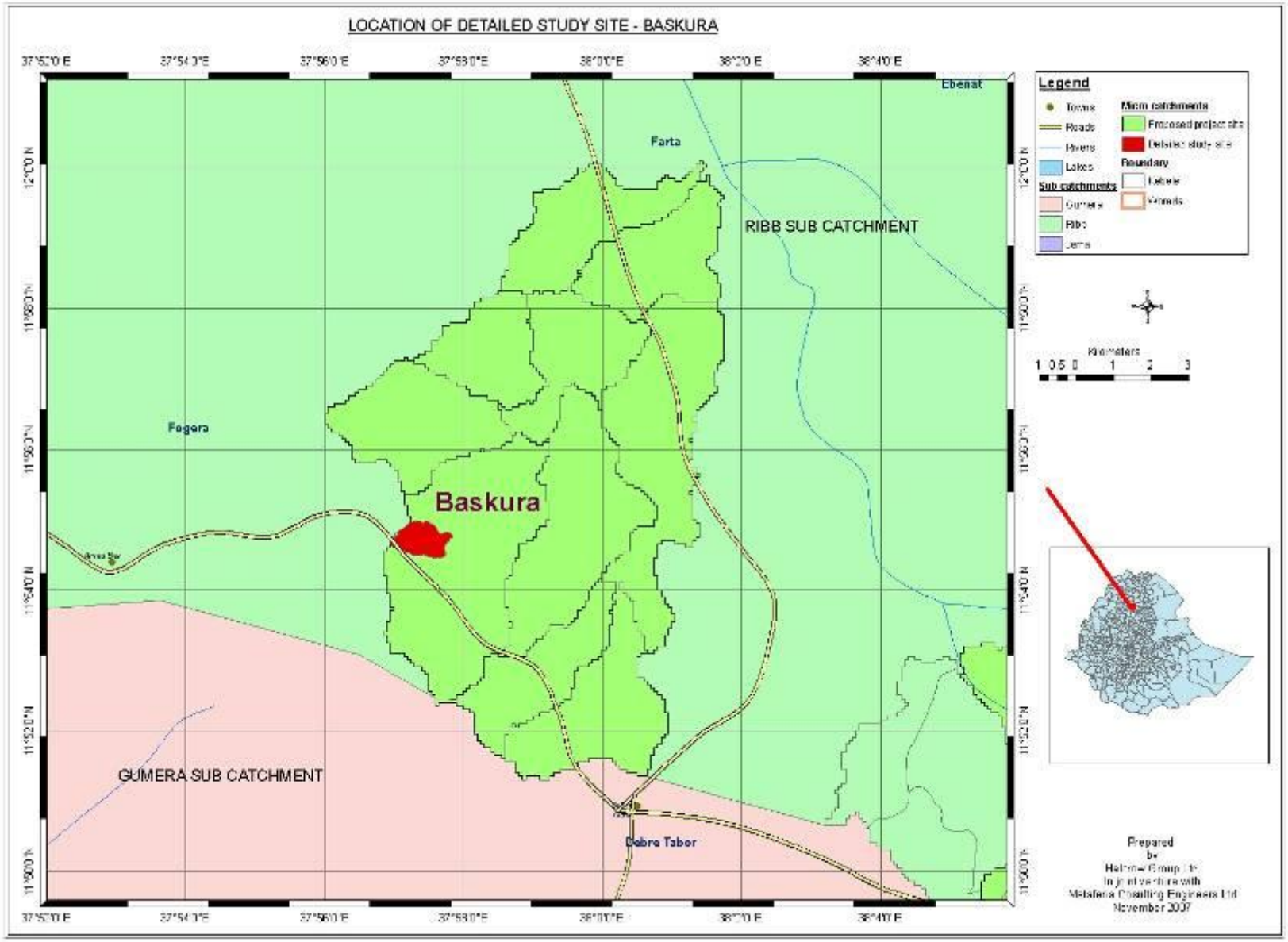
Appendix 1: Maps

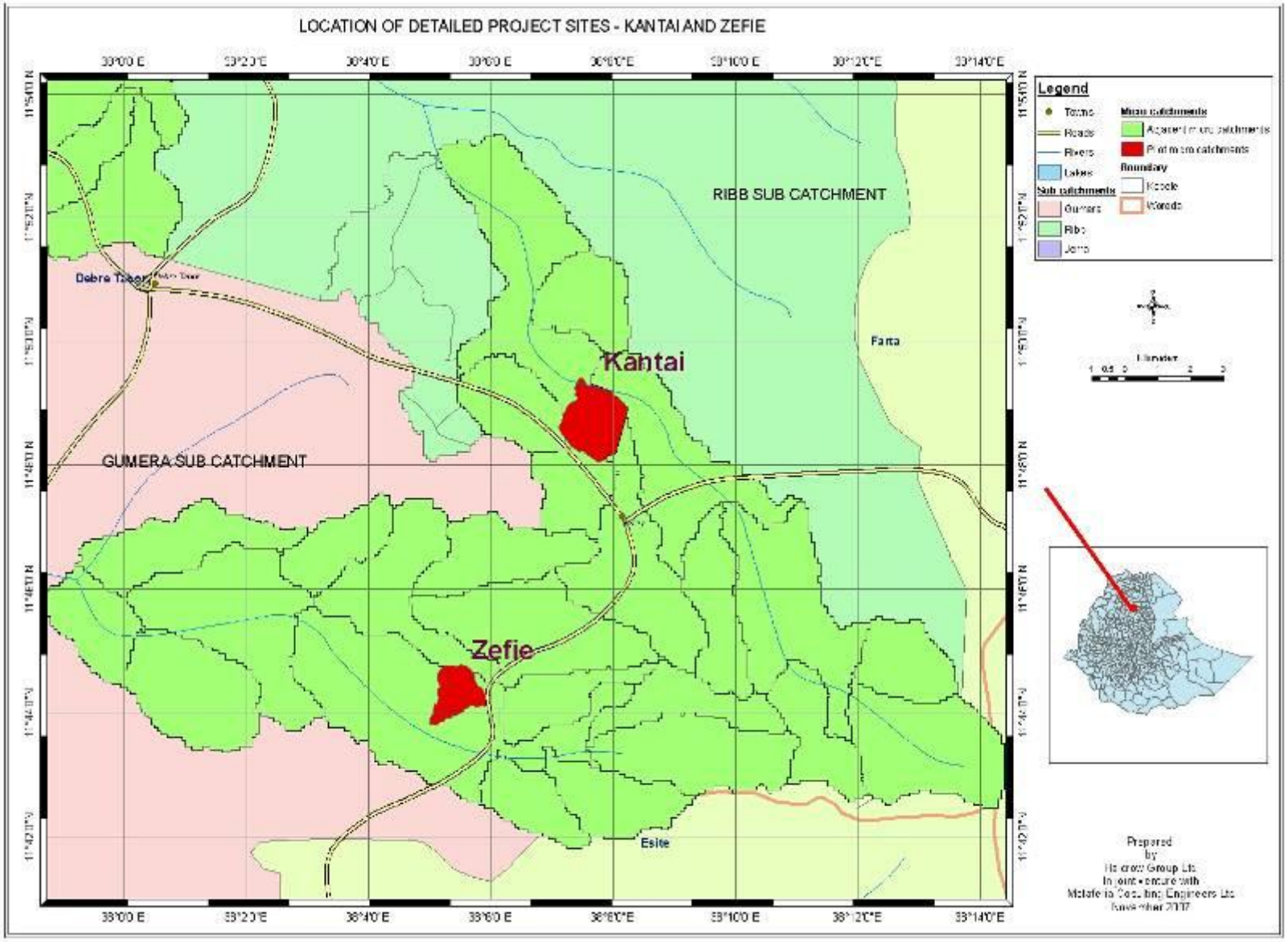
Project area maps

- Baskura
- Kantai and Zefie
- Engkulal
- Engule

Sub-catchment slope area maps

- Baskura
- Kantai and Zefie
- Engkulal
- Engule


LOCATION OF DETAILED STUDY SITE - BASKURA
Legend
Towns
Roads
Rivers
Lakes
Sub catchments
Main catchments
Boundary
Ebenat
Farta
RIBB SUB CATCHMENT
Fogera
Baskura
GUMERA SUB CATCHMENT
Debre Tabor
Kilometers
Prepared
by
November 2007


LOCATION OF DETAILED PROJECT SITES - KANTAI AND ZEFIE
RIBB SUB CATCHMENT
GUMERA SUB CATCHMENT
Kantai
Zefie
Debre Tabor
Farta
Esite
Legend
Towns
Roads
Rivers
Lakes
Sub catchments
Gumara
Ribb
Jema
Meso catchments
Boundary
Kebele
Woreda
Prepared
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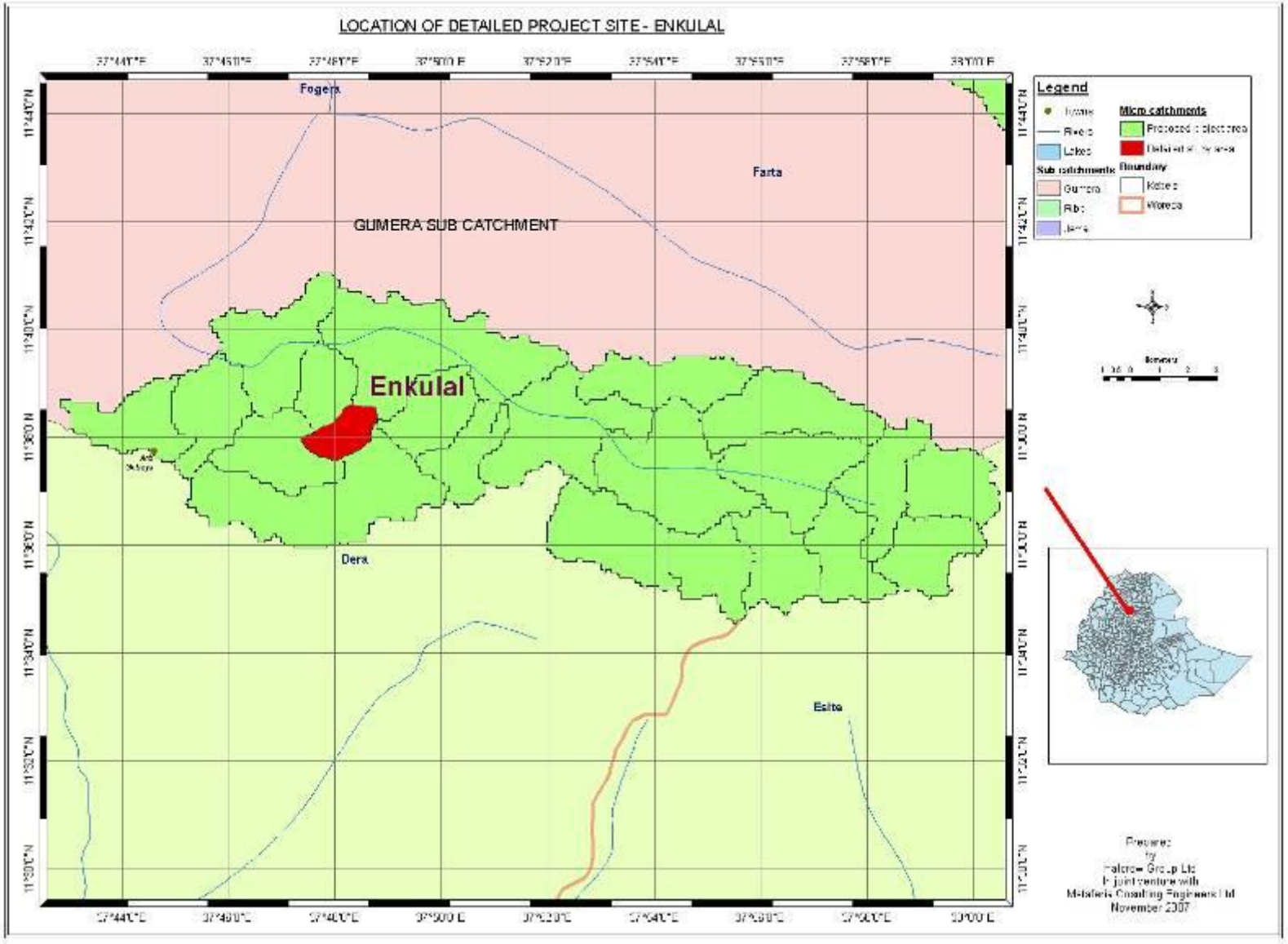
Tahal Group Ltd.
In joint venture with
Mahafe Consulting Engineers Ltd.
November 2007


LOCATION OF DETAILED PROJECT SITE - ENKULAL
Fogera
Farta
GUMERA SUB CATCHMENT
Enkulal
Dera
Esite
Legend
Micro catchments
Sub catchments
Gumera
Rib
Boundary
Woreda
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in joint venture with
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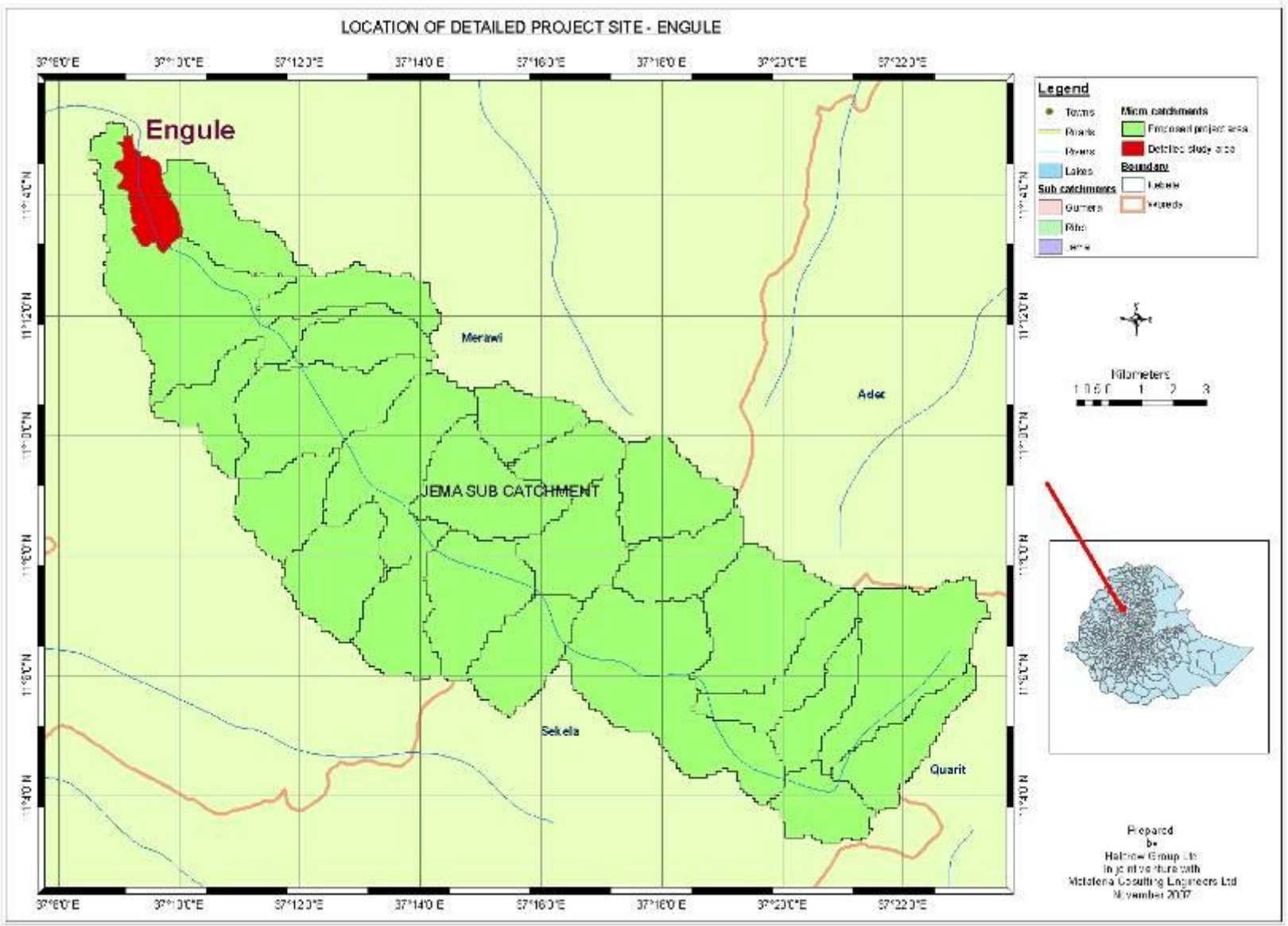
LOCATION OF DETAILED PROJECT SITE - ENGULE
Engule
Merawi
Adet
JEMA SUB CATCHMENT
Sekela
Quarit
Legend
Towns
Roads
Rivers
Lakes
Sub catchments
Gumera
Ribb
Main catchments
Proposed project area
Detailed study area
Boundary
Kilometers
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Prepared
by
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in joint venture with
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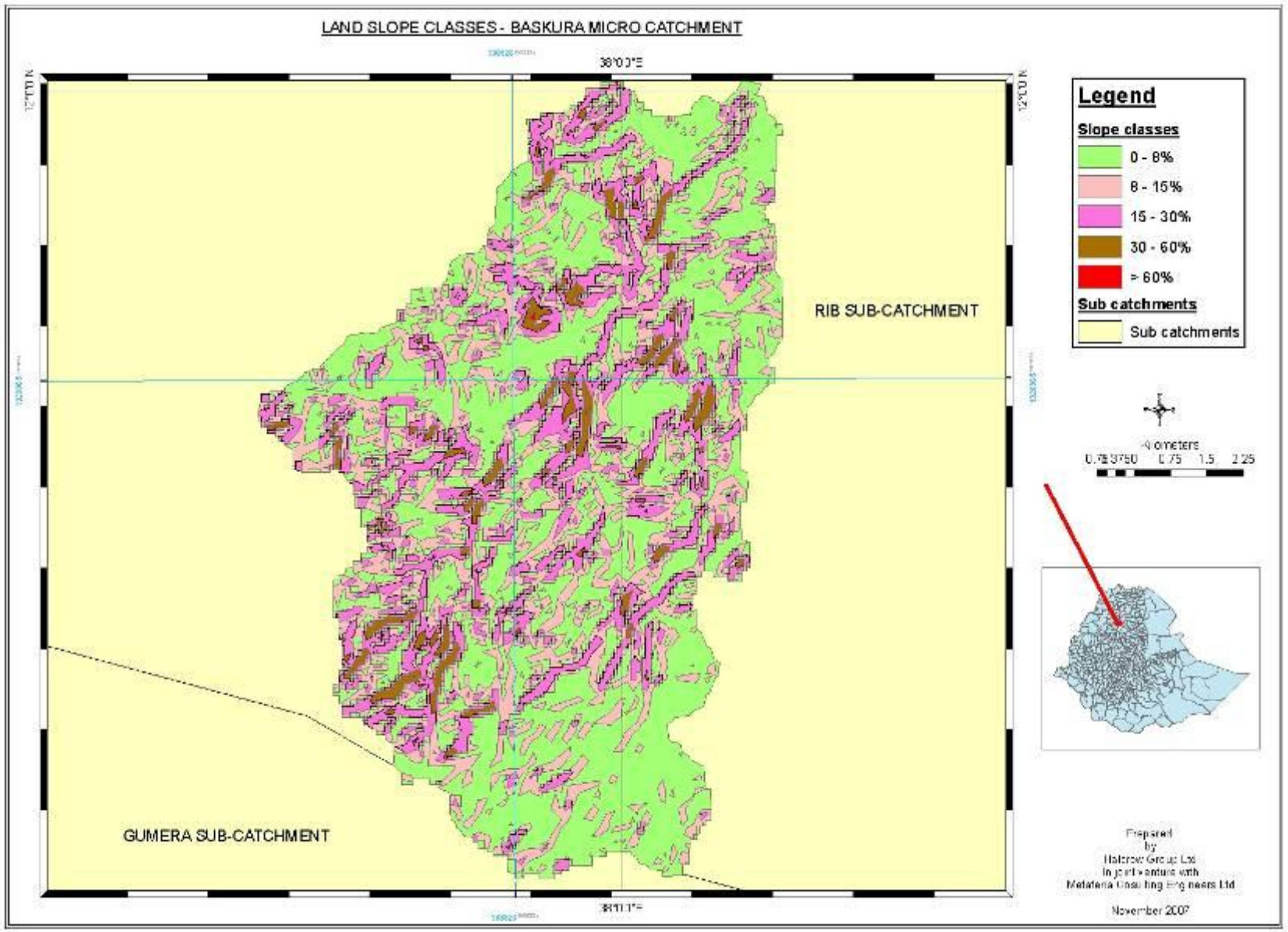
November 2007


LAND SLOPE CLASSES - BASKURA MICRO CATCHMENT
38°0'0"E
12°0'0"N
RIB SUB-CATCHMENT
GUMERA SUB-CATCHMENT
Legend
Slope classes
0 - 8%
8 - 15%
15 - 30%
30 - 60%
> 60%
Sub catchments
Sub catchments
Kilometers
0.75
1.5
2.25
Prepared
by
Hydrow Group Ltd
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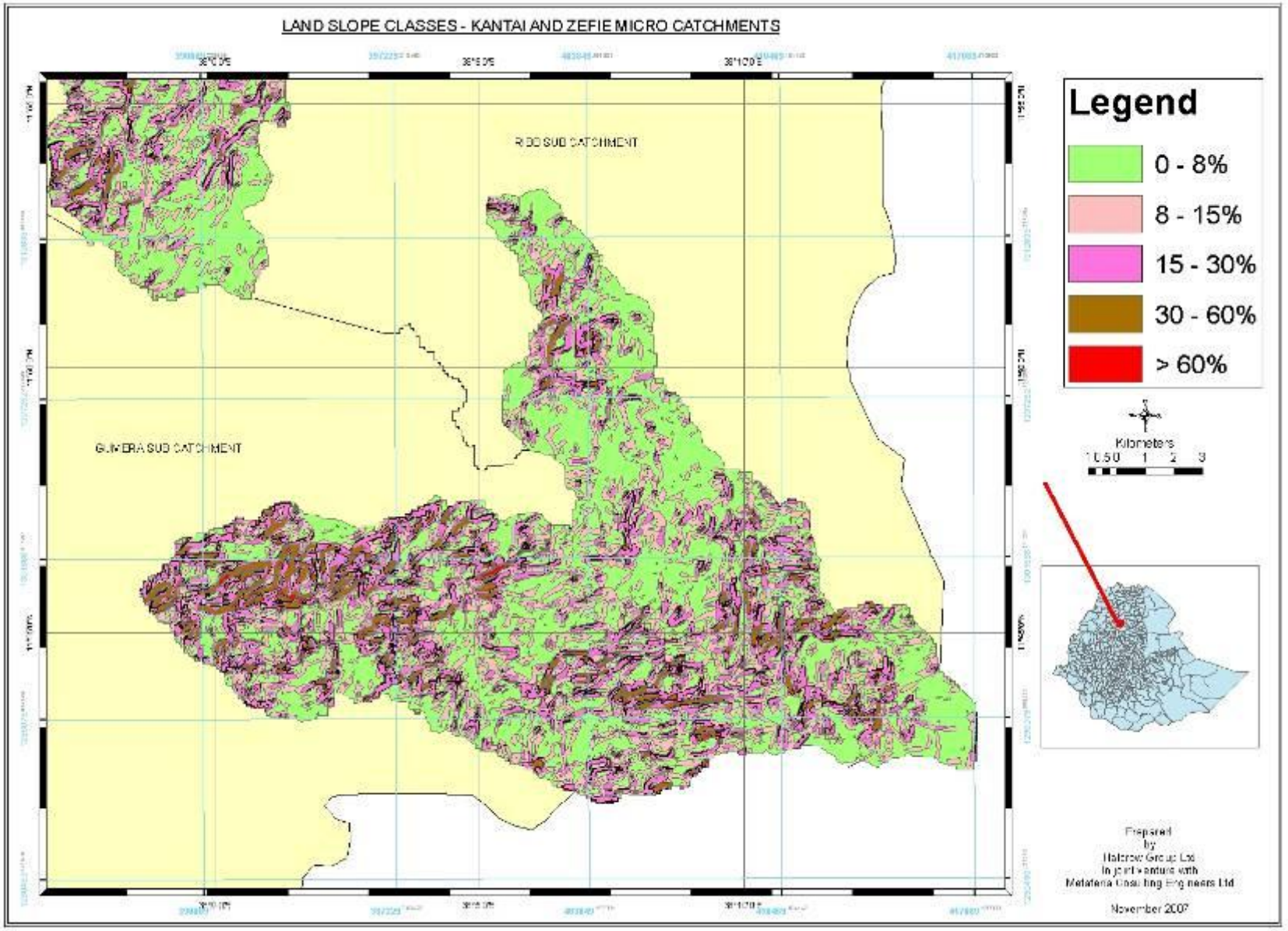
Metafera Consulting Engineers Ltd
November 2007


LAND SLOPE CLASSES - KANTAI AND ZEFIE MICRO CATCHMENTS
R3D SUB CATCHMENT
GUMERA SUB CATCHMENT
Legend
0 - 8%
8 - 15%
15 - 30%
30 - 60%
> 60%
Kilometers
0 0.5 0 1 2 3
Prepared
by
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In joint venture with
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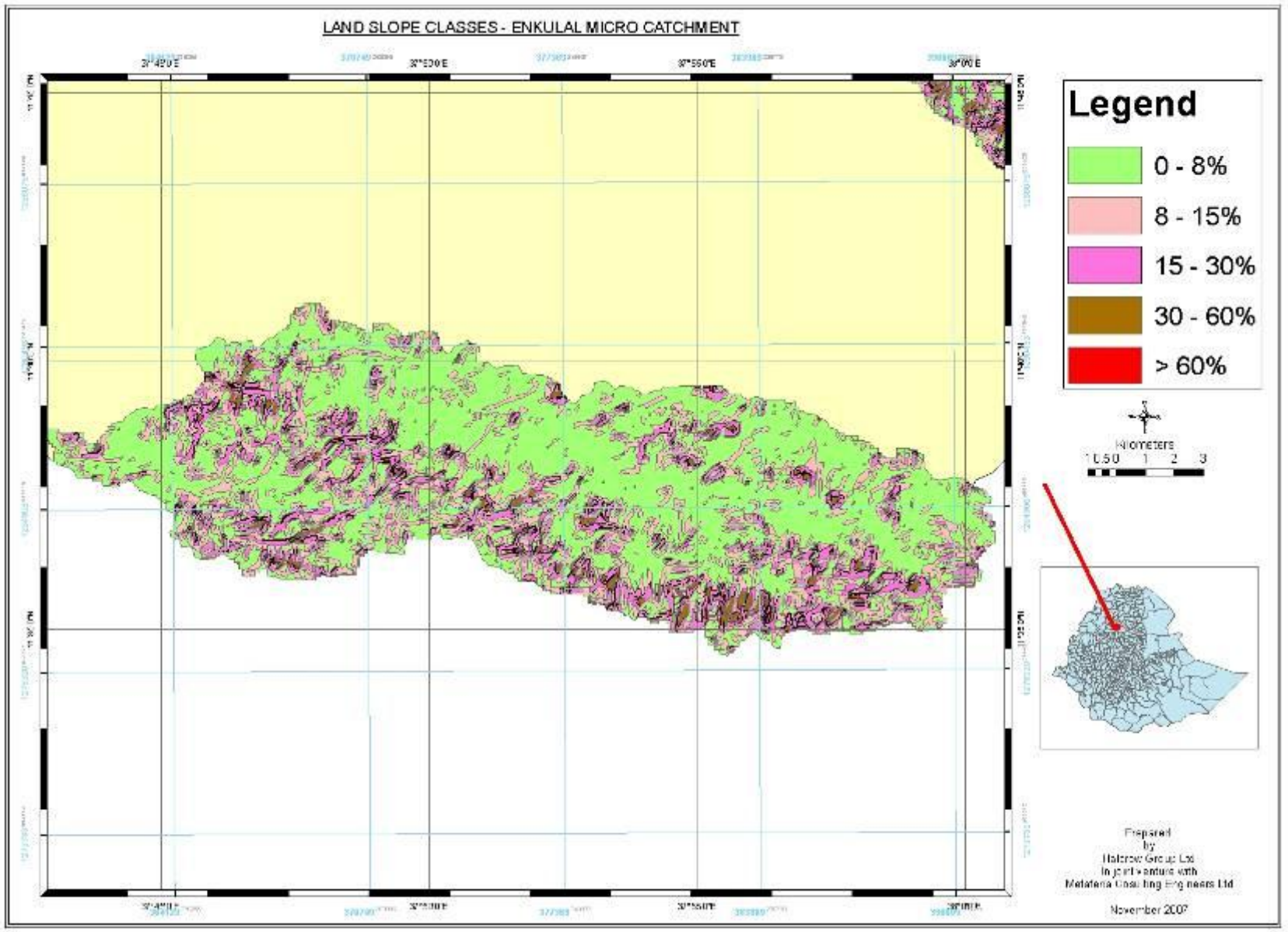
November 2007


LAND SLOPE CLASSES - ENKULAL MICRO CATCHMENT
Legend
0 - 8%
8 - 15%
15 - 30%
30 - 60%
> 60%
Kilometers
0 0.5 1 2 3
Prepared
by
Hidroc Group Ltd
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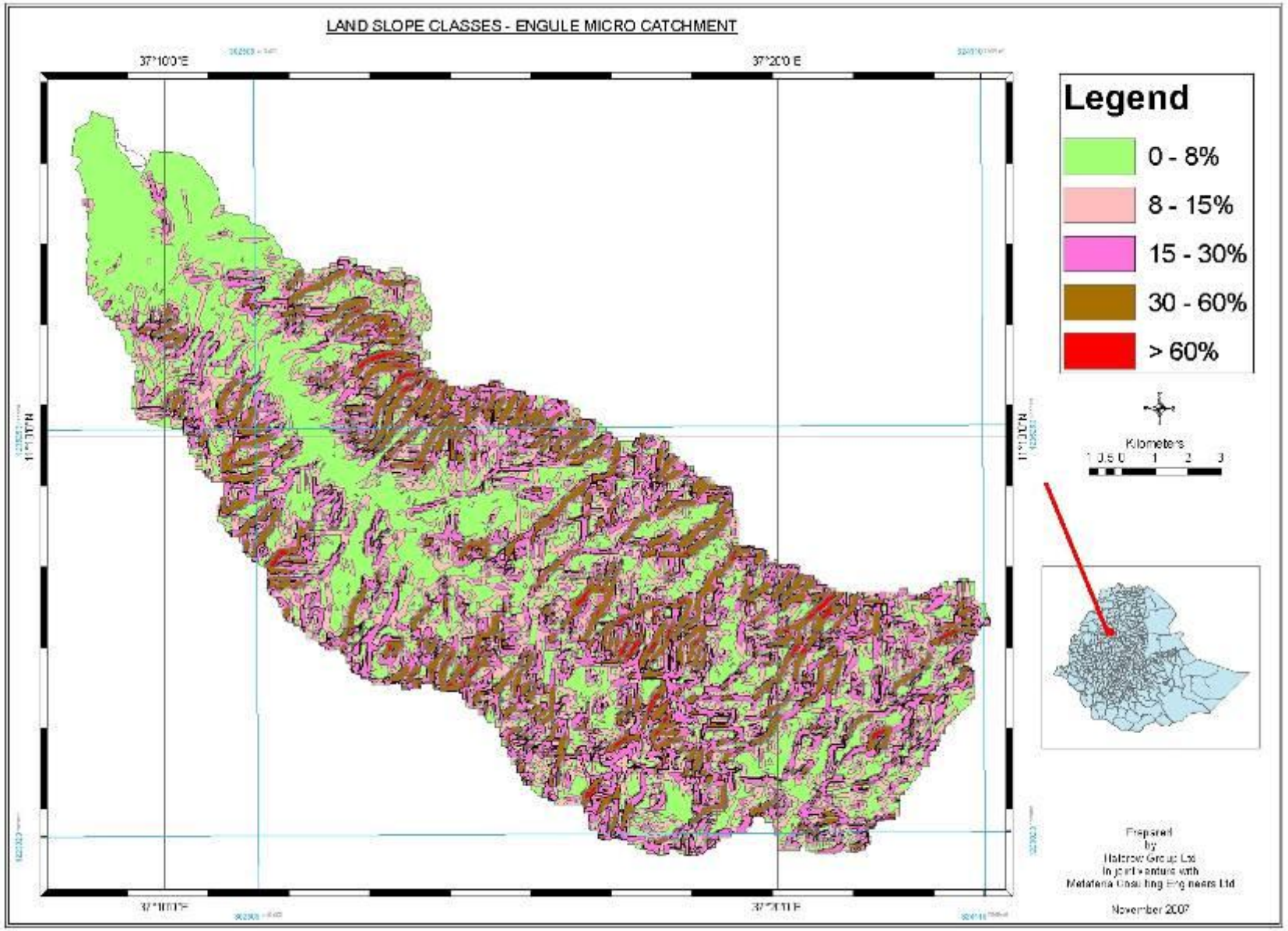
Metafera Consulting Engineers Ltd
November 2007


LAND SLOPE CLASSES - ENGULE MICRO CATCHMENT
37°10'0"E
37°20'0 E
Legend
0 - 8%
8 - 15%
15 - 30%
30 - 60%
> 60%
Kilometers
1 0.5 0 1 2 3
Prepared
by
Hatarow Group Ltd
In joint venture with
Metafera Consulting Engineers Ltd
November 2007

Appendix 2: Project log frame

Logical Framework for Eastern Nile Integrated Watershed Development Project

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions/Risks
Goal			
Sustainable livelihoods and natural resources management systems in Eastern Nile Watershed through community participation	❑ Per capita income growth of 3% to 4% per annum; ❑ % of population below poverty line continues to fall by about 2.5% of population per annum; ❑ No food insecurity.	❑ Household Income and Consumption Surveys; ❑ Statistics and other data from government institutions, NGOs and other sources.	❑ Communities remain cohesive and maintain SWC measures; ❑ Social infrastructure and services continue to improve; ❑ Agricultural support services are sustained
Project Development Objective			
Improvement of livelihoods of rural households living in upper catchments of Ribb, Gumera and Jema Watersheds through enhanced productivity and promotion of sustainable land use practices	❑ Household income rise by 70% (from ETB 4,000 to ETB 7,000 between 2008 and 2018 ❑ % of population below poverty line is reduced from 65% in 2008 to 40% by 2018; ❑ % of food insecure households in normal year reduced from 33% in 2008 to 10% in 2018.	❑ Project impact evaluation report; ❑ Government statistics; ❑ Project progress and project completion reports; ❑ Mission reports from funding agencies.	❑ Communities willing to maintain SWC and rural infrastructure; ❑ Collaboration between relevant government and non-government stakeholders is sustained ❑ Frequency of serious droughts and floods remains unchanged

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions/Risks
Outputs			
Theme A: Livelihoods			
Component 1: Community Entry Points			
1.1 Improved access to potable water and enhanced sanitation facilities 1.2 Renovation of buildings and provision of furniture, equipment and materials for primary schools and health posts 1.3 Improved access and communications within kebeles	❑ 1,250 roof water harvesting structures, micro-ponds & hand pumps established and 657 springs developed by 2013; ❑ 166 improved sanitation units provided in 35 kebeles. ❑ Primary school and health post facilities improved in 35 kebeles by 2013; ❑ 135 km of access roads constructed or upgraded by end of project in 2013; ❑ 192 km of internal access paths constructed or upgraded by 2013; ❑ 232 of footbridges constructed by 2013; ❑ 35 telephone posts established (one in each kebele) by 2013.	❑ Project progress reports; ❑ Construction completion reports; ❑ Community records; ❑ Project MIS data; ❑ Financial records; ❑ Audit reports	❑ Communities willing to contribute labour or funds for the construction of roads, footpaths and other public infrastructure; ❑ Communities are willing to provide land for road and footpath construction; ❑ Adequate government funds are provided in a timely manner

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions/Risks
Component 2: Crop Production			
2.1 Improved facilities and equipment for Farmer Training Centres (FTCs) 2.2 Increased crop production (cereal, oilseed, pulse & horticultural crops) through demonstration and up-scaling of improved cropping systems and adoption of new crops. 2.3 Improved storage and market delivery 2.4 Improved agricultural extension services	❑ 35 FTCs upgraded by 2010; ❑ Average yields for cereal, oilseed, pulse and horticultural crops increased by at least 25% between 2008 and 2013; ❑ Area cultivated under high-value crops has increased from 2,500 ha to over 4,000 ha by the end of the project in 2013; ❑ Quantity of produce reaching market increased by 30% between 2008 and 2013. ❑ 35 DA Crops Offices provided with furniture, equipment and motorcycles by 2010; ❑ All farmers have access to effective agricultural extension services by 2013.	❑ Project impact evaluation report; ❑ Project progress reports; ❑ Annual monitoring surveys; ❑ Project MIS data ❑ BoARD and ARARI reports ❑ Records of co-operatives and private traders ❑ Financial records and audit reports	❑ Strong institutional linkages between the project staff, BoARD and ARARI; ❑ Leading farmers willing to provide land for crop demos; ❑ Farmers willing to adopt improved cropping practices and new crops; ❑ Co-operatives engaged in project activities and provide crop inputs on time; ❑ Credit available to purchase crop inputs and improved equipment/tools; ❑ Timely construction of improved access to markets; ❑ DAs have capacity to co-ordinate project activities

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions/Risks
Component 3: Livestock Production			
3.1 Construct and equip animal health posts based on BoARD standards and provide improved veterinary services 3.2 Improved pasture management and supply of livestock feed 3.3 Enhanced production of meat, milk, eggs and honey 3.4 Improved livestock extension services	❑ Improved access to veterinary services for all project farmers by 2013; ❑ Reduce period of feed shortages from 3 month in 2008 to less than 1 month per annum by the end of the project in 2013; ❑ 20% of households have adopted controlled grazing and/or stall feeding by 2013; ❑ 25% of households have adopted improved fodder production by 2013; ❑ 10% of households have adopted improved animal breeds by 2013; ❑ Livestock productivity has increased by 25% between 2008 and 2013; ❑ 35 DA Livestock Offices provided with furniture, equipment and motorcycles by 2010; ❑ All farmers have access to effective livestock extension services by 2013.	❑ Project impact evaluation report; ❑ Project progress reports; ❑ Annual monitoring surveys; ❑ Project MIS data ❑ BoARD reports ❑ Financial records and audit reports	❑ Good co-ordination between veterinary staff of BoARD; ❑ Leading farmers willing to provide land for pasture and livestock demos; ❑ Pasture seeds are available for demos ❑ Farmers willing to adopt better husbandry practices, controlled grazing systems, and new livestock breeds; ❑ Credit available to establish livestock enterprises. ❑ DAs have capacity to co-ordinate project activities

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions/Risks
Component 4: Non-Farm Income Generation and Micro-credit			
4.1 Renovation and Construction of Community Flour Mills 4.2 Technology and Innovation Fund: Promotion of appropriate farm production technologies, renewable energy innovations, and fuel efficient stoves. 4.3 Establishment of micro-credit facilities for farm and non-farm enterprises through micro-finance institutions (MFI)	❑ 35 community flour mills renovated/constructed (one in each kebele) by 2013; ❑ Appropriate farm production, processing and transport equipment adopted by 20% of households by 2013; ❑ Renewable energy innovations adopted by 10% households by 2013; ❑ Fuel efficient stoves adopted by 33% households by 2013; ❑ 50% households have obtained micro-credit for farm and non-farm enterprises by 2013.	❑ Project impact evaluation report; ❑ Project progress reports; ❑ Annual monitoring surveys; ❑ Project MIS data ❑ MFI data and records ❑ Financial records and audit reports	❑ Strong institutional linkages between project staff, BoARD and MFI; ❑ Households willing to adopt appropriate technologies and innovations; ❑ Appropriate technologies and innovations are technically & financially viable and available for uptake by households; ❑ MFI willing to provide micro-credit to households through project credit line.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions/Risks
Theme B: Natural Resources			
Component 5: Soil/Water Management and Irrigation			
5.1 Participatory Land Use Plans (PLUPs) and Community Action Plans (CAPs) prepared in each micro-watersheds 5.2 Implementation of soil and water conservation measure to mitigate soil erosion, improved water conservation and reduced sediment in each micro-watershed 5.3 Expansion of micro and small scale irrigation	❑ PLUPs and CAPs prepared for 82 micro-catchments by end of project in 2013 ❑ 452 ha of gullies rehabilitated by 2013; ❑ 17,280 km of streams mitigated by stone check dams ❑ SWC measures have been implemented on 53,285 ha of cultivated land and 19,667 ha of grazing land by 2013; ❑ SWC measures have been implemented on 5,669 ha of badlands, 1,220 ha of forestry land and 309 ha of mixed use land by 2013; ❑ Sediment load in rivers reduced by 10%; ❑ Irrigated area expanded by 1,500 ha between 2008 and 2013 for production of vegetables and fruit trees on 400 sites	❑ Project impact evaluation report; ❑ Project progress reports; ❑ Annual monitoring surveys; ❑ Environmental monitoring reports (for reduction in sediment load); ❑ Project MIS data ❑ Financial records and audit reports	❑ Communities willing to form user groups and Water Management Committees to prepare CAPs and PLUPs; ❑ Communities willing to contribute labour or cash for implementation of SWC measures; ❑ Adequate government funds provided on time; ❑ Communities have capacity to implement SWC measures in efficient and timely manner.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions/Risks
Component 6: Forestry and Agro-Forestry			
6.1 Existing natural and planted forests are protected and sustainably managed by communities 6.2 Establishment of forestry and agro-forestry systems to stabilise the landscape and produce fuel wood and timber 6.3 Improved extension services	❑ By 2013, all user groups have adopted management plans to conserve forests; ❑ 20 tree nurseries established by 2013 to supply communities and households; ❑ 3,000 ha of community forests and 2,000 ha household woodlots planted by 2013; ❑ 35 DA NR Offices provided with equipment and motorcycles by 2010.	❑ Project impact evaluation report; ❑ Project progress reports; ❑ Annual monitoring surveys ❑ Project MIS data	❑ Communities willing to protect existing forests; ❑ Communities willing to contribute labour or cash to establish forests; ❑ Adequate government funds provided on time.

Outputs	Activities	Some Key Inputs
Theme A. Livelihoods: Component 1. *Community Entry Points*		
Output 1.1 Improved access to potable water and enhanced sanitation facilities	**Activity 1.1.1:** Development domestic and community water supplies for both human and livestock consumption by: digging wells by hand; developing springs; fitting hand pumps to existing wells, constructing micro-ponds, and promoting water harvesting from roofs.	Rural water engineer; Skilled labour; Materials.
	Activity 1.1.2: Provide sanitary facilities for communities (i.e. health posts and schools) and demonstrate/promote latrines for households.	Rural infrastructure/water engineer; Community and family labour.
Output 1.2 Renovation of buildings and provision of furniture, equipment and materials for primary schools and health posts	**Activity 1.2.1:** Renovate health posts and equip them to provide both curative and preventive health care. Provide clean living quarters if a qualified nurse operates from the health post.	Rural infrastructure engineer; Skilled labour; Medical equipment, medicines.
	Activity 1.2.2: Renovate primary schools and provide essential equipment for teaching and textbooks/material for pupils.	Rural infrastructure engineer Teaching aids, textbooks
Output 1.3 Improved access and communications within kebeles	**Activity 1.3.2:** Repair and reconstruct feeder roads to facilitate access to the main all weather roads, markets, schools and health centres.	Rural infrastructure engineer Skilled labour; Unskilled community labour; Construction materials; Construction equipment and tools

Outputs	Activities	Some Key Inputs
	Activity 1.3.1: Re-construct footpaths and construct safe footbridges over streams which flood in the wet season to facilitate school attendance, transport of inputs to fields, and produce to household storage and/or markets	Rural infrastructure/water engineer Skilled labour; Unskilled community labour. Construction equipment and tools
	Activity 1.3.3: Up-grade existing community telephone posts and install new ones, where necessary.	Rural infrastructure engineer; Construction materials; Negotiate with Ethiopian Tele-communications Corporation for a telephone line.
Theme A. Livelihoods: Component 2. *Crop Production*		
Output 2.1 Improved facilities and equipment for Farmer Training Centres (FTCs)	**Activity 2.1.1:** Undertake assessment, procurement and supply of furniture, equipment and training materials (including audio-visual equipment) for 35 FTC (one in each kebele) such as	Furniture and equipment; Training materials; Audio-visual equipment.
Output 2.2 Increased crop production (cereal, oilseed, pulse & horticultural crops) through demonstration and up-scaling of improved cropping systems and adoption of new crops.	**Activity 2.2.1:** Measure yields of representative crop fields in micro-watersheds in association with the preparation of annual crop and farm budgets. Support regional, wereda and kebele staff logistically.	Agronomist; Farm Management Economist.
	Activity 2.2.2: Undertake assessment, identify and agree appropriate sites, supply necessary inputs/equipment to establish demonstrations of improved cropping practices and systems. Possible techniques to be demonstrated include: appropriate fertiliser and pesticide use; small-scale irrigation; stabilisation of terraces and gullies with trees; improved cultivation techniques;	Funds to support technical specialists to establish and maintain crop demonstrations; Seeds and crop inputs;

Outputs	Activities	Some Key Inputs
	row planting; improved crop varieties; use of organic manure/composting; weed control; integrated pest management; alley cropping; intercropping; cover cropping in tree plantations or orchards; strip cropping; and contour ploughing.	Labour for crop establishment and management.
	Activity 2.2.3: Demonstrations of high value crops. Possible high value crops to be demonstrated include: new varieties of potato; malting barley; vegetables; multi-purpose bamboo; and perennial tree crops such as avocado and citrus according to the agro-climate conditions of the area.	Funds to support technical specialists to establish and maintain crop demonstrations.
Output 2.3 Improved storage and market delivery	**Activity 2.3.1:** Investigate and demonstrate better crop storage, processing and market delivery methods to minimise crop losses and improve the quality of produce reaching the market.	Funds to support technical specialists.
Output 2.4 Improved agricultural extension services	**Activity 2.4.1:** Undertake assessment, procurement and supply of furniture, equipment, materials and transport for 35 DA Crop Offices (one in each kebele) to enhance the level and quality of agricultural extension services. This will include the provision of motorcycles, tools and equipment for conducting field activities and demonstrations, as well as training materials and regular training courses to refresh and enhance skills and knowledge.	Funds to support technical specialists.
Theme A. Livelihoods	**Component 3. *Livestock Production***	
Output 3.1 Construct and equip animal health posts based on BoARD standards and provide improved veterinary services	**Activity 3.1.1**: Construct and equip 11 animal health posts (one for every 3 kebeles or within 3 kilometres walking distance for livestock owners.	Veterinarians and Village Livestock Agents (VLAs); Veterinary equipment and medicines; Training materials.
	Activity 3.1.2: Develop and deliver training courses and demonstrations in animal health through refurbished and new animal health posts.	

Outputs	Activities	Some Key Inputs
Output 3.2 Improved pasture management and supply of livestock feed	**Activity 3.2.1**: Develop a pasture and forage feed year using local, introduced, annual and perennial species. Ethiopia is a centre of origin for top quality perennial pasture species in kikuyu (*Pennisetum clandestinum*) and African *Trifolium* species such as *T. ruepellianum*, *T. quantinianum* and *T. semipilosum.* These can be used as managed pastures or for SWC measures.	Pasture Specialist; Seed and/or vegetative material of improved pastures and forage; Labour for crop establishment and management.
	Activity 3.2.2: Undertake assessment, identify and agree appropriate sites, supply necessary inputs/equipment to establish improved pasture and forage demonstrations. Possible techniques to be demonstrated include: perennial pasture grasses, grass leys and legumes; pasture management, appropriate fertiliser use; rotational grazing, conservation (hay/silage), and stabilisation of terraces and gullies with fodder trees, shrubs and grasses (e.g Vetiver grass).	Pasture Specialist Seeds of improved pastures/forage and other inputs; Labour for crop establishment and management.
	Activity 3.2.3: Work closely with communities to promote and demonstrate the need for animal control (ranging from traditional herding by children to well-constructed physical barriers). Jointly determine the control measures to be used, where to establish them, for which purpose, and how to maintain them.	Pasture Specialist and veterinarian Materials Education and training
Output 3.3 Enhanced production of meat, milk, eggs and honey	**Activity 3.3.1**: With DAs and livestock producers, undertake detailed analyse existing animal production systems and determine which areas need strengthening to improve efficiency and expand output.	Livestock Specialist AI staff and facilities; Improved breeds of cattle, sheep, poultry; Housing and equipment for livestock;
	Activity 3.3.2: Breed improvement through artificial insemination (AI) with cattle improved breeds, introduction of improved sheep and poultry breeds.	

Outputs	Activities	Some Key Inputs
	Activity 3.3.3: Assessment, procurement and supply of the necessary facilities and equipment to establish and manage livestock demonstration centres. These will include the promotion of improved livestock husbandry practices, beef and sheep fattening, poultry/egg production, dairy processing techniques, as well as improved beekeeping systems and honey production.	Dairy processing equipment; Apiculture equipment; Collaboration with Andessa Livestock Research Centre.
Output 3.4 Improved livestock extension services	**Activity 3.4.1**: Undertake assessment, procurement and supply of furniture, equipment, materials and transport for 35 DA Livestock Offices to enhance the level and quality of livestock extension services. This will include the provision of motorcycles, tools and equipment for conducting field activities and demonstration, as well as training materials and regular training courses to refresh and enhance skills and knowledge.	Funds to support DAs and technical specialists.
Theme A. Livelihoods	**Component 4. *Non-farm Income Generation and Micro-credit***	
Output 4.1 Renovation and Construction of Community Flour Mills	**Activity 4.1.1:** Renovate and upgrading of existing flour mills and construct of new community flour mills in each kebele, as well as provision of technical and business management training.	Agro-processing engineer; Equipment; Materials; Training expertise
Output 4.2 Technology and Innovation Fund: Promotion of appropriate farm production technologies, renewable energy innovations, and fuel efficient stoves.	**Activity 4.2.1:** Assess the opportunities to introduce improved and new technologies to the area and, through the project financed Technology and Innovation Fund, procure and demonstrate examples of these technologies and encourage the take up of these as appropriate through access to the micro-credit facility. Examples of potentially valuable technologies may include: improved farm tools and implements for cultivation/planting, mini-tractors (prime movers) and attachments, improved carts, threshers, solar panel, wind turbines, ram pumps, micro-hydropower, fuel efficient cooking stoves, and processing, preservation and storage equipment/facilities.	Appropriate technology specialist; Innovative machinery and equipment; Training equipment and materials Training expertise

Outputs	Activities	Some Key Inputs
Output 4.3 Establishment of micro-credit facilities for farm and non-farm enterprises through micro-finance institutions (MFI)	**Activity 4.3.1**: Detailed assessment and identification of: (i) constraints of existing credit facilities within the project area, (ii) additional borrowing requirements, and (iii) appropriate lending mechanisms. Discuss and agree with a suitable micro-finance institution (MFI) and/or rural bank the terms, conditions and procedures for the establishment of a revolving micro-credit facility to be financed by the project and managed as a separate line of credit. The fund will be administered by the MFI/bank under terms acceptable to the project. Monitor the provision of micro-credit by MFI/bank, uptake by beneficiaries, type of enterprises financed, repayment rates and management of funds.	Micro-finance Specialist; Participating MFI or bank.

Outputs	Activities	Some Key Inputs
Theme B. Natural Resources	**Component 5. *Soil and Water Management***	
Output 5.1 Participatory Land Use Plans (PLUPs) and Community Action Plans (CAPs) prepared for each micro-watershed	**Activity 5.1.1:** Discuss, prepare, agree and finalise with communities the PLUPs and CAPs for each micro-watershed as part of the participatory planning process.	Micro-watershed communities; User groups; Development Agents (DAs); Community Watershed Management Teams (CIT)
	Activity 5.1.2: Assist communities with the implementation of the PLUPs and CAPs (bearing in mind that it may be adjusted as experience is gained).	
Output 5.2 Implementation of soil and water conservation measure to mitigate soil erosion, improved water conservation and reduced sediment in each micro-watershed	**Activity 5.2.1:** Construction of structural SWC measures such as stone check dams, stone/soil bunds, waterways, cut off drains and bench terraces as well as re-shaping of gullies in accordance with the PLUPs and CAPs.	SWC Specialists, Skilled labour and unskilled community labour; Construction materials; Equipment and tools.
	Activity 5.2.2: Establishment of bio-physical SWC measures such as vegetative fencing, agro-forestry in micro-basins, vetiver/leguminous hedgerows, use of perennial legume-grass pastures, contour ploughing and mulching/crop residue management, as well as permanent and rotational closure of land.	SWC Specialists, Skilled labour; Unskilled community labour; Planting materials; Equipment and tools.

Outputs	Activities	Some Key Inputs
Output 5.3 Expansion of micro and small scale irrigation	**Activity 5.3.1**: Development of micro and small scale irrigation through the construction of masonry weirs across minor perennial streams incorporating a gated off-take to command areas of up to 5 ha.	Irrigation Specialist, Skilled and unskilled labour; Construction materials and tools; Pumping equipment.
	Activity 5.3.2: Where land adjoins a major river, pumped irrigation will be promoted through the provision of small diesel pumps and associated pipework to command areas of up to 2 ha.	
Theme B. Natural Resources	**Component 6. *Forestry and Agro-forestry***	
Output 6.1 Existing natural and planted forests are protected and sustainably managed by communities	**Activity 6.1.1:** Establishment of protection and harvesting R&D units to determine rules and regulations by which the communities protect and manage natural forest for different purposes including bio-diversity, non-timber forest products and selective harvesting.	Forestry and Agro-forestry Specialist Livelihoods Specialists
Output 6.2 Establishment of forestry and agro-forestry systems to stabilise the landscape and produce fuel wood and timber	**Activity 6.2.1**: Undertake assessment, identify and agree appropriate sites, supply necessary inputs/equipment to establish demonstrations of forestry and agro-forestry systems to stabilise the landscape and produce fuel wood and forestry. Demonstrations would include promotion of appropriate tree species, plantation establishment, management and maintenance, as well as sustainable harvesting techniques.	Funds to support technical specialists to establish and maintain forestfy demonstrations; Seedling and other inputs; Labour for plantation establishment and management.

Outputs	Activities	Some Key Inputs
	Activity 6.2.2: Undertake assessment, identify and agree appropriate sites, supply necessary inputs/equipment to establish 20 tree nurseries for supply of seedlings to communities and households.	Funds to support technical specialists to establish and maintain tree nurseries; Seeds, equipment and other materials; Labour for seedling production.
Output 6.3 Improved extension services	**Activity 6.3.1:** Undertake assessment, procurement and supply of furniture, equipment, materials and transport for 35 DA Forestry Offices (one in each kebele) to enhance the level and quality of forestry extension services. This will include the provision of motorcycles, tools and equipment for conducting field activities and demonstrations, as well as training materials and regular training courses to refresh and enhance skills and knowledge.	Funds to support DAs and technical specialists.

Appendix 3: Other relevant projects and programmes

Other relevant projects and programmes

A significant number of internationally-funded development projects and programmes are or will be implemented in the Amhara National Regional State (ANRS). The Project should use as much as possible the training curricula and materials, extension packages as well as technologies that have been developed by these development projects and programmes. The most relevant development projects and programmes are listed below:

Wereda	Type and number of cooperatives and main services
Mecha	• 12 input supply cooperatives: supply of agricultural inputs and new technologies (i.e. drip irrigation, pedal pump)
Sekele	• 20 input supply cooperatives (1 cooperative for 3 Kebeles) and 60% of all farmers are members
Dera	• Multi-purpose cooperatives: input supply, flour mill, marketing and shop • Union of 5 cooperatives for distribution of seeds in 29 Kebeles
Este	• 18 multi-purpose cooperatives • 8 saving and credit cooperatives • 3 housing cooperatives • 2 irrigation cooperatives
Farta	• 21 multi-purpose cooperatives: input supply, flour mill, credit, marketing and shop • 3 saving and credit cooperatives, including one in rural area • 1 milk processing and marketing cooperative with 60 members in 3 Kebeles • 8 irrigation cooperatives for river diversion schemes
Libokemkem	• 16 multi-purpose cooperatives • 8 saving and credit cooperative • 1 housing cooperative • 1 milk processing and marketing cooperative • 2 irrigation cooperatives

(a) (Integrated) Watershed Management and Forestry

- Managing Environmental Rehabilitation in Transition to Sustainable Livelihoods (MERET) Project, which implemented in 23 Weredas with financial support of WFP and focused on conservation, intensification and expansion of cultivated land and diversification of income opportunities;

- SIDA-Amhara Rural Development Project (SARDEP) with activities related to crop production, livestock, extension, water, health and roads in East Gojam and South Wollo;
- USAID-funded Amhara Micro Enterprise, Agricultural Research, Extension and Watershed Management (AMAREW) Project, which is involved in watershed management in three micro-watersheds in three different Weredas, including Sekele Wereda, in accordance with an integrated watershed development approach as well as micro-enterprise development through small groups, including seed production, gabion production and raising ruminants;
- African Development Bank (AfDB)-funded Koga Irrigation and Watershed Management Project aimed at the construction of large-scale irrigation system as well as watershed management in the Koga watershed upstream of the dam;
- Sustainable Use of Natural Resources for Improved Food Security in Amhara (SUN) Project, which is implemented by GTZ with funds from KfW and aimed at integrated watershed management activities in 8 Weredas, including Libokemkem;
- World Bank-funded Biomass/Energy Access Project, including forestry activities;
- Integrated development of a model micro-watershed of 500 ha in the eastern part of Amhara is carried under the National and Regional Global Water Partnership (GWP).

(b) Agricultural and Livestock Development

- Integrated Livestock Development Project, which is implemented with funds from Austria in 16 Weredas;
- USAID-funded Dairy Livestock Development Project with focus on urban areas;
- IFAD is supporting agricultural marketing in all Zones of Amhara and it was funding irrigation development in 18 Weredas until last year; and
- ILRI is conducting research on animal forage in Farta Wereda.

(c) Potable Water Supply and Water Harvesting

- AfDB-funded Agricultural Sector Support Programme (ASSP), including irrigation development;
- CIDA-funded Sustainable Water Harvesting and Institutional Strengthening in Amhara (SWHISA) Project;
- World Bank-funded Rural Water Supply and Sanitation Project (RWSSP) focused on improvement of PWS schemes in 32 Weredas as well as capacity building at Regional and Wereda level;
- Government of Finland-funded Rural Water Supply and Environmental Programme (RWSEP) – Amhara Region (Phase 4), which constructs PWS

schemes in Farta and Dera Weredas, including the formation and training of WMCs;

- UNICEF-funded project installing shallow wells in 18 Weredas;
- AfDB-funded rural water supply and sanitation project in 29 Weredas (planned);
- CARE-funded water supply and sanitation activities in Farta and Estie Weredas;
- Millie-Jarie Watershed Development Project, which is implementing the integrated watershed development approach;
- JICA, SIDA, UNICEF, UNDP and various NGOs (i.e. CARE, World Vision and ORDA) are financing and/or executing the construction of PWS schemes
- FAO, SIDA, IFAD, AfDB and the French Government (i.e. AFD) provide funds for small-scale irrigation development;
- IFAD was funding irrigation development in 18 Weredas until last year;
- International Water Management Institute (IWMI), which as an office in Addis Ababa, is conducting research on irrigation and water management.

(d) Capacity Building

World Bank and CIDA-funded Rural Capacity Building Project (RCBP) through BoARD in 21 Weredas with activities in aimed at the strengthening of the capacity of the Agriculture Technical Vocational Education and Training (AgTVET) colleges, subject matter specialists (SMS) at Wereda level and Farmers' Training Centres (FTCs), including Dera and Farta Wereda.

During the first year of Project implementation, the PCU should contact all aforementioned development projects/programmes and donor agencies in order to make an inventory of the availability of the following issues:

- Training curricula and materials;
- Capacity to provide training services and/or technical assistance;
- Extension packages; and
- Technologies (improved and adapted).

It may not be necessary for the Project to develop its own training curricula and materials, extension packages and (improved and adapted) technologies as they would have been developed by any of the aforementioned projects and programmes. It is only a question of collecting all available training curricula and materials, extension packages as well as information of new/improved technologies. The PCU in collaboration with the PMC should undertake a review of all collected training curricula and materials, extension packages as well as information of new/improved technologies in order to

assess if any adjustments and/or modifications are required before they are used in the field.

Based on available information, there appear to be opportunities to cooperate closely with the following projects with regard to the provision of training services on NRM as well as to execute potable water supply schemes and the institutional strengthening of DA Offices and FTCs:

- World Bank-funded Rural Water Supply and Sanitation Project (RWSSP);
- Government of Finland-funded Rural Water Supply and Environmental Programme (RWSEP) – Amhara Region (Phase 4);
- CARE-funded water supply and sanitation programme in Farta and Estie Weredas, including the provision of training for local contractors;
- Sustainable Use of Natural Resources for Improved Food Security in Amhara (SUN) Project; and
- World Bank and CIDA-funded Rural Capacity Building Project (RCBP).

If appropriate and needed, a Memorandum of Understanding (MoU) or Contractual Agreement should be signed between both parties, in which all modalities for cooperation are clearly specified.

Appendix 4: Data files handed over to ENTRO

Project reports and related data

1. **Baseline Survey**
   - *Baseline survey report and related field report. Raw data in hard copy handed over also*
2. **CAP and PLUP studies**
   - *Various records from PLUP and CAP preparation in detailed study sites*
3. **Maps in print format**
   - *Various maps prepared for use in reports including location, land use slopes and soils*
4. **Miscellaneous**
   - *Detailed ToR prepared at draft final stage for agro-stologist, horticulturalist and veterinarian staff – if required in due course*
5. **Photographs**
   - *Various site photos taken by Consultants' staff throughout the catchment area*
6. **Proceedings**
   - *Proceedings, notes and presentations from Interim and Final Workshops*
7. **Project Reports**
   - *Inception Report*
   - *Interim Report*
   - *Briefing paper (for WB)*
   - *Project Outline*
   - *Draft final report*
   - *Final Report*
   - *Monthly reports*
   - *Other reports (Annexes submitted in Nov 07)*
8. **Technical Working Papers**
   - *Various assessments including agronomic, forestry, livestock and socio-economy from which published report material was drawn*

GIS and related data

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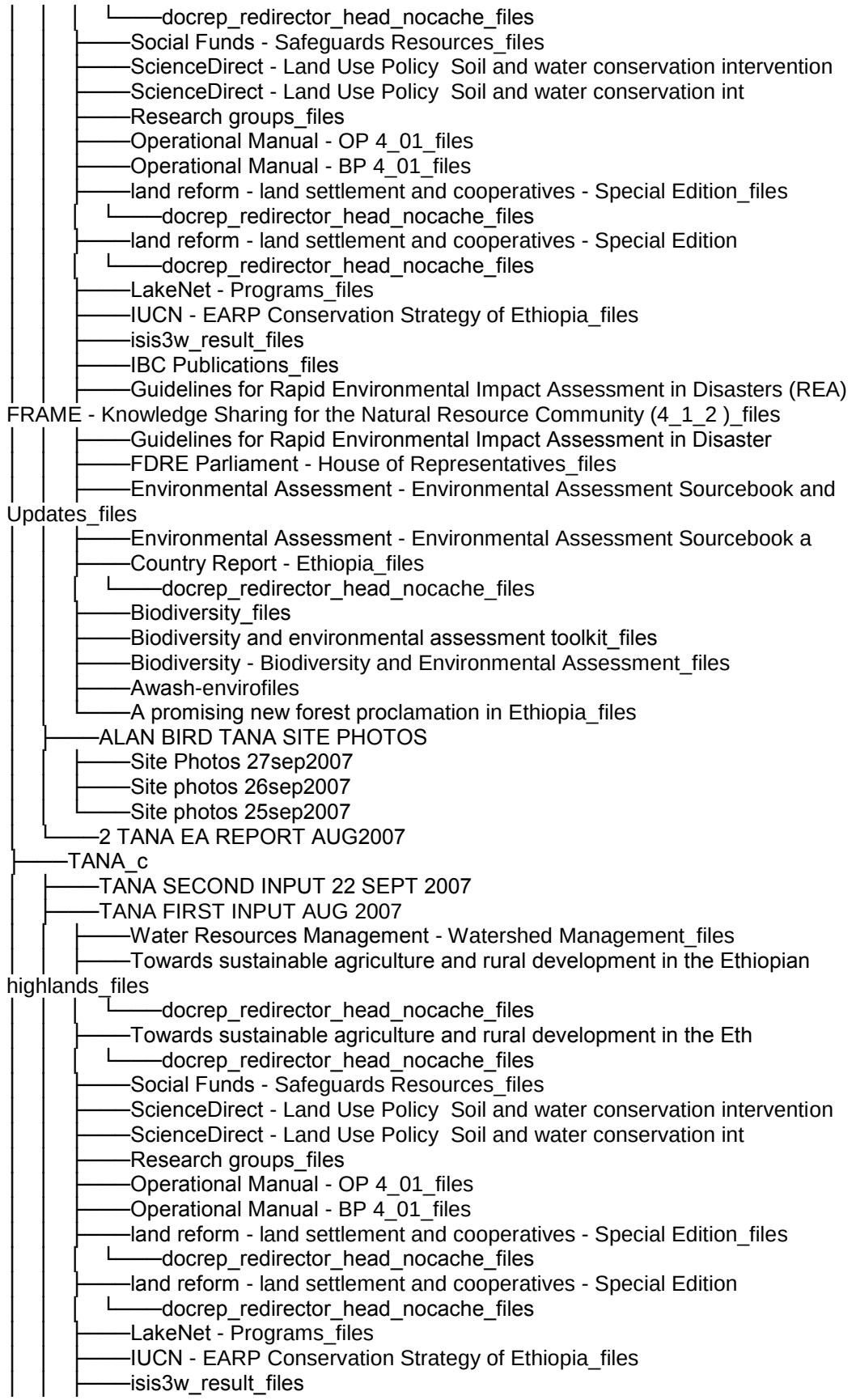
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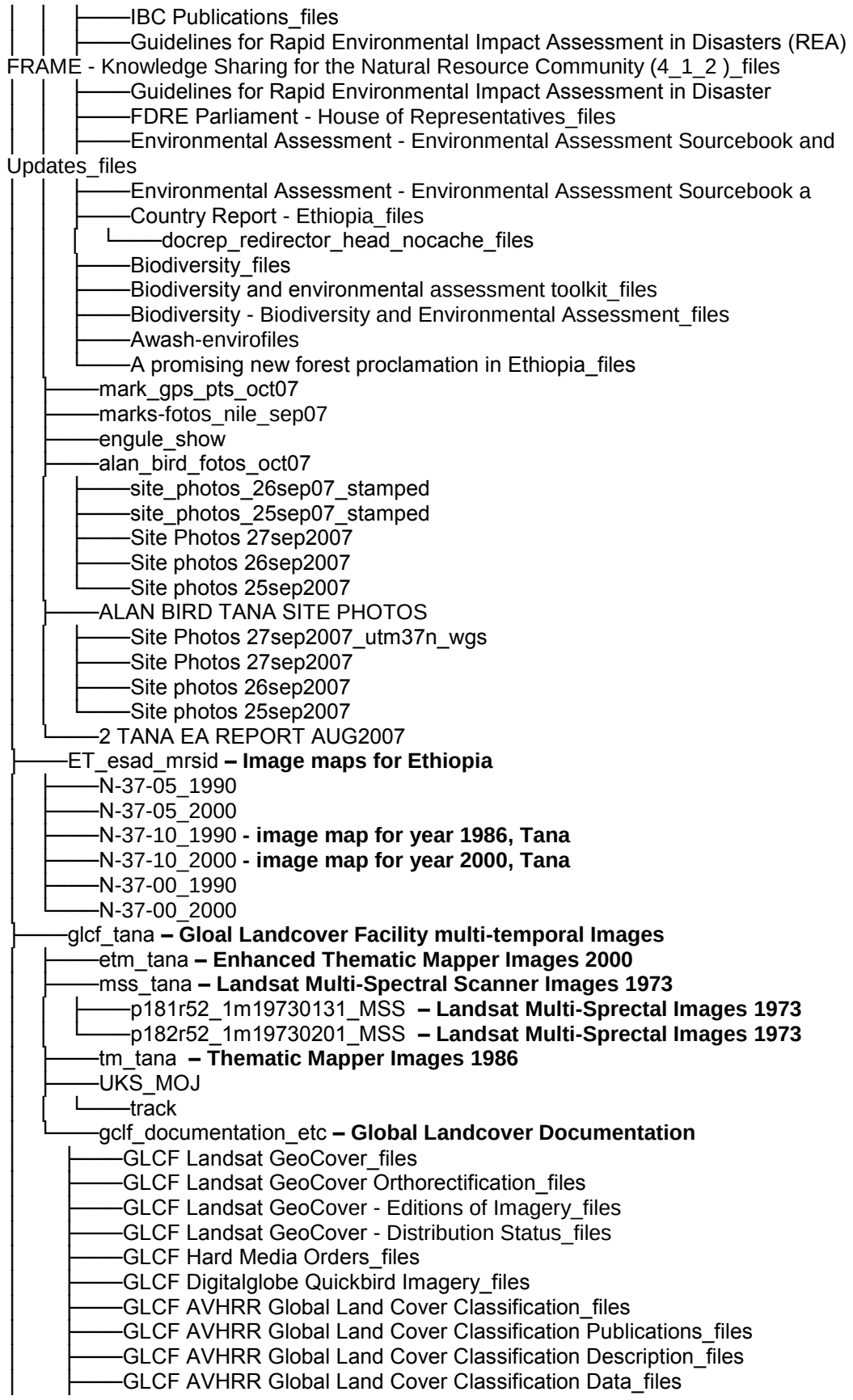
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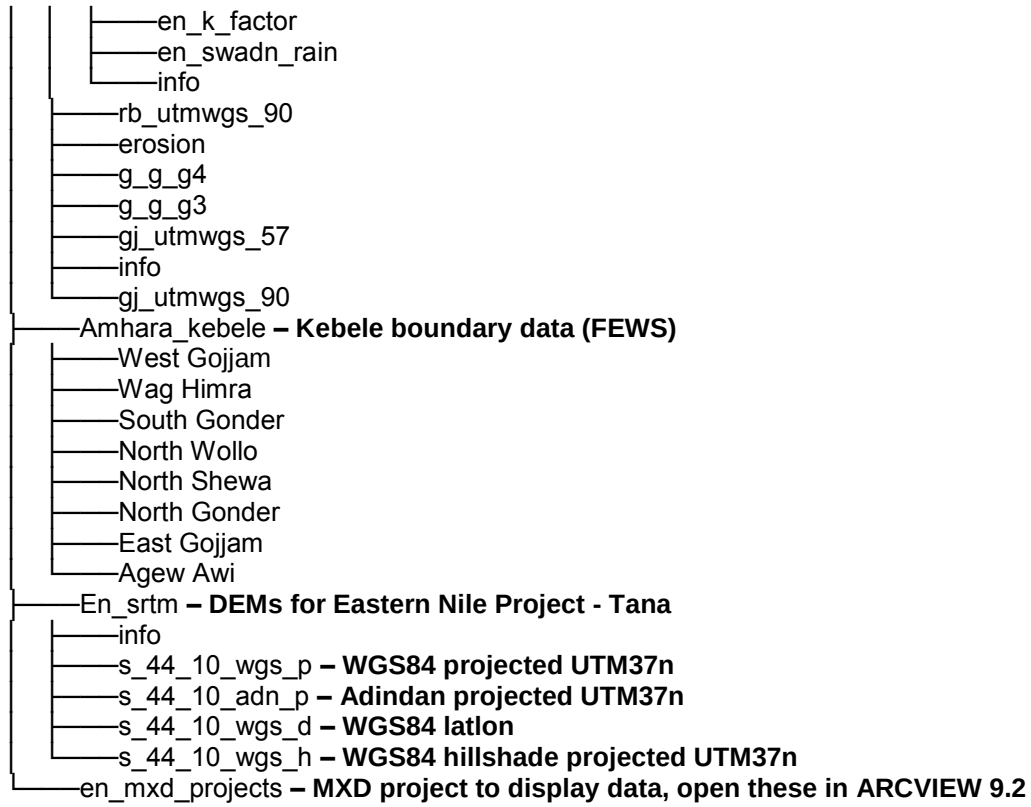
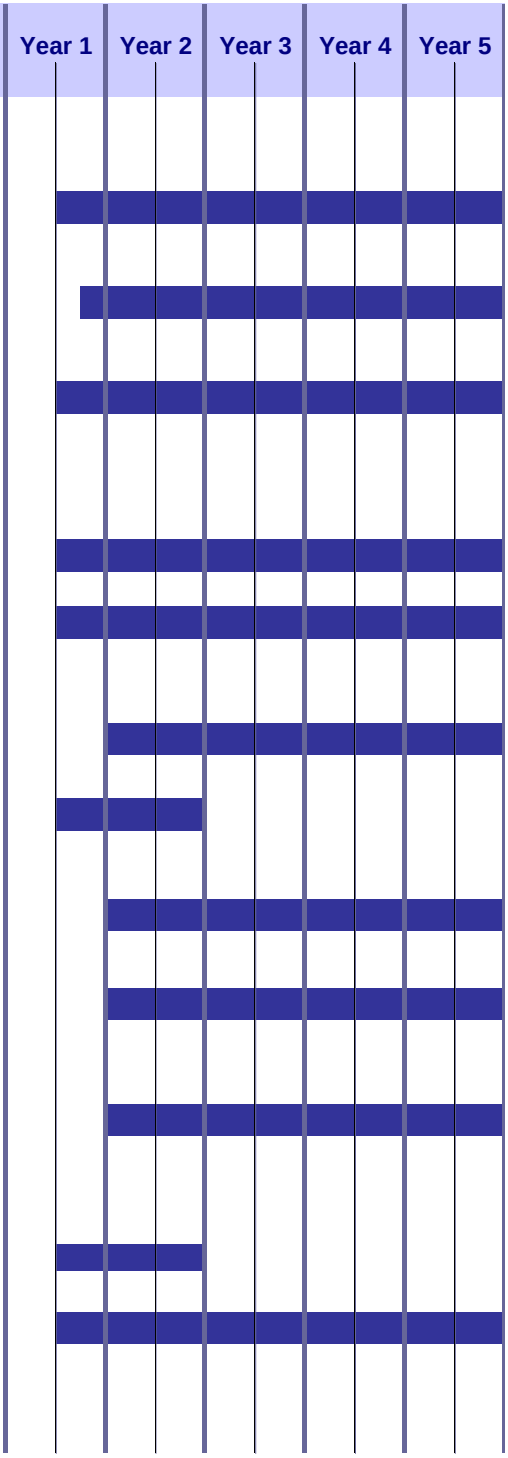


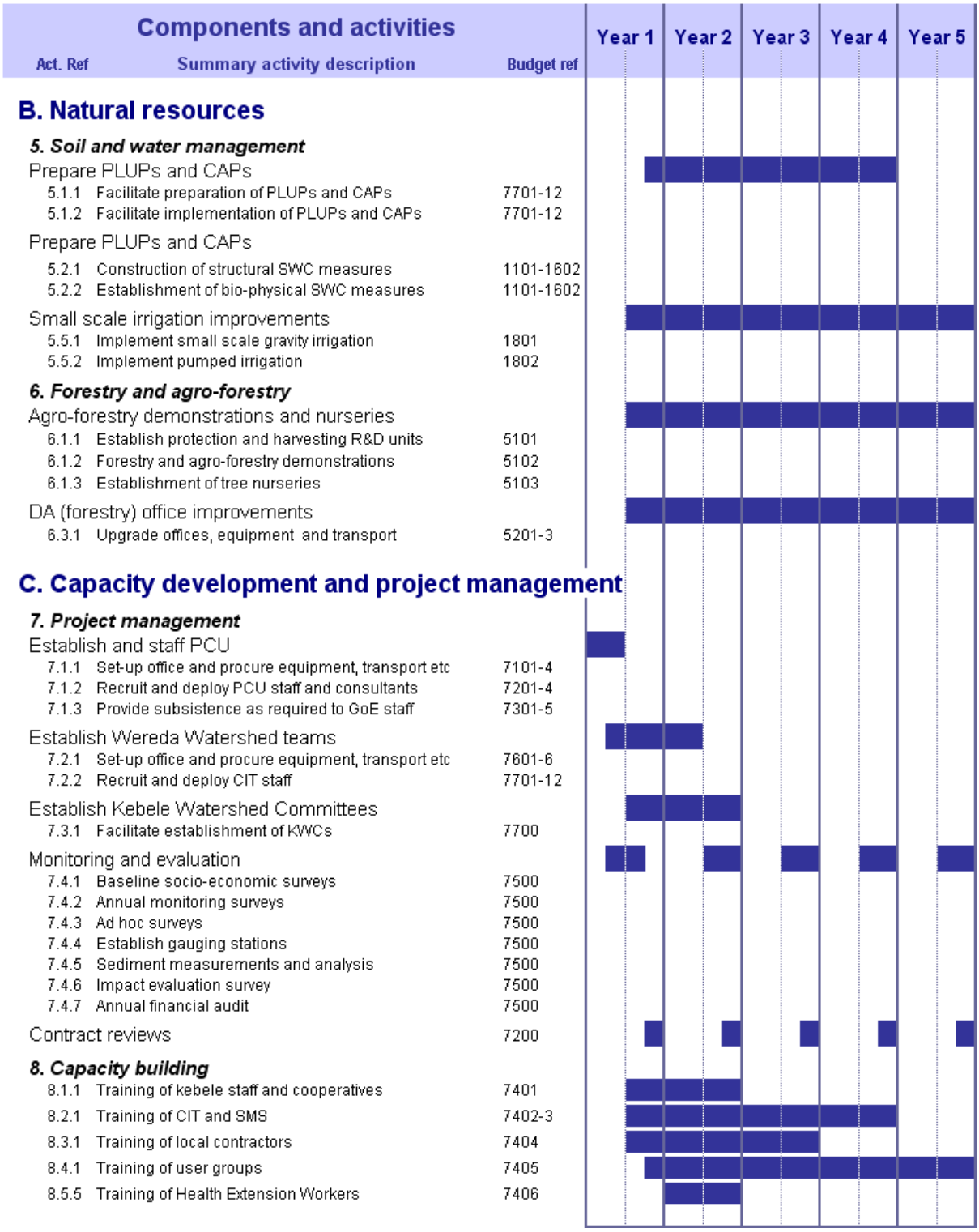
Note: Use All extensions and Gilgel Jama projects are similar to Ribb Gumera You need to load Gilgel Jama data from Gilgel Jama folder.

Appendix 5: Project implementation schedule

Project Implementation Schedule

Act. Ref	Summary activity description	Budget ref
A. Livelihood interventions		
1. Community entry points		
Improved public water supply		
1.1.1	Develop domestic/institutional water supplies	1701-4
1.1.2	Provide and demo improved sanitation facilities	1705
Renovation of public buildings		
1.2.1	Renovate and re-equip health posts	2200
1.2.2	Renovate and re-equip health posts	2200
Improved access and communications		
1.3.1	Repair and reconstruct feeder roads	2101
1.3.2	Reconstruct footpaths and new footbridges	2102-3
1.3.3	Upgrade and extend telphone posts	2104
2. Crop production		
Farmer training centre improvements		
2.1.1	Upgrade offices, equipment and transport	3101-2
Crop production demonstrations		
2.2.1	Undertake yield measurement	3201
2.2.2	Demonstrate improved cropping practices	3201
2.2.3	Demonstrate high yielding and new crops	3202
Improved storage and maket delivery		
2.3.1	Demo crop storage, processing and market delivery	3201-2
DA (crops) office improvements		
2.4.1	Upgrade offices, equipment and transport	3301-3
3. Livestock production		
Establish animal health posts		
3.1.1	Construct and equip animal health posts	4101-4
3.1.2	AHP Training Courses for Farmers	4105
Pasture development / feed supply		
3.2.1	Improvement of communal pasture	4201
3.2.2	Establish and run pasture and forage demos	4202-4
3.2.3	Promote and demonstrate controlled grazing methods	4204
Enhanced production of meat, milk, eggs and honey		
3.3.1	Detailed assessment of requirements	
3.3.2	Breed improvement and AI centres	4301-3
3.3.3	Demonstrate improved livestock systems	4401-4803
DA (livestock) office improvements		
3.4.1	Upgrade offices, equipment and transport	4801-3
4. Non-farm income generation		
Non-farm income generation and micro-credit		
4.1.1	Promote improvement of community flour mills	6101-2
4.1.2	Implement technology and innovation fund	6200
4.1.3	Establish micro-credit facility	6300




Components and activities
Act. Ref
Summary activity description
Budget ref
Year 1
Year 2
Year 3
Year 4
Year 5
B. Natural resources
5. Soil and water management
Prepare PLUPs and CAPs
5.1.1 Facilitate preparation of PLUPs and CAPs 7701-12
5.1.2 Facilitate implementation of PLUPs and CAPs 7701-12
Prepare PLUPs and CAPs
5.2.1 Construction of structural SWC measures 1101-1602
5.2.2 Establishment of bio-physical SWC measures 1101-1602
Small scale irrigation improvements
5.5.1 Implement small scale gravity irrigation 1801
5.5.2 Implement pumped irrigation 1802
6. Forestry and agro-forestry
Agro-forestry demonstrations and nurseries
6.1.1 Establish protection and harvesting R&D units 5101
6.1.2 Forestry and agro-forestry demonstrations 5102
6.1.3 Establishment of tree nurseries 5103
DA (forestry) office improvements
6.3.1 Upgrade offices, equipment and transport 5201-3
C. Capacity development and project management
7. Project management
Establish and staff PCU
7.1.1 Set-up office and procure equipment, transport etc 7101-4
7.1.2 Recruit and deploy PCU staff and consultants 7201-4
7.1.3 Provide subsistence as required to GoE staff 7301-5
Establish Wereda Watershed teams
7.2.1 Set-up office and procure equipment, transport etc 7601-6
7.2.2 Recruit and deploy CIT staff 7701-12
Establish Kebele Watershed Committees
7.3.1 Facilitate establishment of KWCs 7700
Monitoring and evaluation
7.4.1 Baseline socio-economic surveys 7500
7.4.2 Annual monitoring surveys 7500
7.4.3 Ad hoc surveys 7500
7.4.4 Establish gauging stations 7500
7.4.5 Sediment measurements and analysis 7500
7.4.6 Impact evaluation survey 7500
7.4.7 Annual financial audit 7500
Contract reviews 7200
8. Capacity building
8.1.1 Training of kebele staff and cooperatives 7401
8.2.1 Training of CIT and SMS 7402-3
8.3.1 Training of local contractors 7404
8.4.1 Training of user groups 7405
8.5.5 Training of Health Extension Workers 7406

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