

**ASSESSMENT REPORT ON SUPPORT BUILDING AN ADVOCACY
CAMPAIGN ON INSTITUTIONALIZING COMMUNITY
PARTICIPATION AND LIVELIHOOD CONCERNS IN THE PROJECT
IMPLEMENTATION STRATEGY OF THE EASTERN NILE PROJECT
(EN) IN WATERSHED MANAGEMENT PROJECT**

ETHIOPIA





TABLE OF CONTENT

ACCRONYMS	2
ACKNOWLEDGEMENT	0
I. INTRODUCTION	4
1.1. Background	5
A. General	6
1.2. Project Context	7
1.3. Project Description	8
1.4. Objective of the Project	8
1.5. ENSAP-Watershed Project Activities in Ethiopia	8
1.6. Budget Allocation & Project Duration	9
1.7. Objective of the Study	9
2. REVIEW	10
2.1. Overview of the Study Area	10
2.2. Concepts, Theory & Policy Frameworks	22
2.3. Review of Participation Models in Watershed Management	31
3. METHODOLOGY and SAMPLING TECHNIQUE	32
3.1. Sampling Technique	32
3.2. Methodology	32
3.3. Stakeholder Analysis:	33
4. RESULTS AND DISCUSSIONS	38
4.1. Activities of Watershed Management Project	38
4.2. Analysis of Planning and Implementation Process	39
4.4. Influence of the Watershed Project on Community Participation	62
4.5. Short and Long-term Benefits of Watershed Development within and Beyond the Project Areas	63
5. MAJOR PROBLEMS ENCOUNTERED	75
6. CONCLUSIONS AND RECOMMENDATIONS	76
6.1. Conclusions	76
6.2. Specific Policy and Implementation Strategies	78
6.3. Project Planning, Coordination and Joint Review	85
7. REFERENCES	80
8. ANNEXES	82

ACCRONYMS

WB	World Bank
MIS	Management Information System
NBI	Nile Basin Initiative
NBDF	Nile Basin Discourse Forum
NBEthF	Nile Basin Discourse Ethiopia Forum
TBIWRM	Tana & Beles Integrated Water Resource Management
S&WC	Soil and Water Conservation
PHCC	Population and Housing Census Count
ORDA	Organization for Rehabilitation and Development in Amhara
SUNERMA	Sustainable Natural resource Management Association
CSOs	Civil Society Organizations
REST	Relief Society of Tigray
ADLI	Agricultural Development Led Industrialization
ACT	African Country Almanac
ENSAP	Eastern Nile Subsidiary Action Programme
ENCOM	Eastern Nile Council of Ministers
SAP	Subsidiary Action Programme
SVP	Shared Vision Programme
ENTRO	Eastern Nile Technical regional Office
BS-GRS	Beneshangul-Gumuz Regional State
ENPM	Eastern Nile Planning Model Project
FPEW	Flood Preparedness and Early warning project,
ESTIP	Ethiopia-Sudan Transmission Interconnection Project,
ENPTPS	Eastern Nile Power Trade Programme Study
ENIDS	Eastern Nile Irrigation and Drainage Studies project
ENWSMP	Eastern Nile Watershed Management Project
CBAPWM	Community Based Actions Planning and Watershed Management
CGIAR	Consultative Group for International Agricultural Research
CRA	Cooperative Regional Assessment
DTM	Digital terrain Model
DIFID	Department for International Development
ETB	Ethiopian Birr
FAO	Food and Agricultural Organization
GEF	Global Environmental Fund
GIS	Geographic Information System
HCENR	Higher Council for Environment and Natural Resources
HELP	Hydrology for Environment, Life and Policy
IDEN	Integrated Development of the Eastern Nile
IFAD	International Food and Agricultural Development

IFPRI	International Food Policy Research Institute
IGADD	Inter Governmental Agency for Drought and Desertification
ILRI	International Institute for Livestock Research
IUCN	International Union for Conservation of Nature and Natural Resources (World Conservation Union)
JMP	Joint Multipurpose Programme
km	Kilometre
km ²	Square kilometre
km ³	Cubic kilometer (1 billion m ³)
MoARD	Ministry of Agriculture and Rural Development
ABoRAD	Amhara Regional Bureau of Agriculture
masl	Meters above sea level
MWR	Ministry of water Resources
MOFED	Ministry of Finance and Economic Development
MCM	Million Cubic Meters
MW	Mega Watt
MERET	Managing Environmental Resources to Enable Transitions to More Sustainable Livelihoods
N	Nitrogen
NBI	Nile Basin Initiative
NCS	National Conservation Strategy
NGO	Non-government Organization
NTEAP	Nile Trans-boundary Environmental Assessment Project
RFPA	Regional Forest Priority Area
SLM	Sustainable Land Management
PDO	Project Development Objective
PAD	Project Appraisal Document
DAs	Development Agents
FGDs	Focus Group Discussion
HHs	Households
BCM	Cubic Meter
CFs	Community Facilitators
SMSs	Subject Matter Specialists
KWMC	Kebele Watershed Management Committee
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WBISPP	Woody Biomass Inventory and Strategic Planning Project
WM	Watershed Management
WUA	Water Users Association
VSLA	Village Saving and Loan Association
CBOs	Community Based Organizations
OSDS	On Site Disposal Systems

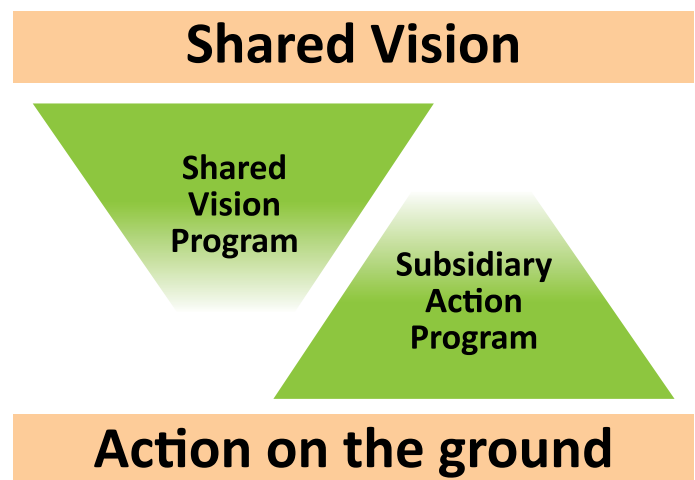
Chapter 1

1. INTRODUCTION

Please first answer the three questions stipulated on page 4 of the TOR (what is the watershed management project-general, planning and implementation processes, and progress to date). Please always go from general to specific: NBI, ENTRO, then to Ethiopia, instead of starting from Ethiopia.

The Federal and Amhara Regional Governments are currently investing some £35.08million/ five years funded by the World Bank, in an effort to enhance livelihoods in an institutionally and ecologically sustainable fashion through the development of micro-watersheds. This major initiative recognizes that the areas of degraded land in rain-fed areas of three selected sub-watersheds in Lake Tana-basin is covering more than 80,000 ha taking into consideration that there is a close two-way relationship between poverty and degradation; and that a focus over the last three decades on 'development of watersheds has led to address natural resource management with less emphasis to social and human capital development aspects. This project is one of the major components of the Tana-Belese Integrated Water Resource Development Programmes (TBIWMP) being implemented through Integration of Livelihoods Improvement, Natural Resource & Land Management, Institutional Capacity Building and Project Management Strategy. It was developed by Eastern Nile Technical Regional Office (ENTRO) within the framework of Eastern Nile Subsidiary Action Program(ENSAP)¹ as part of its response to the structural problems of food insecurity and poverty that has been prevailing as result of natural resources degradation and population pressure in Eastern Nile Countries(Egypt, Ethiopia &Sudan).

The lead implementers of the project are MoW&E &the Amhara Regional State BoARD in collaboration with other relevant government line departments, Non-Governmental Organizations such as Ethiopia Nile Basin Discourse (Eth. NBD-a CSOs Networking Forum with ORDA, SUNERMA, Agri-Service, CRDA, REST etc). While World Bank provided with the proposed credit of financial support, whereas, the technical assistance being provided from Eastern-Nile Technical Regional Office (ENTRO)², Addis Ababa (PAD, May 02, 2008). Based on this institutional/partnership arrangements, the project has been conceived, since 2008/09 and being implemented in upper-stream catchments of Tana-sub-basin in Amhara Nations Nationalities Regional State, Ethiopia. Therefore, the current situation analysis and evidence collection has been planned by Nile Basin Discourse(NBD) to be conducted as part of a series of studies to document the integration of community engagement, critical elements of communities' contribution to the watershed project, the role of women, benefits-cost sharing and equity, compensation arrangements and adequacy of funding for sustainable management of the project, the role of stakeholders and CSOs position, the knowledge base (MIS), and the real experience gained from the current Community Based Watershed project implementation and management.



¹ Is one of the two SAPS in NBI? It is an investment program of the Governments of Egypt, Ethiopia and Sudan under the umbrella of NBI. It is led by Eastern Nile Council of Ministers (ENCOM) assisted by its technical wing, ENSAPT. An ESAP Team (ENSAPT), consisting of three senior technical professionals from each country comprises the ENSAP country Team, which advises its perspectives to ENCOM members. More Over an ENSAP National Focal Point (NEP) has been also established in each EN Country to facilitate the development Process. The ENSAP, National Focal Point (NFP) has been established in each eastern Nile Country to facilitate development process. The Eastern Nile Technical Regional Office

² Work for the shared benefits of cooperation within Eastern Nile Subsidiary Action Programme, (ENSAP) under NBI.

1.1. Background

A. General

The NBI's Strategic Action Program is made up of two complementary programs: the basin wide "Shared Vision Program (SVP)" to build confidence, thrust and capacity across the basin, and the two³ sub-basin "Subsidiary Action Programs (SAP)" to initiate concrete investments, action and to bring tangible benefits on the ground through identification and implementation of investment projects are under implementation as complementary elements of the NBI's Strategic Action Program at sub-basin levels. The programs are reinforcing in nature. The Eastern Nile Subsidiary Action Programme (ENSAP) is among the major achievements of NBI & an investment program under the NBI implemented by Egypt, Ethiopia, and Sudan. ENSAP seeks to develop the water resources of the Eastern Nile Basin in a sustainable & equitable manner to ensure prosperity, security and peace for its entire people. ENSAP is premised on the recognition that Eastern Nile water resources management /development related challenges are trans-boundary in nature (e.g. recurrence of flood & droughts; soil erosion, sedimentation-siltation; wetland degradation; impacts of climate change; growing demand for water, etc). These challenges cannot be addressed successfully by any single country alone, unilaterally. Hence, cooperative development and management of the EN-water resource is expected to serve as a catalyst for greater regional integration with benefits that far exceed those derived from the river itself. The SVP, which focuses on building the regional institutions, capacity, and trust, lays the foundation for unlocking development potential of the Nile, which can be realized through subsidiary action programs. The three countries (Egypt, Ethiopia and Sudan) established the EN-Technical Regional Office (ENTRO⁴) headquartered in Addis Ababa, Ethiopia, in June 2002, as an executive arm of ENSAP.



Moreover, the Integrated Development of the eastern Nile (IDEN) is an ENSAP regional development investment program that consists of two tracks of investments: the *fast-track*⁵ and more long-term multi-purpose track projects. The Multi-Purpose-Track Programmes and Projects are: Baro-Akobo-Sobat (BAS) Multi-Purpose Water Resources development Study project and ENSAP Non-IDEN Project (Joint Multi-Purpose Programme (JMP)). Whereas, the SVP is a multi-country, multi-sectoral grant-funded program of collaborative action, exchange of experience, and analytical work intended to build a strong foundation for regional cooperation. The development objective of the SVP is to build trust, capacity and an enabling environment for investment in Nile Basin countries. This objective will be achieved through the implementation of the projects in the SVP portfolio and the successful coordination and management of the Program throughout the basin-wide, sub-basin and at project levels in each EN-country.

³ The two SAPs are namely the Nile Equatorial Lakes Subsidiary Action Program (NELSAP) and the Eastern Nile Subsidiary Action Program (ENSAP)

⁴ ENTRO's Main Tasks are: a) providing support to ENSAP, including secretariat support, b) liaison with development partners and other stakeholders, c) identifying, preparing new projects and launching them to implementation.

⁵ Fast-Track Projects: i) EN Planning Model Project (ENPM), ii) Flood Preparedness and Early warning project (FPEW), iii) Ethiopia-Sudan Transmission Interconnection Project, iv) Eastern Nile Power Trade Programme Study (ENPTPS), v) Eastern Nile Irrigation and Drainage Studies project (ENIDS), vi) Eastern Nile Watershed Management

1.2. Project Context

Ethiopia, one of the three Eastern Nile Countries(ENC), is remarkable not only in the scale of its natural resource base degradation, and in the volume of government and aid funds that have been committed to reversing this degradation, but has been striving, especially in the attempt to link environmental improvement and poverty reduction strategies. The focus of watershed development in Ethiopia has shifted from being primarily Cash for Work/ Food for Work (CFW/FFW), Linked Relief Rehabilitation with Development Initiative (LRRDI) as food aid activity. Later, (since 2004) the Productive Social Safety Net Program (PSNP) has been introduced to a broader food security and growth programme. The PSNP aims to assist livelihoods dependent on rain-fed agriculture (crops,

livestock, fisheries, and agro-forestry) to achieve sustainable improvements in productivity, improve natural resource management and to minimize variability in production due to climate change; a more challenging issue to our planet nowadays. The causes and intensity of poverty in Amhara Region can easily be attributed to the low performance of agriculture; the sector which defines and leads the Ethiopia's economic structure in general.

The low return from agriculture on its part is attributed to prevalence of pests and diseases, scarcity of farmland, soil erosion and degradation, lack of improved technologies, lack of supportive services, poor socioeconomic infrastructure, and the like. All the challenges the agricultural system experiences are well known and much has been done with the aim of reducing these challenges and their consequences. Nevertheless, the threat posed by watershed degradation/land degradation and soil erosion- on the livelihood of millions of people residing in the region in general and in the selected three sub-watershed basins (upper Ribb, Upper Gumera and Jema) in particular has been grave. Land degradation and soil erosion also are resulting in economic damage by shortening the life span of reservoirs, siltation of irrigation channels and damaging HP generation infrastructure downstream. Therefore, a comprehensive, multi-sectoral and integrated approach has been required to address the root causes of environmental degradation, instead of conventionally launching emergency appeals as response to risks that have been prevailing due to climate change and population pressure.

The watershed development project, a sub-component of the Tana-Belese Integrated Water Resource Development Program (TBIWRDP) was one of the milestones identified under the framework of SAP for ENSAP-countries, in response to those threats/challenges mentioned in the



Project(ENWSMP), which is the NBD's concern to conduct situation analysis and collect evidences to better understand Support Building an Advocacy Campaign on Institutionalizing Community Participation and Livelihood Concerns in the Project Implementation Strategy of the Eastern Nile Project (EN) in Watershed Management Project.

above paragraphs. The situation analysis of the watershed project under concern addresses the Ethiopian portion and is being implemented in Amhara Region, since 2008/09. Methodologically, it adopted a holistic approach that integrates improvement of natural resource management and the living standards of basin communities. This component aims to undertake critical investments to improve the natural resource management and is confined to investments in Tana-sub basin, given the urgent desire of such investments in the Tana sub-basin and the early nature of government's engagement in the Beles sub-basin. In line with this, the watershed development sub-component includes supports for sustainable development investments covering about 80,062 ha. in the upper Ribb, upper Gummera, and Jamma sub-watersheds in the Lake Tana sub-basin under pinned by community based planning and Participation.

The interventions include supports on private and common lands, combined with interventions to improve social infrastructures and on-farm/off-farm activities for the improvement of livelihoods by extending people's opportunities with an alternative income generation activities (IGAs). (Adopted from Document of The World Bank, the Tana & Beles Integrated Water Resource Development- PAD, Report No: 43400-ET, May 2, 2008).

The government has adopted a community-based participatory watershed development approach to planning, implementation and monitoring of this programme. The guidelines published by the Ministry of Agriculture and Rural Development (MoARD) in January 2005⁶ provided a common platform and has been used as important policy instrument for the watershed development program in harmony with other related projects. Thus, the interventions to be supported were based on the Community Action Plan for each micro-watershed, developed jointly with the participating

communities. In addition, the concepts and guiding principles of sustainable land management described in the Ethiopian Strategic Framework for Sustainable Land Management prepared by MoARD⁷ opting for the implementation of well-regulated land use plan was observed being in place.

1.3. Project Description

While interventions will largely be on a national scale, EN watershed management challenges are essentially of regional nature, as well as the benefits: erosion control leading to decreased siltation and sedimentation in downstream rivers and reservoirs reaches; improved HP production and irrigation efficiency; protection of critical aquatic habitats; increase land productivity; food and livelihood security and alleviation of poverty and global benefits such as carbon sequestration.



⁶Community-based Participatory Watershed Development: A Guideline. Ministry of Agriculture and Rural Development, Department of Natural Resources, Addis Ababa, Ethiopia, January 2005.

⁷The Ethiopian Strategic Framework for Sustainable Land Management, -Prepared by the Sustainable Land Management Secretariat for the Ministry of Agriculture and Rural Development, Addis Ababa. August 2008

1.4. Objective of the Project

1.4.1. Project Goal:

The overall goal of the project is to provide enhanced support/to facilitate investment for the sustainable livelihoods and natural resources management of the EN sub-basin through fostering stakeholders & CSOs involvement and community engagements in the planning and management process.

1.4.2. Specific Objectives of the project:

To increase adoption of sustainable land and water resources management practice through:

- i. Building national capacity; facilitate stakeholders consultation; information and knowledge sharing;
- ii. Establish long-term coordinated system for monitoring and knowledge development for effective watershed planning and management
- iii. Conducting detailed project preparation for EN watersheds hot-spots in an investment ready format.

Its significance will be contributing to enhanced food security and poverty alleviation in the EN-countries in general and Ethiopia in particular, while its long-term contribution to arresting degradation of the natural resource base, reduction of sediment transport and siltation of infrastructure, decreased pressure on natural resources and enhancement of the environment.

1.4.3. Development Objective:

The development objective of the project is aiming at to improve the livelihoods of rural HHs living in upper catchments of Ribb, Gumera, and Jema sub-watersheds through enhanced agricultural productivity and promotion of sustainable land use practices.

1.5. ENSAP-Watershed Project Activities in Ethiopia

The watershed development project includes the following key components that are arranged in three mutually

supportive and reinforcing themes:

Theme-A: Livelihood Improvement: has four sub-components directed to support and improving livelihoods through better communications, increased crop and livestock production and productivity and enhanced income generation opportunities within the three sub-catchments, improved rural access, upgrading of social infrastructure at Kebele level, water supply sources development and irrigation (including ground water pump) development within the micro-watersheds and the adoption of the appropriate technologies and innovations.

Theme-B: Natural Resource Management: has two main sub-components covering supports for soil & water conservation works (check-dams, gully improvements, stone faced bunds hedgerows, steep and bed land improvements etc); and the protection of existing badly degraded areas and their improvement through the development of forestry and agro-forestry programmes targeted at creating a sustainable landscape development that limits soil erosion and sedimentation loads as well as creates a more productive base for sustainable livelihood generation.



Theme-C: Institutional Strengthening/Capacity Building and Project Management: addresses the immediate constraints in capacity to implement the project and sustain the outcomes through strong community and government institutions. Based on this, the project is supporting woreda and kebele level institutional capacity building, improvements to office infrastructure and provision of funds for training kebele staff, Subject Matter Specialists (SMSs) and Development Agents (DAs). At the regional level it has been supporting Bureau of Agriculture and Rural Development (BoARD) coordination unit (Amhara Regional State), consultancy costs and monitoring and evaluation requirements.

1.6. Budget Allocation & Project Duration

The project has allocated a total amount of \$35.08million (to be utilized within 5years period) to support the three key activities for Sustainable Watershed Development investments including covering about 80,062hactares of land in the upper streams of Ribb, Gummera &Jamma sub-watersheds in Lake Tana sub-basin.

1.7. Objective of the Study

On the occasion of the Eastern Nile sub-region Multi-Stakeholders' Forum which was conducted in Cairo, Egypt, in March 2011, Civil Society Representatives and experts who took part came up with the following initial positions with respect to the Eastern Nile Watershed Management Project:

- i. Funding for the watershed projects is not adequate enough to render sustainable results on the livelihood of the communities of project sites,
- ii. The cost of critical elements of community contribution to the watershed management such as labor and time have neither been estimated nor built into the overall project design,
- iii. The role of the community has not been actively integrated into the project implementation process especially the roles of women,



- iv. Inadequate compensation packages to local communities for their contribution to critical aspects of watershed management, and
- v. Relevant stakeholders especially at community level do not have sufficient information about the project.

In relation to this, Nile Basin Discourse(NBD) is seeking to proof or disproof the above five positions raised by the civil society representatives through employing short term consultants who will conduct and collect evidence from the field in each country. Therefore, the specific objective of the study entails to:

- conduct situation analysis of the national watershed



Chapter 2

2. REVIEW

2.1. Overview of the Study Area

2.1.1. Overview of the Region

The Amhara National Regional State (ANRS) is one of the nine regional states of the Federal Democratic Republic of Ethiopia (FDRE). In geographic terms, the ANRS is located between 90 21' to 140 0' North latitude and 360 20' and 400 20' East longitude. The total area of the Amhara region is estimated to be 170,752 square kilometers. The region shares borders with Tigray region in the North, Afar and Oromia regions in the East, Oromia region in the South, and Benishangul region and The Sudan Republic in the West. The region is divided into 11 administrative zones including Bahir Dar special administration (Figure 1) and 114 Woredas. The regional capital city Bahir Dar is located at a distance of 565k.m northwestern from Addis Ababa.

projects in the three EN countries (Egypt, Ethiopia, Sudan with focus on the compensation schemes and cost of critical elements of the community contribution,

- document the role and contribution of local communities,
- document real life experiences of communities on video, and
- develop relevant national project fact sheet that indicate the most appropriate ways in which this advocacy might be carried out (e.g. support the strengthening/establishment of participation platforms with local communities including through partnerships with local government

Demographic Characteristics:

The Age Structure: Age structure is both a determinant and consequences of population growth. According to demographic characterization, the population is said to young or old depending on the value the median age, the proportion of children or the proportion of elderly. The Amhara region has a total population of 17, 214, 056 million [8,636,875 Male (50.17%) & 8,577,181 Female (49.83)]. Out of which about 1,024,136 (48.49%) Male & 1,088,084 (51.51%) female are urban dwellers. Whereas, nearly 15,101,836 (87%) of the region's population lives in the rural areas with its livelihood mainly depending on agriculture and related activities. From these rural residents about 7,612,736 (50.41%) and 7,489,097 (49.59%) are male and female, respectively (PHCC, 2007). Table1 below gives the value of population size in the region disaggregated by gender.

Table 1 Total population Size in the Region Disaggregated by Gender

Sex	Urban + Rural		Urban		Rural	
	No.	%	No.	%	No.	%
Both Sexes	17,214,056	100	2,112,220	100	15,101,836	100
Male	8,636,875	50.17	1,024,136	48.49	7,612,739	50.41
Female	8,577,181	49.83	1,088,084	51.51	7,489,097	49.59

Source: (PHCC, 2007)

Generally, populations with median age under 20 years, proportion of children 40% and above, and proportion of elderly less than 5percent are considered to be young. Considering the first and last censuses, although the proportion of children decreased by 5percent between 1984 and 2007, the overall size is still well above 40%, the share of elderly decreased by 0.2% and was much lower than the threshold (5%). The median age increased by one year but was still under 20 in 2007. Thus the Ethiopian Population is a young population with a median age not more than 18years, 45% of the population under 15years of age and only 3.3% are 65 years and above.

Table 2 Median age, percentage of children and elderly: 1984-2007

Source: (PHCC1984-2007, BoFED, 2010)

The Amhara region is one of the populous regions in Ethiopia, standing next to Oromiya. Amhara, Oromo, Agew and Tigre communities live in the region with harmony and interdependence. Christians, Muslims, and others also live together in the region. This makes the gross population density averaging 107 persons/km². The total (young and old) dependency ratio in Amhara region is nearly 93%, which means 1 person depending on an economically active person. The rate of population growth increased from 2.2 percent annually 1960 to a peak of 3% in late 1980s and early 1990s, consequently the population increased by more than three times its 1960 size reaching around 17.2 million in 2007, with an annual growth rate of 2.6% (for the current fiscal year). (PHCC, PDO, 2008, Solome and Assefa 2010). In relation to this, when the 2007 population's annual growth rate is compared with that of the early 1990s, the annual growth rate of the regional population has decreased by 0.4%.

Table 1 Population Size By Religion and Place of Residence

AMHARA Region	Urban + Rural		Urban		Rural	
	No.	%	No.	%	No.	%
All Persons	17,214,056	100	2,112,220	100	15,101,836	100
Orthodox	14,208,067	82.5	1,667,487	78.9	12,540,580	83
Protestant	30,240	0.2 2	1,416	1	8,824	0.1
Catholic	4,270	0	1,107	0.1	3,163	0
Muslim/Islam	2,952,775	17.2	414,476	19.6	2,538,299	16.8
Traditional	5,667	0	679	0	4,988	0
Others	13,037	0.1	7,055	0.3	5,982	0

Source: (PHCC 2007)

Owing to the various biophysical and socioeconomic challenges, the region (Tana-sub basin) is one of the poorest in the Country. The annual per capita incomes are extremely low in Tana sub-basin (\$125 with 43% of 3million population in absolute population. When this compared to that of Beles (\$100 with 54% of the much smaller 0.05million population in absolute poverty) it is nearly similar but relatively better in Tana sub-basin than Beles(Amhara BoWRD,2006). According to the Sustainable Development and Poverty Reduction Program (SDPRP) of FDRE, the regional head count index (number of people living below the absolute poverty line) is estimated to be 54%. This figure exceeds the national average by 8% and the Sub-Saharan Africa (SSA) average by 15% (SDPRP). The population distribution of Ethiopia in general and Amhara region in particular, is influenced greatly by altitude, climate, availability of good soil, water, and the prevalence of infectious and zoonotic diseases.

Physical Characteristics: The Amhara region has topographic setup of very diverse nature. Lowland, midland and highland plains, mountains, rugged lands,

undulating landforms, chains of plateaus are common land features in the region. The low lands (500-1500 meters above sea level) cover mainly the north western part of the region bordering the Sudan and the eastern parts bordering the Afar region.

These areas are largely plain and constitute big part of the northern and eastern part of the region. The highland areas are rugged and mountainous with peaks rising up to 4620 masl at Rasdashen (the highest peak in Ethiopia). In terms of the traditional agro-ecologic classification, the region is composed of Bereha 3% (below 500 masl), Kolla 22% (500-1500 masl), 44% Woinadega (1500-2300 masl), 27% Dega (2300-3000 masl), 3.6% Wurch (3000-3700 masl) and 0.4% high Wurch (above 3700 masl) (Picture 2).

Climate: The climate of the region in general and the Rib, Gumera and Jema sub-watersheds in Tana sub- basin, in particular are dominated by two factors: its proximity to

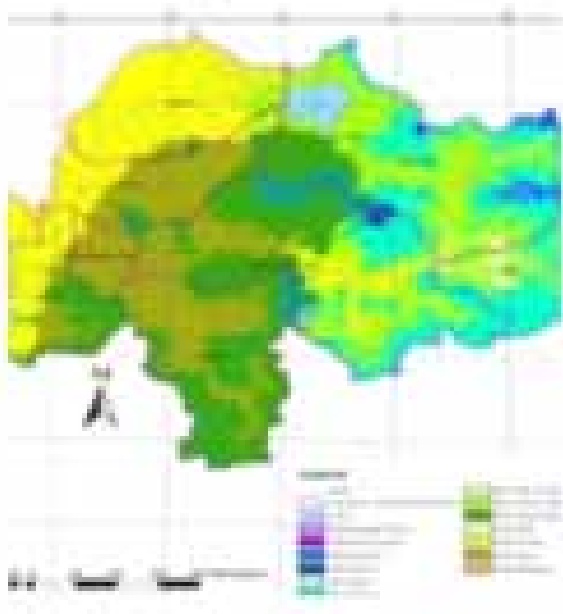


Figure 2 TRADITIONAL AGRO-ECOLOGICAL ZONES (Source: Hurni, H 1995)

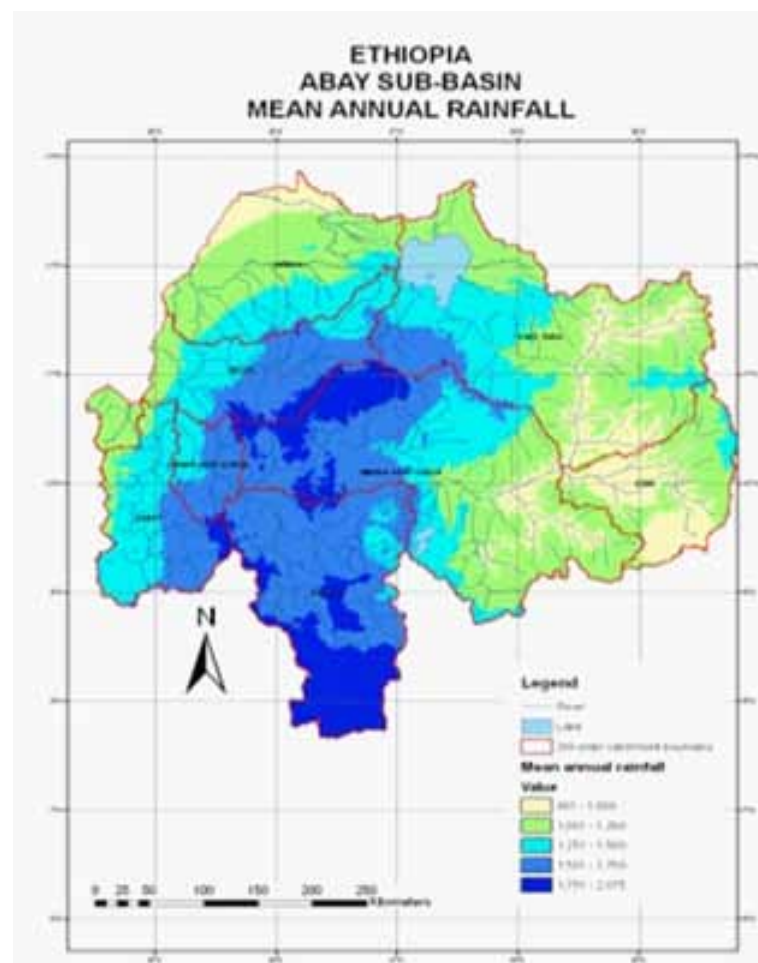


Figure3 MEAN ANNUAL RAINFALL (mm/yr)

equatorial location and altitude. The influence of these factors determines the rich variety of local climates ranging from hot and desert-like along the Sudan border to temperate on the high plateau and cold on the mountain peaks at Ras-Dashen, Choke and Gunna. The recorded annual mean temperature of the region ranges from 12.4 or in Mehal Meda (Dega) to 27.80C in Metema (Arid Kolla) (CSA, 1996). The mean annual rainfall recorded in the region is in the range of 598.3 mm (Lalibela) and 1692 mm (Chagni).

Rainfall: The annual rainfall ranges between 800- 2,200 mm/yr in the Ethiopian Highlands with a mean value of about 1,420 mm to less than 200 mm/yr at the border to Sudan. The highest rainfall values are recorded on Mount Choke to the south of Lake Tana and on the mountains south of the Abbay River. Within the highlands of Ethiopia, a uni-modal wet season is found to the west of the Simien massif. The wet season (Kiremt) lasts about four months, from June to September. In the direction to east of Tana-basin sub-watershed areas, the rainfall pattern is bi-modal, characterized by two wet seasons. The “Belg”, or short rainy season, occurs from mid-February to mid-May and the highest rainfall occurs in “Meher” season which starts in mid June and ends in early September. However, the rainfall is characterized by inter-annual and inter-seasonal variations. The short rain has of some agricultural importance, particularly in the north-east where annual rainfall is low. The rainfall decreases to north-westwards of Tana-Basin from where the river Abby leaves Ethiopia. The North- Western and North-Eastern parts of the region along the boundary with the Sudan, Tigray and Afar regions receive the lowest amount of rainfall, which is less than 700 mm. The region receives the highest percentage (80%) of the total rainfall in the country (BoRAD, 2010). The mean annual rainfall recorded in the region is in the range of 598.3 mm (Lalibela) and 1692mm (Chagni) BoARD, 2009.

Temperature: The spatial distribution of temperature values is strongly related to altitude. The area located in the highlands of Ethiopia is characterized by lowest minimum mean monthly temperatures that range between 3 and 21oC, and that occur between December and February. Generally, the annual mean temperature of the basin is 18.5 °C, with a minimum and maximum average daily temperature of 11.4 in Mehal Meda (Dega) and 25.5 °C in Metema (Arid/Kolla), respectively.

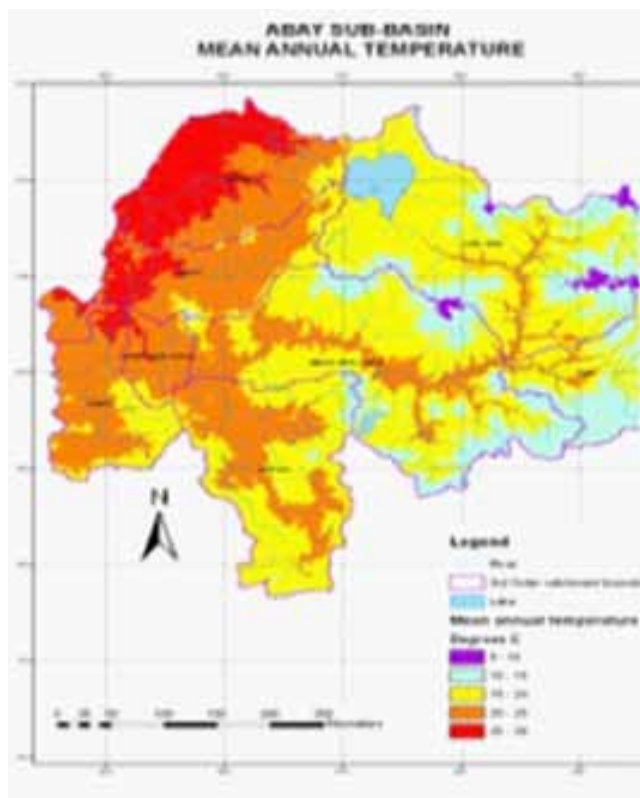


Figure 4 MEAN ANNUAL TEMPERATURE (Degrees OC)

Altitude: Physiographically, the sub-watershed basins are dominated by part of the western highland plateau of Ethiopia tilting gently westwards from the rift valley that splits it from the eastern plateau. The altitude ranges from 490 masl at the Sudan border to 4230 masl at mount Guna . Generally, the three sub-basin are found in the upper Abbay basin, where about two-third of area falls in the highlands above 1,500 masl altitude rising to over 4,000 masl. Its western extent is limited by an escarpment while its continuity is generally frequently interrupted by dissected rivers, which are frequently deeply entrenched and offering little in terms of valley extent. The western

limits of the basin as well as the main valleys fall below 1,500 masl (generally below 1,000 masl) and form the lowlands.

Geology: The Ethiopian highlands the Sub-basin is composed of basic rocks, mainly basalts, while the lowlands are mainly composed of basement complex rocks as well as metamorphic rocks, such as gneisses and marble. Where the Abbay has cut through the basalts there are restricted areas of limestone and then sandstones before the Basement Complex is reached.

Soil Types: On the flat plateaus in the Ethiopian highlands

left the soils acidic to very acidic and nutrient poor.

Vegetation Cover/Type: The once dominant forest has been reduced to scattered trees in and around cultivated areas within the highlands. Significant areas are covered dominantly by Eucalyptus trees almost replacing the traditional indigenous trees of sub-watershed basins. The grasses tend to occur in pure stands of *Hyparrhenia anthistirriodes* or *Cymbopogon nervatus* with *Sorghum* spp. in the higher rainfall areas and wet lands (such as: Elephant Grass, Papyrus). Grasses such as *Vetivare* becomes largely unpalatable to livestock during the dry season but very effective for soil and water conservation (land stabilization).

Montane High Forest: Highland high forest areas represent less than 2 % of the basin and are now much fragmented and located in relatively small patches. Three main types are found; Mixed Juniper-Podocarpus Upland Evergreen Forest), and Single Dominant Evergreen Forest (*Juniperus procera*). Undifferentiated Afro-montane Forest (Transitional Broadleaf Forest): These forests are found as dispersed patches of forest in areas southwest and southeast of Lake Tana north of the Abbay River. They are found between 1,500 to 2,700 masl where annual rainfall is between 700 and 2,200 mm. Mean annual temperature ranges between 14°C and 20°C. North of the Abbay the main area of natural forest, occurs some 150 kms southwest of Lake Tana where some 32,450 ha of high forest occur. Many of the other species are those found in “disturbed” forest. Another more humid sub-type occurs around Lake Tana on the islands and on the Zege Peninsula. Canopy trees include *Albizia gummifera*, with *Ehretia cymosa*, *Milletia ferruginea* and *Mimusops kummel*. East of Lake Tana just to the north of Addis Zemen in North Gonder Zone is the Tara Gedam Monastery forest. This appears to be a serial stage of this type of forest. It has a canopy of *A. abyssinica*, with understory trees of *Bersama abyssinica*, *Ficus thonningi*, *Maesa lanceolata*, *Ritchiea albesii*, and *Schrebera alata*. Single dominant Montane Dry

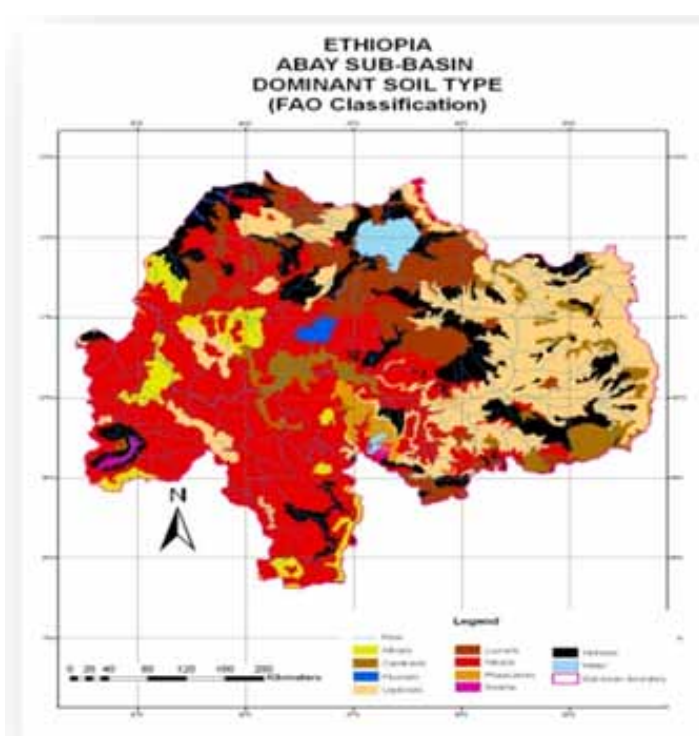


Figure 5. DOMINANT SOIL TYPES (FAO CLASSIFICATION, 1998, “Soil & Terrain, Database for Northeast Africa)

are extensive areas of vertisols. On the deep soils in the high rainfall areas around Lake Tana there are extensive areas of Luvisols. Soils of the Watershed basin reflect the combined effects of soil formation. Accordingly, the principal soils found in the sub-basin include Acrisols, Alisol, Arenosols, Cambisols, Fluvisols, Leptisols, Luvisols, Nitisols, Phaeozems, Regosols and Vertisols. The Alisols and Leptosols dominate the basin area as a whole with about equal proportion (21%) followed by Nitosols (16%), Vertisols (15%) and Cambisols (9%). Leaching has

Evergreen (*Juniperus procera*) Forest: found on the plateaus and hills in North and South Gonder between 1,600 and 3,200 masl., where the annual rainfall ranges between 500 and 1,500 mm and often but not always bimodal in distribution. Mean annual temperature is between 12°C and 18°C. It comprises an open forest tending towards Juniper woodland with a canopy of 10 to 15 meters. Where disturbance has been more severe *A. abyssinica* dominates the canopy and few if any *Juniperus* or *Olea* are seen, Mountain Woodlands: These woodlands are found at higher altitudes above 2,500 masl. The Common species are *A. abyssinica*, *Protea*, *Cussonia*, *Hagenia abyssinica*, *Erica arborea*, and *Hypericum*. Afro-alpine Grasslands and *Erica* Woodland: These alpine grasslands are generally found above 3,200 masl. Mean annual temperature is generally below 11 degrees C and frost will occur most nights. No rainfall stations are found at this altitude but it is generally agreed that rainfall increases up to 3,800 masl and then starts to decrease. Palatable grasses found in this grassland type include *Eragrostis* spp., *Deschampsia flexuosa*, *Helictotrichon milanjanum*, *Molinia caerulea*, and *Poa* spp. On Mount Choke substantial areas of giant heather (*Erica arborea*) woodland occur.

Wetlands: Out of the four major types of wetland found in Ethiopia, the Afro-Alpine tropical wetland system is confined in the Western, Eastern, and Central Ethiopia highlands where the major river originates and high rainfall exists. These areas include most of Ethiopia's Afro-alpine and Afro-montane freshwater wetlands ecosystems (Lake Tana is the most example, one among others). The system includes the larger flood-plains wetlands of Fogera and Dembia, on the shores of Lake Tana, Chemoga-Yeda floodplain below the Choke Mountains near Debremarkos. They can be grouped into three categories based on ecological zone, hydrological functions, geomorphologic formation and climatic conditions. These categories inter-link to form three major biomes. It narrows the valley bottom wetlands found in northeast Ethiopia south of the North east & west

of Lake Tana and Abbay. Lacustrine Wetlands: These are located fringing Lake Tana and in the lower Gishhe Abbay River. Those around Lake Tana have been considerably reduced in extent, most particularly around the Fogera Plain having been converted to cropland. The Fogera plains are fed by the Ribb River and bounded by the Gumera River to the south. A perennial swamp has formed at their junction. Lake Tana also floods back 1.5 meters during the rainy season. The vegetation along the Lake shore is almost purely papyrus whilst inland swamp grasses such as *Echinochloa* spp. and *Cynodon aethiopicus* dominate.

These form excellent dry season grazing. A number of globally threatened birds occur including the Wattled Crane, the Lesser Kestrel, Pallid Harrier and Great Snipe. The streams flowing to the swamps are short (average about 9 kms) and thus rainfall over the swamps is an important source of water for the swamps. During the rains the water level rises by some 2 meters. The swamps are covered by floating vegetation the dominant species being the perennial grass *Panicum hygrocharis* (EWNHS, 1996). The wetlands are of particular conservation importance as a location for the globally threatened Wattle Crane.

Narrow Valley-bottom Wetlands: These are mainly located in the high rainfall areas southwest of Lake Tana and in the western Highlands south of the Abbay River. A survey and inventory of wetlands in the Amhara Region (Enyu Adgo et al., 2005) found that many of these wetlands were under threat due to land degradation and sedimentation, and the lack of bylaws and community rules regarding their use. Many are used for dry season grazing, hay production, thatching grass and grass mats (Cheffe). Despite serving for livestock rearing, the areas between Gumera, Ribb and Northeast Tana and North east Abbay sub-basins, many wetlands are used for cultivation. Because of severe degradation on the upland soils the wetlands have become vital elements in sustaining peoples' livelihoods (both crop and livestock). However, in some areas there have been

reports of over-draining of these wetlands leading to the destruction of their delicate hydrographic and loss of value for cultivation (Wood, 2000).

Surface Water: Although the Abbay basin is the second largest drainage area in Ethiopia, it has the highest runoff, estimated to be 51km³/yr. The Abbay basin accounts for 50 percent of water runoff in Ethiopia. It also contributes 62 percent of the Nile discharge into Lake Nasser/Nubia and 72 % of the total Ethiopian contribution to the Nile waters. The Abbay river has a channel length of 922 km and falls 1,295m from Lake Tana (1,785 masl) to the Sudan border (490 masl). Shortly after leaving Lake Tana, the river plunges over the spectacular Tis-Isat falls and, thereafter enters the deep Abbay river gorge. Comparing the mean monthly discharges of Abbay river at Lake Tana and at the Sudan border indicate that there is a 10 times increase in discharge between that at Lake Tana and at the Sudan border.

Groundwater: In the highlands the ground water is almost exclusively confined to consolidated rocks, which include basalts, limestone and sandstone and metamorphic basement rocks. The retention capacity of these rocks is low and any groundwater is linked to the occurrence of fractures within these rocks. The presence of a thick basalt cap overlaying the normally better yielding sedimentary rocks restricts possible recharge of these areas and limits exploitation of shallow aquifers, such as springs and wells. The presence of deep gorges along the Abbay escarpment also provides relatively free drainage for the aquifers which may emerge as springs in the lower slopes. This effectively draws the groundwater table down deeper in the locality of the escarpment which significantly reduces the potential storage ability of the aquifer. FAO Africover Sudan (2002) & WBISPP-MoARD (2001 -2003)

The Land Use⁸ : The land use pattern of the assessment areas is 28.2% arable land, 30% agro-pastoral/pastoral land, 2.1% forest land 12.6% bush land, 7.2% settlement, 3.8% water bodies and 16.2% is unusable land (PEDB, 1999). The region is rich of rivers and water bodies. The region is the source of the famous Blue Nile and owns some other 49 perennial rivers. Despite the presence of such enormous water resources, the region is characterized by rain fed and subsistence



Figure 6 DOMINANT LAND COVER (Source: WBISPP 2004).

Crop Production: The selected three sub-watershed basins are characterized by low levels of economic activity, high incidence of land degradation, and a high population pressure. Agriculture accounts for 85% of the total labor force. Low public and private sector investment in agricultural research and technology transfer have resulted in low adoption rates of improved technologies. These, coupled with increased incidences of drought, have led to the poorer sectors of rural societies, the small producers,

⁸Land use planning is a science that determines the type of land use through studying the ecological character of the land as well as its socio-economic structure. It is possible to plan for the appropriate use of the land and to enhance the present management of the land use by utilizing Geographical Information System (GIS)

becoming even more marginalized in the region. Around one-third of the 116 million people in WANA live in rural areas. With population growth rates second only to West Sub-Saharan Africa, the numbers are expected to increase to around 175 million by 2020. Livelihood dependency on agriculture varies depending on the availability of off-farm opportunities. Landholdings are fragmented (0.75hac./HH) resulting in homogeneous communities and only gradual adoption of innovations.

Farming systems are predominantly crop-livestock enterprises, with small ruminant production the mainstay of economic activity through the production of meat, milk, pelts, leather and wool. Livestock feed on extensive rangelands during winter/spring grazing, and are moved to cultivated areas for grazing of cereal stubble and other crop residues in the hot dry summers and autumn. As a result of increased animal numbers and demand for their products, the proportion of animal feed requirements supplied from the native rangeland vegetation has decreased from around 70% in the 1950s to 10-25% at present. Feed shortages for livestock are therefore a particularly acute constraining factor, with the result that farmers are expanding cereal (mainly barley, wheat, pulses) production into marginal or unsuitable areas, resulting in land degradation. Thus, there is a need to improve on-farm feed production and to find alternative feed sources. Inappropriate policies on land use plans and the absence of secure property rights (mainly for communal lands) have often acted as further constraints to the sustainable use of land and range resources. It was therefore, necessary to re-examine issues such as grazing or pasture land user-rights and the role and effectiveness of local institutions in regulating rangeland use within existing policy frameworks.

Land ownership and access is an additional differentiating factor besides rainfall in these areas. In most countries land can be privately or collectively owned (mainly cropped

land), or belong to the public sector (rangelands). Three types of land tenure exist, privately owned, rented, and sharecropping. Land degradation resulting from the loss of vegetation through overgrazing, ploughing and fuel wood extraction, and consequent soil erosion via wind and water, is also common. The problem of land ownership and tenure issues exacerbates where land is either collectively owned or is public (ARBoARD 2010). This is too much literature. Please shorten it significantly.

2.1.2. Over View of the Study Woredas (Sub-Watershed Areas (Ribb, Gumera and Jemma)

i. Lake Tana sub-basin

The Lake-Tana is located at an elevation of 1875masl and is the source of the Abbay River (Blue Nile). It is the largest freshwater lake in Ethiopia with an area of 3,150sq.km. The Lake-Tana Basin is cut off from the lower Blue Nile by the 40m drop at Tis Issat Falls that drains journey into Sudan and Egypt and eventually to Mediterranean Sea. It covers an area of 15,123sq.km and is fed by 4perinneal Rivers Gilgel Abbay (5,004 km²; west), Ribb (2,464 km²; east), Gumara (1,893 km²; south-east) and Megech (2,620 km²; north) and about 60 seasonal streams. It has a mean depth of about 9m and maximum depth of 14m, and stores nearly 28 BCM of water. It is a well mixed lake with a detention time of 1.5years. Its basin has 1600sq.km of fluvial wetlands that provide natural filter against sediments and pollutants and habitats for fish spawning, birds, wildlife and plants (PDO, 2008). The outflow is now regulated by Chara-Chara weir and the discharge is now standardized at 110m³/s (Amhara REPLAU 2004). The Blue Nile drops 120m between the Ethiopian border and Khartoum. There is little or no flow from the Rahad and Dinder during the dry season. Mean (1920-2000) annual discharge at the border is approximately 50.0 km³ with an addition 4.0 km³ coming from the Rahad and Dinder. There are considerable seasonal variations in flow. The monthly low flow of the Blue Nile is 302million m³/month in February and the peak flow 13,151 million. The annual

discharge of the Blue Nile ranges from 1920 to 2001m³/month in the month of August. In contrast to the White Nile the flow is highly seasonal being concentrated between July and October (figure 2). The peak flow at Rosaries occurs in August whilst that at Lake Tana outlet is September indicating that the downstream tributaries are peaking earlier. Similarly, there are considerable variations in annual discharge. According to the statistical data, the area and average gross runoff depth of the sixteen main drainage basin units of the Abbay river basin (rank order by gross runoff depth). Although there is still uncertainty associated with hydrology of the lake Tana, the Hydrolic study conducted for the preparation of this project (by SMEC International Pvt.Ltd) indicates that the estimated annual inflow into the lake is about 6.9 BCM, annual rainfall over the lake about 3.8 BCM and the lake outflow is about 3.7BCM/year. A key challenge is to reduce vulnerability from high climate variability (flood and drought) and related challenge is to empower the communities and stakeholders to promote responsible and sustainable development of the nation's natural resources. The Lake Tana subbasin's water, land, livestock, forests fishery, cultural and other environmental assets offer considerable social and economic benefits to the livelihoods of 3million people scattered in numerous towns and settlements (Kebeles)

Agriculture and Livestock: The major crops grown on about half a million hectares of land of which (on 450, 00ha. Rain fed, and 6, 00 ha floodplain irrigation, and 500ha small-scale irrigation, with 7,000ha irrigated area being developed at Koga) are cereals(77%), pulses(17%), oilseeds(6%) and vegetables, root crops and fruits(1%). The sub-basin has nearly 5.5 million cattle for local use and trade. 4-5large multipurpose dams (flood control, irrigation etc) are planned to be constructed on the Gilgel Abbay, Megech, Ribb and Gummera rivers upstream Lake Tana.

Hydropower: In the Lake Tana sub-basin, 11 MW is

ENTRO is a model basin organization that has achieved best practices in integrated water resources development and management. It WORKS FOR THE



SHARED BENEFITS OF COOPERATION. ENTRO, as a regional organization, has a distinct role and profile in working for the sustainable integrated development of the Eastern Nile under the umbrella of the NBI. It serves ENCOM and ENSAPT in their pursuit

presently being generated at the Tis-Abbay I power plant built in 1964 and 73 MW at at the Tis-Abbay II (built in 2001). The new Tana Beles Hydropower Project with peak load capacity of about 460MW) will divert about 2.5BCM of water from Lake-Tana to the Belese River.

Tourism: The Lake Tana sub-basin contains the Gondar Castle, the Island Monasteries, as well as the Blue Nile

Falls as major tourist attractions. The fall and 20 monasteries (from the 13th-17th Century A.D) on the 37 Islands in the Lake draw about 130,000 visitors to the sub-basin annually (including 30% of International Visitors).

Fisheries: Lake Tana has about 26 species of fish, including 15 endemic labeobarbus species. tilapia, catfish, and the unique cyprinid diversity is a source of cheap and high quality protein for the local diet. Traditional lake fishery and riverine fisheries (upstream rivers) has been practiced for over 200 years. Traditional lake fishery is dominated by Nile Tilapia and is practiced by 400 boats fishermen year round near shore areas. Riverine fishery dominated by labeobarbus in upstream rivers is practiced by 100-300 boats/fishermen on a seasonal basis. It is estimated that Lake Tana may have a potential fisheries in the tune of about 16,000 to 22,000 tons a year. However the reported fish production has not exceeded 2,300 tons/ and has declined from 2,300 tons/year to 1,800 tons/year in 2001 to around 1450 tons/year in 2006, with the largest decline noted in the endemic labeobarbus fish species.

Watershed Degradation and Sedimentation: Pressures on land from large population and livestock densities and poor land use and management (overgrazing, cultivation on steep slopes without control, deforestation, etc are contributing severe and widespread degradation of land and sediment deposition into the lake. 57% of the sub-basin has steep slopes from 0-25 up to 2.55.

- **Figure 7 Lake Tana Sub-basin**

An Enabling Environment for EN Basin Watershed Mgt.

Ethiopia-Source of Blue Nile

Watershed Guideline



Consequently sediment loads are increasing at alarming rates (5-250t/ha/year). Erosion is highest in the eastern part of the sub-basin & lowest in Western part. Erosion in the Gilgel Abay has significantly increased silt deposition in the lake and this has extended to the Tana Kirkos Island which is no longer an Island but a peninsula. Although, the lake has a huge storage capacity, the increased sediment deposition can impact the lake in several ways. It increases turbidity,

reduces transparency and productivity of the lake, contributes to its aging, affects fish and other biota and alters the morphology of the lake.

Eutrophication: Studies related to fisheries research that has characterized the trophic state of the lake as mesotrophic, a detailed limnological assessment of the lake has not been carried out. This is an important assessment that needs to be carried out. Local alga blooms in and around Bahir-dar,(southern gulf) have developed and increasingly being dominated by the potentially toxic blue green algae. Lake water transparency has declined. Increased nutrient loads(possibly from sewage and about 30,000 pit latrines carried through run-off and storm water and fertilizer and fish kills and possible toxins for other uses.

Livestock Production: The livestock population in the region constitutes 29.4 percent of the national livestock wealth. In this regard, cattle, shoats, and equines are the most important sources of traction power, meat, milk, skin and hides, respectively. Cattle constitute the largest proportion (85.2% of the total TLU); nevertheless, when compared with the available grazing land, there is high intensity of livestock pressure on the existing grazing land. As a result, the production and productivity of the livestock sector in the region is low (BoFED, 2010). Therefore, animal husbandry is an integral part of the mixed farming systems that dominates the agriculture of the sub-watershed basins in Tanna-sub-basin, reflecting high number of livestock. In the selected sub-watersheds, raising livestock is an important economic activity and source of income to farmers.

2.1.3. Population Size and Growth:

Table 4 The Size of total HH population in the study watershed areas by PA

Sub-watershed	Woreda	No. of Kebele	No. Micro-watersheds ¹	Total Area (Ha.)	No. of Households (Total Population)	Av.HH Size
Gumera	Dera, Este, & partly Farta	13	34	32,764	11,065 (50,126)	4.1
Ribb	Farta	12	21	22,559	12,489 (64,066)	5.1
Jema	Mecha Sekela	10	27	25,279	12,840 (65,996)	5.1
Total	5	35	82	80,602	36,394 (180,189)	

Table 5 Population size in Assessment Woreda by Watershed & Woreda disaggregated by Sex

Watershed	Woreda	Population/Watershed			Urban			Rural		
		Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
Gumera	Dera	246,351	125,898	120,453	16,123	7,644	8,479	230,228	118,254	111,974
	Misrak Este	210,767	107,517	103,250	13,902	7,013	6,889	196,865	100,504	96,361
	Mirab Este	120,075	61,603	58,472	2,192	1,100	1,092	117,883	60,503	57,380
Ribb	Farta	232,337	118,599	113,738	6,780	3,443	3,337	225,557	115,156	110,401
	Debre Tabor/town Woreda	55,157	27,430	27,727	55,157	27,430	27,727	-	-	-
Jema	Mecha	292,250	147,700	144,550	22,676	11,432	11,244	269,574	136,268	133,306
	Sekela	138,652	68,989	69,663	6,772	3,389	3,383	131,880	65,600	66,280
	Total	1,295,589	657,736	637,853	123,602	61,451	62,151	1,171,987	596,285	575,702

Source(HPCC 2007)

In spite of the time involved in collecting fodder and looking after the livestock and other social costs, raising livestock is profitable. Livestock is also the main source of milk, meat, skin & hides, packing and manure for improving soil fertility and of draft power for ploughing. Despite, the availability of water resources which encourages farmers to raise livestock; forage/feed is depleted due to overgrazing of communal lands. As a result of this, the project has addressed the existing shortages of feed along with enclosure of communal lands (overgrazed) and treatment of denuded gullies through active participation of local communities. Both physical and biological control measures undertaken in each micro-watershed were observed being integrated with different leguminous plants and grass species, such as: Elephant grass, Kikuyu grass, Vetch, Lucenea, Susbanea, Pegion-Pea etc.

2.1.4. Socioeconomic Conditions

The population of the Abbay basin is about 14.23 million out of which about 64% are in Amhara, and, 33% and 3% are in Oromiya and Benshangul-Gumuz respectively. The population percentage of urban areas is about 9.3%. The average population density in the sub-watershed basins is 101 Persons/km². Region-wise, this figure goes up to 107 persons/km² with 2.6% average population growth rate (PHCC, 2007). The watershed inhabitants living in three selected areas are of homogenous ethnic groups (Amharic language speakers) and followers of Orthodox (82.72%), Islam (17.2%), Protestant (0.22%), and Catholic (0.1%) religions. Due to economic, social and ecological pressures, majority of the productive labor (youth and landless) is observed migrating outside watersheds to search for employment (this shall be researched further). A socio-economic study/or baseline study carried out in

Table 6 Livestock Population-by Species, Kebele and Micro-basins(Debre-Tabore Town Woreda City Administration

Species	By Kebele		Total	By Micro-Basin							Total
	Tsagure-Adiko	Weybla-Selamko		Angua	Kaha	Laye-Ache	Tsegure K/Mehiret	Suraye	Zanti	Laye-Mesllo	
Livestock	3113	3854	6967	541	580	869	711	265	125	498	3589
Equiene	642	568	1210	101	298	149	122	91	394	156	1311
Shoats	4959	3463	8422	185	321	510	359	262	35	349	2021
Poultry	873	2902	3775	172	241	195	153	161	376	202	1500
Grand Total	20,374										8421 (41.33%)

Source: Debre-tabore-Woreda City Administration Agriculture Office, September 2011

As it can be seen from the table above, there is a big difference in numbers of livestock species between columns under (by Kebele and under columns by each micro-basin. This is perhaps the rest of the livestock population could be found in the lower catchments of the watershed.

2010 indicated that about 2-3% of the populations are landless, and more than 85 % of the farmers own less than one hectare of land with an average landholding size 0.75hac/HH.). Only an average of less than 4% own above 1 ha of cultivated land (Source: Baseline survey, Farta Woreda Agriculture Office, 2010). The average literacy rate for men and women is estimated at 36-40% (men 65%, women 28%), a figure higher than the national average of 29%. This indicates that both the significant development needs as well as lack of adequate institutional capacity in

⁹These micro watersheds are to be known as "Community Watersheds" and their number would increase beyond 82. This is because for participatory planning, according to the guideline, the size should not be more than 500ha. The 82 micro watersheds are only according to ENTRO preparatory study delineation.

this sub-basin. Due to lack of irrigation system the region is fragile and dependent on the climatic conditions for its agriculture sector. However, the percapita income rose from 961 to 1,088 Birr from 1995/96 to 1999/00, surpassing the national average (1,057birr) in the latter years (this figure is very low for international standards-PDO200).

2.2. Concepts, Theory & Policy Frameworks

2.2.1. Overview and Rationale of the Nile Basin

Development Cooperation

Environmental security is a new concept which entered the language of politics in the 1970s. In the past, in terms of international relations the term “security” meant national security which not only meant national defense, Public law and order and of course a sound macroeconomic policy. Whereas environmental security is defined policies that nations undertake to protect themselves, from disasters such as toxic and nuclear waste, artificial or otherwise which take place in one nation but are danger to others and the global commons. The Nile River and its basin is a global common and here environmental security defined as watershed protection, pollution control etc will be intimately tied to the prevention and reversals of environmental scarcity which include water scarcity through integrated watershed and land management interventions.

In the 1990s, the Nile Basin states, faced with diminishing water supply due to environmental factors and realising the need for joint conservation projects, began to form a consensus on cooperation and the need for external technical financial assistance that would strengthen a comprehensive framework. In February 1993, Egypt initiated the Nile 2002 Conferences to encourage cooperation and better understanding as well as collaboration on water resource development of Nile Basin. A second Nile 2002 Conference, held in Khartoum in 1997, and other conferences examined various cooperation modalities and assistance from external support agencies

and international organizations. One critical factor influencing the convergence of interests was the recognition, particularly by Egypt and Ethiopia, that a new consensus would be less costly in human and economic terms now than later. That is, as population increased in the basin states, the water situation could deteriorate, leading to unilateral actions and the tragedy of the commons. Secondly, the basin states realized that undertaking joint conservation projects on the Nile was critical to eliminating pollution and water hyacinth infestation in upstream states and controlling evaporation loss, reducing silt deposits or sedimentation loads. (Environmental Security, Regime Building and International-Law in the Nile Basin, Aaron Tesfaye, Ph.D* Associate Professor, Department of Political Science, William Paterson University, USA)

You talked about NBI in your preceding paragraphs, why you bring NBI again?

In 1997, Nine of the 10 Nile riparian’s established a forum to facilitate a process of legal and institutional dialogue, as result of this, the Nile Basin Initiative has been established in February 1999, on which Nile riparian also agreed to take concrete steps towards greater cooperative development. Since its establishment NBI has adopted principles in various policy areas at the basin and sub-basin levels through a process of norm localization; this has been most important to institutional development. World Bank and donor conditions made institutional development possible, and the initiative’s organizational structures have influenced the East African Community (EAC), whose members hope to get buy-in from riparian states. In early 2000, a panel of experts concluded 3 years’ work by producing a draft “Cooperative Framework” text that was completed in 2006 with most outstanding issues having been resolved.

The NBI is a transitional institutional mechanism guided by a shared vision “to achieve the sustainable socio economic development through equitable utilization of, and benefit from, the common Nile Basin water resources” and a set of policy guidelines which provide a basin-wide framework for cooperative action. Its structure is comprised of a Council of Ministers of Water Affairs of the Nile Basin (Nile COM), a Technical Advisory Committee (Nile-TAC), and a Secretariat (Nile-SEC) located in Entebbe, Uganda. The Nile COM is the main policy and guidance forum for Nile Basin

involvement (communications), the development of applied training in the basin, promoting and developing benefit sharing approaches and to ensure effective integration, execution and co-ordination. ii) A Subsidiary Action Programs (SAPs) carried out by smaller groups of Nile riparians, comprising physical investments at the sub-basin level. It includes, two Subsidiary Action Programmes namely: The Eastern Nile Subsidiary Action Programme (ENSAP) which includes Egypt, Sudan and Ethiopia (where the current situation analysis and evidence collection work falls under the Ethiopian portion of watershed management project) ; and the Nile Equatorial Lakes Subsidiary Action Programme (NELSAP) which includes the six countries in the southern portion of the Basin, as well as Sudan and Egypt, are the means by which NB-countries identified and being executed joint investment projects. (Source: World Bank).



33rd TAC Meeting - Kampala

cooperation (there are subsidiary ENCOM and NELCOM organs), whilst Nile-TAC coordinates joint activities and establishes working groups as required accomplishing specific tasks. To translate the NBI’s shared vision into action, a Strategic Action Program was launched to identify and prepare cooperative projects in the Basin. Accordingly, the following two complementary sub-programs were identified: i) a basin-wide Shared Vision Program (SVP) of technical assistance and capacity building- projects being implemented basin-wide and created an enabling environment for cooperative development. Currently, includes eight projects. Four of these are thematic in nature, addressing issues related to environmental management, power trade, efficient use of water for agriculture, and water resources planning and management; the other four are to facilitate efforts to strengthen confidence-building and stakeholder

Here, the subsidiary principles have to do with the re-conceptualization and re-interpretation of the broader comprehensive framework of the basin-wide initiative. Hence, cooperative water resources management might also serve as a catalyst for greater regional integration, both economic and political, with benefits far exceeding those derived from the river itself. Therefore, assignment the current consultancy has been geared to conduct a situation analysis and evidence collection in the Ethiopian Portion of the integrated watershed development project as one of key projects planned and being implemented under the frame work of ENSAP initiative.

2.2.2. Overview of the Ethiopian Policy

The country’s long-term economic development strategy is known as “Agricultural Development Led Industrialization” (ADLI) has combined with growth transformation Policy (GTP, 2010/11). The goal of the strategy is to achieve rapid and sustainable economic growth by improving the productivity of the agriculture sector and by building up an agricultural based industrial sector, which is labor intensive and utilizes local raw

materials. The objectives include: attain food self sufficiency through increased agricultural production; improved the quality of life of the rural population through employment creation, poverty reduction and improved nutrition, and reverse the rapidly expanding ecological degradation. The strategy focuses primarily on agricultural development to be attained through improved productivity of peasant agriculture and the establishment of large-scale commercial agriculture.

The government also recognizes that any strategy for alleviating rural poverty and food security should be based on generating agricultural growth, with the aim of transforming the agriculture sector from one primary based on subsistence production, to one based on commercial farming enterprises. To this end, the government has not only continued support to the ADLI strategy but also launched a series of development and poverty reduction programs, including the Agriculture and Rural Development Policies and Strategies (ARDPS-2002), Agricultural Growth and Rural Development Strategy and Program (2004), the Food Security Program (2004) and the Plan for Accelerated and Sustainable Development to End Poverty (PASDEP, 2006-2010). In all these endeavors, agricultural growth, food security and accelerated rural development, constitute key government policy directions (ESIF-SLM).

In addition to these, the federal and regional governments

have to date enacted a wide range of policies, strategies, proclamations, action plans and programs with the aim of addressing land degradation and associated cross-cutting themes. The following strategies, policies and action programs were issued among others:

- Conservation Strategy of Ethiopia (CSE-1997), which provides an umbrella strategic framework, detailing principles, guidelines and strategies for the sustainable conservation and management of the country's natural resources and biodiversity,
- Environmental Policy of Ethiopia (EPE-1997)
- The main water policy in Ethiopia has been launched by MoWR in 1999 as having relevance to Integrated Water Resources Development and served as an umbrella for the formulation of the water sector development programme (WSDP-MoWR, 2000), and the water sector development strategy(MOWR,2001) that was being in place.
- Ethiopian Forestry Action Program (EFAP-2004)
- Ethiopian National Biodiversity Strategy and Action Plan (2005)
- National Action Program (NAP-2007)
- Federal Rural Land Administration and Use Proclamation(No. 456/2005)
- Federal Policy and Strategies on Forest Development, Conservation and Utilization (2007)
- Federal Forest Development, Conservation and Utilization Proclamation (No. 542/2007)

The environmental policy of Ethiopia issued in 1997 is the output of the Conservation Strategy of Ethiopia, a policy document initiated in 1989 and approved in 1997; the policy aims at improving the quality of life of the people through sustainable development of natural as well as cultural resources (Melaku, 2008). With regard to measures taken by the regional states pertinent to environmental policy and establishment of agencies, the Plan for Accelerated and Sustained Development to End Poverty (PASDEP) stated as follows:



...all regional States, have establish environmental agencies or have assigned environmental responsibilities to existing agencies, where Amhara region plaid a proactive role in issuing its respective environmental proclamation. Likewise, the Ministry of Water Resources, the Ethiopian Road Authority, and Electric and Power Corporation has established their respective Environmental units (MoFED 2006).

2.2.3. A Conceptual Frame Work of the Study

While thinking about sustainable watershed development, one cannot draw a line about nature and see the human population as outside this line. Nothing is independent of the environment, including the human species, which is part of nature and in all basic life supporting functions depends on the environment. Rather than viewing population environment linkages in terms of linear causal chain of separate boxes, it should be visualized as service of concentric circles, where the inner circles are fully embedded in the broader ones. The conceptual framework for People-Environment analysis developed by Lutz et al. needs of (2002) is presented in Figure2_below. Likewise, the SEGA approach and the Livelihood Approach (Asset Pentagon, DFID &UNDP) also see people as a part of nature instead of being separate from it. All the three approaches permit us to visualize the interconnected process of environmental, social and economic change. They help to

generate a clearer understanding of the social factor (i.e. class, gender, ethnicity, religion) on hierarchies that determine access to and control over resources. The SEGA approach provides PRA-tools for the user to analyze social relations (to understand the relationship among people, social structures, and resource bases). The SEGA analyses facilitate people's participation as a way to learn from the local level and also help to build development partnership that can restructure/reshape, policies/institutions, society and peoples relations with their environment. Whereas, Figure2: emphasizes that every life on earth, every economic activity, and every kind of development is embedded in the laws of nature. In this sense the environment is seen not only as a constraint, but also a basic life support system that makes all human life and activities possible. Within the sphere of human-made environment people are the agents. They are the ones who conduct activities develop routines, traditions,

cultures, knowledge and infrastructure and change the natural environment. In the most general sense, the population environment relationship is also showing us how human interact with their environment-how they affect and in turn are affected by the environment. Again, this can best be explained by the framework SEGA and Livelihood Analysis, which put the people at the center indicating that they are agents or drivers of environmental change and in return people are affected by or they are recipients of the same. Environmental resources are the foundations of social and economic development as they are the sources of goods and services needed for economic growth. This mismanagement coupled with their underutilization has so far reduced their contribution to the Ethiopia's overall development, land is the most critical resource and the bases of survival of all overgrazing and the expansion of farming into unsuitable land caused by an increasing population without increasing productivity are leaving the land bare.

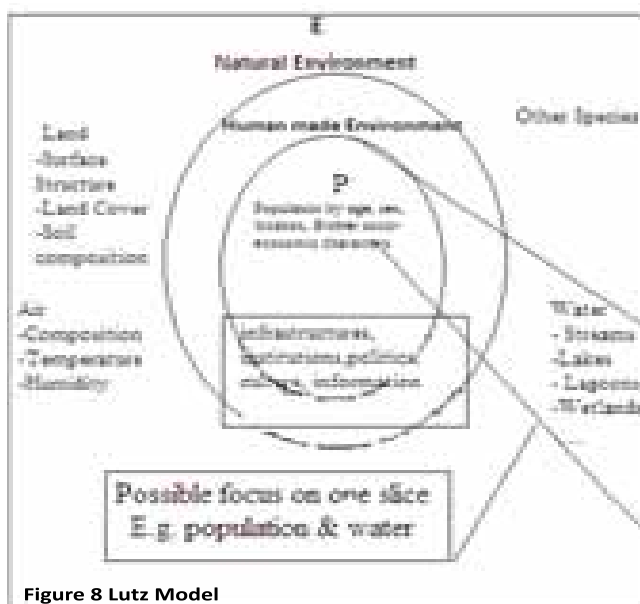
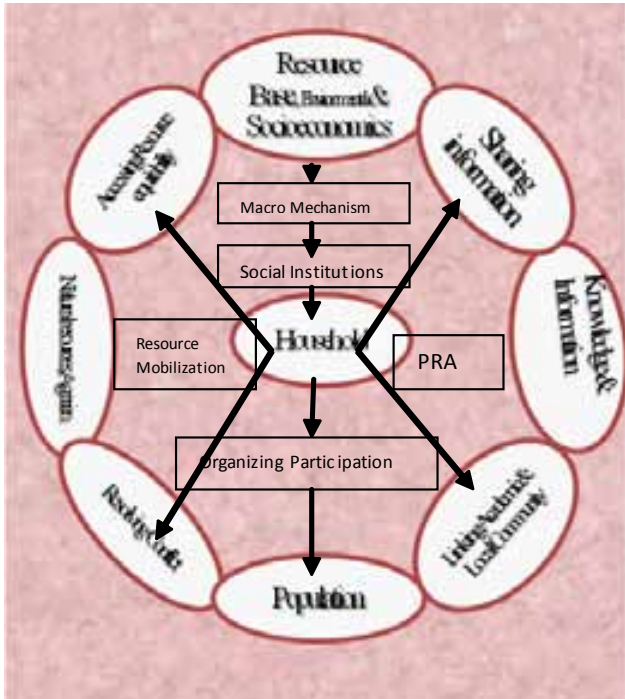


Figure 8 Lutz Model

SEGA MODEL: A conceptual framework of SEGA Model defines terms such as community participation, institutional building and partnership, gender and stakeholders' analysis, sustainable development, project management and benefit-cost analysis.

Figure 9 SEGA MODEL



It employs a participatory Strategies and Tools, offering more than 40 tools and strategies for socioeconomic and gender analysis and focuses on : a) organizing strategies for situation analysis b) collecting evidences and gathering information c) awareness raising and identifying priorities d) assessing needs e) planning, formulating and strategizing for change and building scenarios etc. A fundamental premise underlying the SEGA approach is that building the capacities of the rural communities or most disadvantaged groups within society is central to increasing productivity, equity, improving people's living conditions and livelihoods as well as Sustainable Development Praxis. Thus the SEGA approach conceptualizes the roles of community participation and contributions to achieve development changes in a new way. It makes socio-economic and gender analysis central to the process of natural resource management and securing effective and sustainable

development. See the details in Figure9 to the left side:

2.2.4. Definitions of Key Terms and Concepts

To build better understanding on the existing biophysical, hydrologic, socio-economic components that are dynamically interacting and impacting each other such as: socio-cultural, political or economic power, class, division of labor and gender, modes of production and production relations among people's and the environment as a whole, it is found important, first to capture the definitions of key terms and concepts having relevance to community based watershed planning and management project investments that peruse to improve the livelihoods and living standards of target communities. The socioeconomic, biophysical and hydrologic situation analysis and evidence collection needs to verify and consolidate understanding of both problems and solutions over the links to socio-economic problems in detail to highlight new opportunities based on watershed logic. Despite perusing to understand the integration of livelihood, institutional capacity building, natural resource management components as thematic cross cutting issues of the watershed, this study seeks to verify the engagement/or participation of the target communities and their role(contributions), access to communal resources and benefit-cost sharing, adequacy of funding for sustainable development and compensation mechanisms, the role of stakeholders and CSOs positions in the watershed project planning and management process as well as the knowledge base/information management systems including the development policies and strategies shaping the real lives and sustainable watershed and land management practices.

As a result, it desired to define and understand the following terms and concepts, taking into consideration that they are entry points to design the study framework and inherently key watershed development words used to augment the report writing. These are: Watershed and

¹⁰ Socio-Economic and Gender Analysis Model

Catchment Management Mechanisms, community participation and mechanisms, sustainable livelihoods and natural resource management etc. The definitions for these terms and concepts are obtained through referring and reviewing different literatures (see the details in the following sub-topics).

2.2.5. The Concepts and Mechanisms of Watershed Management

2.3.2.1. Watershed and catchment management

This portion of the report reviews the conceptual framework of watershed and its management mechanism so as to respond to the question of: “What is Watersheds and its management Mechanisms? Thus, it intends to provide short definitions and briefings on key terms and concepts as an entry point to establish a clue or framework for community based watershed management situation analysis and evidence collection process.

It starts by defining a watershed as: an area with a common confluence point through which the rain water passes. Watersheds are also known as hydrologic units or drainage basins/areas. Watersheds are units with biophysical and social components which, dynamically interact with each other creating a whole system. Human activities make use of the various components within the watershed system and impact each other as well as the whole system (Dr. Solomon Abate, Regional Watershed Management Project Coordinator, and Eastern Nile Technical Regional Office (ENTRO) Addis Ababa, Ethiopia, 2008). Whereas, a watershed management is a holistic approach to managing watershed resources that integrates forestry, agriculture, pasture and water management, with an objective of sustainable management of natural resources (perhaps a working definition). In relation to this, let us see also Tiffin and Gichuki (2000) in distinguishing between the terms of “catchment” and “watershed”. A catchment is “the area of land from which rainwater can drain, as surface runoff, via a specific stream or river system to a common outlet point which may be a dam,

irrigation system or municipal/urban water supply off take point, or where the stream/river discharges into a larger river, lake or the sea” (DENR, 1998, p. 29).

On the other hand, a watershed is a “whaleback land unit” that forms the upper area of one or more catchments, with hydrologic linkages to lower parts of the catchments (Tiffin & Gichuki, 2000). The term “watershed management” is usually used to refer to the management of both Watersheds and catchments. In practice, it is clear that some policies and programmes are focused on the protection of the upland watershed areas that form the headwaters of streams and rivers, while other policies and programmes are focused on the management of the land and water throughout catchment areas. The term “watershed management” has often been the basis for top-down management approaches by outside agencies, particularly in South Asia and Southeast Asia. Policies and programmes in northern Thailand, Indonesia and the Philippines are primarily concerned with the maintenance of tree and forest cover on upper watershed areas in order to maintain the quality and quantity of water in rivers emanating from the uplands. The presumption is that trees reduce sediment runoff and increase water infiltration, leading to higher dry season base flow and less sediment in lakes and rivers. High dry season base flow and infiltration are given particularly high value in rice-based societies with large concentrations of people living in flood plains. On the other hand, catchment management is concerned with the use, allocation and ownership of units of landscape that are comprised of complex formations of soils, landforms, vegetation and land uses and the flows of water that link them together (Lal, 2000, p. 4). In recent years there has been a marked increase in the focus on catchments as units of land management in both developed and developing countries (Rhoades, 2000). The main issues motivating catchment management usually include: (1) on-site land productivity and the welfare of the people who rely on that land; (2) annual

water yield flowing into reservoirs used for electricity generation, irrigation, and municipal uses; (3) peak (storm) flow of water and the implications for floods in lowland areas; (4) dry-season base flow, especially for people, animals or industries that draw water directly from streams; (5) appearance and safety of water in lowland areas; and (6) sedimentation of lowlands, reservoirs and lakes (Van Noordwijk, van Roode, McCallie, & Lusiana, 1998, p. 224). On the basis of an extensive review of the literature, Aylward (2000) concludes that soil erosion caused by agricultural production causes substantial off-site damages in the United States and similar areas around the world, but that the evidence is less conclusive on the importance of off-site damages of soil erosion in the tropical regions.

This approach seeks to promote also interactions among multiple stakeholders within and between the upstream and downstream locations of a watershed. Therefore the study needs to understand the nature and dynamics of these interactions in order to make sustainable interventions that restore or enhance the biophysical and hydrologic units as well as the social environment. Watershed Development provides not only strong conservation support to natural resource but also to create new opportunities for households to diversify their livelihood strategies. Assessing the new opportunities arising from watershed development, it is important to consider the issue of the compatibility of watershed development with existing livelihood strategies. The importance of this is perhaps best illustrated by analyzing the whole situation and looking at migration, which is one of the most important means of diversifying rural livelihoods for the rural poor in Ethiopia. It also involves the establishment of new institutions such as watershed committees; migrants/landless-generally the poorest (but productive age)-are often absent from villages and so tend to be marginalized from decisions on resource use. Thus, watershed today is considered as a means to improve

agricultural production and productivity through improved soil and water conservation techniques as well as to improve income-earning base with a freedom of interaction between choices of the poor for development in a resource-friendly manner. I hope either the former and later definitions narrated here above have commonly unifying or converging points which all the above practitioner agree as main issues motivating “catchment management” usually include as the points listed 1-6 here above.

Now again let us see and try to capture the most important and vey debating words in any development agenda-“sustainability” and “Livelihood”. The reason why this study intends to review these words is as the catchment management in rural settings is very diverse and complex intervention that addresses entirely the interconnectedness or cyber links among the following five capitals that are the building-blocks available to people and HH from which they can fashion a livelihood (Carney 1998):

1. Natural capital or natural resources-including the stocks and flows and environmental services in particular agroecological settings-in which livelihoods are constructed are the crucial parts of analysis(Scoones 1998); the potential important aspect of the context include historical and political factors, current policies, macroeconomic conditions, terms of trade, climate, environment, demography and existing patterns of social differentiation. This attention to context arises from a conviction that development and change is path-dependent that previous events define and limit to some degree the options available for contemporary livelihoods. Such influence may widen or narrow the options available; the only general rule is that the specificities and dynamics of the context will inevitably play a role in shaping livelihood choices.

2. Financial or economic capital-including savings and access to credit;
3. Physical capital-including infrastructure and transport;
4. Human capital –including demographic and gender structures, the body of education, skills, knowledge, good health needed to produce effectively; social capital-including social networks, claims, associations, and social relationships, more generally, including consensual norms, and relationships of legitimate authority.

2.2.6 Sustainable Livelihood Resources

Two aspects of livelihoods, in particular, appear to offer opportunity for further improvements in integrated watershed management. These are: the link to poverty and impact assessment.

Literature promotes the idea of monitoring a range of Sustainability indicators recognizing that sustainability cannot be condensed into a single definition (Pannell and Glenn 2000). Most of these indicators are strongly ecological in focus and very detailed, or they are policy oriented and developed at aggregate, sector or country level. So, indicators are developed that differ greatly in information content and condensation of this information. Scientists are most interested in uncondensed data that can be analyzed statistically. Policymakers and the public in general can be assumed to prefer condensed data related to policy objectives and free of redundancy (Pacini et al. 2003).

The concept of sustainable livelihoods at the household level has similarities to the World Bank “greening” concept, but again its full value in Integrated Natural Resource Management science will depend on the development of

measures and methods for assigning values to the different capital assets at household and community levels (CGIAR). Thus, rural livelihoods and their future at the local community level are defined partly by access to tangible assets, e.g., natural, physical and man-made, to non-tangible assets, such as social and liquid assets (e.g., financial), and partly by the higher order national and international forces and opportunities of social, economic and infrastructure development lifting communities into a higher level of economic and political integration. The linkage between integrated watershed management and poverty reduction will therefore vary depending on the actual mix of livelihood assets and opportunities. The Integrated watershed Management approach facilitates the integration of research on policy, property rights and the institutional and socioeconomic environment, so that issues are addressed from a technical, socioeconomic, cultural, and institutional and policy perspective. It is true that this approach incorporating sustainable livelihood concepts in their analysis, but the aim must be to change the asset profile of households to enable poverty reduction to occur at household and community levels. While technology for productivity improvement is an essential precondition for change, it is not a sufficient condition. Integrated Watershed Management aimed at poverty reduction must enter the social and cultural fabric of the household and the community in which the economic activities of farms are embedded (Cernea and Guggenheim1985). See details on the following schematized illustrations (Figure 9 Sustainable livelihoods framework) a checklist for “Sustainable Livelihoods Framework (Ian Scoones, 1998). It has been used by DFID & UNDP- as a core feature of their version of Framework for Livelihoods Analysis (see Carney et al. 1999), in livelihoods discourse ‘sustainability’ tended to refer to coping with immediate shocks and stresses, where local capacities and knowledge, if effectively supported, might be enough.

2.2.7. The Concepts and Models of Community

Participation

What is community Participation?

Definitions: Community participation is the process by which individuals and families understand responsibility for their own livelihoods and welfare of societies. Communities should be motivated enough to solve their common problems themselves. This enables them to become agents of their own development instead of positive beneficiaries of development aid. Community Participation is defined as employing methods where the community is motivated to function and contribute as a group to perform various tasks they all contributed to

and capture the essential elements and interactions and extent of community participation in the process of watershed project planning and management. Here, to what extent the project has intended to satisfy the main needs and aspirations of its beneficiaries? As well as paving the ground to full fill the principles of sustainability of the land use or management of natural resources.

In the past, people's participation was usually conceived of in terms of the percentage they contributed to a project's total cost and their contribution was generally in the form of voluntary labor. But, since the local people cannot contribute cash, their contribution is most significant in activities that require a lot of unskilled labor. The spirit of



identify, select and design. In any society there are different levels of interactions, not only rights, but also responsibilities, such as: a judicial levels that looks after conflict resolution, traditional structures and religions, different levels of vulnerability, intra and inter-community relationships, state laws and regulations, etc. Hence a community is made up of all these interactions, where some defined as coming from inside, an others coming from and going to outside. This includes use and management of land resources, people's assets and farming system, economic activities and coping mechanisms. Therefore, this study entails to understand

community participation was first incorporated (since late 1960s) in the process of planning and implementation at the district level by focusing users' committees. However, due to lack of understanding of mechanisms of people's participation among the members, the user's committees did not mature. Also, in the absence of legal framework for people's participation in the past, influential persons tried to get all the benefits of a project's activities in the name of community participation. Some of the issues and experiences of people's participation in watershed management in the past are as follows (Shakya and Bogati, 1991): Watershed management focused on public lands

and activities like conservation, plantation and gully control were popular since decades. Work was carried out in the field either by directly hiring local laborers or by operating through a contractor. The beneficiaries were involved conventional. Mass education materials were published and disseminated, but extension services were focused on privileged and well-off people. Users' committees were seldom formed. Participation was limited to political leaders and local elites, and users meetings were organized only to satisfy the formalities. Some activities such as environmental reclamations, water source protection, water supply and hill side terraces improvement did receive contributions from the people in terms of their labor. The wage payments were made at a bare minimum fixed rate (in kind or cash) without taking into account the labor price in the local markets. However, these activities were nominal and unsustainable. Activities accomplished by peoples' participation did not adequately address the non-privileged and powerless groups of the community and lack to represent the gender dimensions and equity of resources distribution. See the summary of the evolution of people's participation in four stages (Box1)-annex_____

2.3. Review of Participation Models in Watershed Management

Models of Participation: Different models of people's participation which are commonly practiced in watershed management projects are: 1) No participation model: the model to which information about programs, budgets and project evaluation is given only to the members of the government. 2) Information sharing model: In this, the project shares information with the district level political unit and discusses project evaluation. 3) Political participation model: Here, the project field staff share information with the village level political unit and elicit input about identifying, planning, monitoring and evaluating activities. 4) Users' participation model: Here, the resource users form groups and put pressure on village and district level political units to identify, plan, implement,



and maintain project activities. Projects negotiate with the users' groups through field staff. 5) Individual participation model: In this model, the individual farmer is considered in planning and implementing farm-level conservation packages on private land. Projects negotiate with individual farmers, who in turn strengthen the users' groups. In the Ethiopian context, it was tried to include the community participation in the Soil Conservation Project (1986) and Community Forest Management (1989) considering an integrated program results in meaningful output only when the beneficiaries participate in planning and implementation of project activities. Nevertheless, it was addressed the blue prints without taking into account Ethiopia's varied attitude, rainfall, results in significant difference in temperature, vegetation cover, land degradation and socioeconomic environments. So no land management blue print would work. For this reason, the Ministry of Agriculture through the Swedish embassy in Addis, requested the Regional Land Management Unit (RELMA), to take on the revised/ updated version, titled "Managing Land", the combined practical guidebook for development Agents in Ethiopia, has been published including topics missed in the previous two guidelines, such as agronomy, livestock, water management and extension approaches.

Chapter 3

3. METHODOLOGY AND SAMPLING TECHNIQUE

3.1. Sampling Technique

The project area includes 82 micro-watersheds spread over 5 woredas and some 80,602 ha in Gumera, Ribb and Jema sub-watersheds of the Lake Tana sub-basin. So far 17 micro-watershed development plans have been prepared. Amhara Bureau of Agriculture and Rural Development (BoARD) has completed planning work in all 82 micro-watersheds by June 2011. From the three project intervention areas, this study has tried to address, only the two (Ribb&Gumera), whereas, Sekela and Mecha were automatically omitted due to lack of access road to project sites (Metiku, September 2011). The respondents for the HH interview will be selected randomly from the three (Rib, Gumera&Jamma) Watershed Project Areas or Districts.

Moreover, a multi-stage sampling by combining purposive and cluster sampling procedures were exercised following both Macro (sub-basin) & Micro Watersheds Zones following the principles of catchment management. The structures of the watershed management committees at different levels were accommodated as the basis to get the study off-ground. Mainly, purposive sampling was used after discussion with the regional & woreda level project management and coordination units focusing on selection of specific sample watershed areas, kebeles, villages, community groups/HHs benefiting or affected from specific project activities or infrastructure construction. As result of this, Zefe and Woyenwoha (from Gumera), Baskura and Kenati (Ribb sub-watershed) from Farta Woreda, as well as Keha and Woybella sub-microbasins heading to Ribb from Debretabore woreda were selected for the study. Meanwhile, Hirui-Abaregay (also heading to Ribb) was selected to draw good lessons and best practices from the past and existing initiatives.

The procedures employed were: (i) set criteria for each watershed project in collaboration with the regional, district and village level Watershed Management Committee, and then within each project areas two or three kebeles were selected based on accessibility; again from the two kebeles two or three villages/Gotts/Clusters were selected.

The numbers of respondents from each kebele were 10 (five Women and five Men). Hence, the total number of respondents to be selected for interview will be 30 HHs (giving equal chance to both women and men).

(ii) three kebeles selected from each woreda/Watershed area shall satisfy as much as possible representation of topographic variations or slopes of the catchment and agro ecological demarcations (Dega and Woyina Dega,, if any), distance of the watershed project sites from the homesteads/villages, district towns, types of activities/ infrastructure constructed by the project, etc.

(iii) the sample selection used list of watershed management committee and kebele members as a sampling frame.

3.2. Methodology

Methodologically the process of qualitative and quantitative data collection from both primary and secondary sources followed using preferably a cross-sectional comparison as an interactive method. At the same time, participatory strategies & variety of tools offered by SEGA-Model were used to be sensitive, flexible and adaptive to the conditions in the field, through mobilizing and engaging watershed project stakeholders, individuals, beneficiaries/community members and other interested groups, etc. The approach has focused on the orientation of identifying baseline indicators, post project conditions, analyzing stakeholders and assuring clear project objectives.

The consultant reviewed relevant reports and documents. Face-to-face discussions and meetings with NBD EthNPC, ENTRO- Technical Coordination Office, Watershed Management Coordination and M&E team at MoWRE, Amhara Regional BOARD, woreda level personnel and field implementers in Farta, Debre-Tabore, woredas were held. Likewise, discussions with community facilitators and Watershed management committee were held at selected micro-watersheds in Ribb and Gummera sub-watershed basins. For example, it was also understood from face-to-face discussions with technical staff at strategic and operational levels, despite, the role and contribution of CSO is significant for support building in the areas of advocacy campaign and institutionalizing community participation and livelihood concerns, only one local NGO (ORDA) is working with the regional government not as permanent partner, but as volunteer stakeholder (local CSO) by providing different community trainings to the watershed project beneficiaries and development Agents/CFs. At national level NBD-Ethiopia Forum is playing a paramount role through its forum networks (see the details under sub title 4.1.6.- CSOs Engagement under chapter 5).

A Rapid Rural Appraisal (RRA) was conducted in several villages of the micro- watershed areas to gather information on different aspects of people's participation and critical elements of contributions made by community to the watershed project, the extent and their role, arrangements for compensation payment and cost-benefit sharing mechanisms, access over the resources and equity as well as the role of women in watershed planning and management processes. The PRA was organized in the following manner:

- Different literatures, studies, guidelines, project document, reports, plans related to the Integrated Tana Belse Watershed Project were reviewed;

- Face-to-face discussion and interview held with NBDEth.NPC, Board Members, ENTRO-Watershed Management Coordinator;
- Informal interviews were conducted with farmers, conservation groups, members of users' groups and Kebele and Community Watershed Development Committees;
- Secondary and primary information gathered from federal, regional and woreda officials, project field staff and local leaders through face-to face/panel discussion ;
- Issues related to watershed management were discussed face-to-face with project planning, coordination & management teams and other concerned individuals;
- Information triangulation was done by interviewing farmers on randomly chosen sites; and
- Village level meetings were conducted for gathering information in groups;
- Existing people's experiences and watershed schemes were documented using video-aids and digital photo camera

3.3. Stakeholder Analysis:

The stakeholders are those groups, persons or institutions with interests in a watershed Project. They are grouped or categorized based on their interests, significance, role and power in influencing the decision-making process. In our case this study has tried to group into two Categories:

- Category1: Primary Stakeholders: these are those ultimately affected by the project either Positively or negatively (such as project beneficiaries)
- Category2: Secondary Stakeholders: these are the intermediaries in the project process, such as funding, implementing, monitoring, advocacy organizations or governmental, NGOs or Private sector organizations.

Key Stakeholders: are those significantly influence or are important to the success of the project, whereas external stakeholders are those who are not necessarily primary or secondary stakeholders but who may benefit indirectly from the project, or else pose a potential risk through their influence (eg religious leaders disapproving of credit with interest, of course which is not observed in the case of this watershed project due to cancellation of credit component). Therefore, the stakeholder analysis is one of the techniques in the SEGA-Model used as one of tools for the identification of a project's key stakeholders. Hence, their interests and the ways in which these interests affect project riskiness or viability has been assessed to provide information about individuals, groups, and institutions with an interest in the project that can be used to prepare



realistic and effective strategies for participation. At the same time, presence of potential conflict of interests between different stakeholders which may put the project's implementation and sustainability at risk has been assessed. In terms of organizational culture it involved productive sector such as agriculture as the main leading implementer at operational level, but also infrastructural and social sectors: roads, health, education, irrigation & water. While illustrating the problem the process has defined various levels of integration, from disciplinary or sectoral at one extreme to trans-disciplinary or sectoral planning and implementation of watershed eschews integration altogether, and relies on casual interaction for the whole to be greater than the sum of the parts. At the other extreme trans-boundary and trans-sectoral required the creation of a new cognitive paradigm, cooperative initiative across the borders and with cost-benefit sharing concepts. Watershed as multi-disciplinary and multi-sectoral involved a common goals but relied on individual actions. At the same time the watershed as interdisciplinary and inter-sectoral has taken integration one step further with cooperative goal definitions and collaborative actions. Here we have to take note of that these require collaboration in new way between group of people group of countries or states traditionally worked in separate but sharing the same basin boundaries and resources.

In addition to this, the relationship between different stakeholders which can be built on to encourage links and sense of ownership and responsibility has been analyzed.

Brainstorming: The first step in our stakeholder analysis was using brainstorming to identify who are the stakeholders of the watershed project? As part of this, it was tried to consider thinking all the organizations and individuals who are affected by the project directly or indirectly, who have influence or power over it, or have an interest in its successful or unsuccessful conclusion.

The table7 below shows the analysis of roles and responsibilities of state and non-state organizations/institutions who might be or are stakeholders in the watershed management projects:

Table 7 List of Stakeholders (Ranking)

	Category		Roles & Responsibilities	Ranks
I	Primary Stakeholder	Basin Communities or beneficiaries	Project ownership, implementation (positively/negatively affected by the project)	2
II	Secondary Stakeholders	NBI	Initiation for cooperative and benefit-cost sharing and transitional(multilateral) across riparian countries	3
		ENTRO	Project designing, fundraising, technical backstopping	2
		NBD	Advocacy, awareness raising and increase understanding of the public on various thematic areas pertinent to Nile Cooperation	2
		World Bank	Funding	4
		Eastern Nile Countries (Egypt, Sudan and Ethiopia)	Policy and project owners, implementers, Facilitators, Cooperators, Negotiators, reap cost-benefits across trans-boundary Nile basin development cooperation	4
		Governments • MoFED& BoFED	Co-signatory, Fund disbursement/financial transactions, facilitate procurement and allocation	3
		• MoWR&E	Co-signatory and Prime implementer (strategic and technical support, i.e. result monitoring and Eva. And Facilitate Decision Making at apex,)	4
		MoRAD	Strategic and Technical Support	4
		Env. Protection Authority	Member of a taskforce at Strategic Level	2
		MoH	Member of Task force at strategic level	3
		MoE	Member of Task Force	3
		Amhara Reg. Council(President Office)	Chairing, follow-up and provide the necessary supports	4
		Media (Federal)		3
		ARBoARD	Co-Signatory at Regional Level Prime implementer	4
		Amhara Regional Disaster Prevention and Management or FS Office	Implementer of B2 Project(Disaster Reduction and Flood Management)	2
		Private Sector	Contractors	1
		CSOs	Collaboration and advocacy	2
		Woreda Cooperatives	Collaborator	2
		Woreda Agriculture Offices	Direct implementation	4
		Woreda Women, Children and Youth Affairs	Member of Taskforce/participant	2
Woreda Health Office	Member of task force/ provide technical support	2		
Woreda Education Office	Member of taskforce/provide technical support	2		
Woreda water office	Member of task force/provide technical support	2		
Woreda Medea	Film production, Documentation, info. Dissemination (up on request)	2		

The above listed stakeholders were regrouped based on the following criteria:

4 = High power- interested people: these are the people you must fully engage and make the greatest efforts to satisfy.

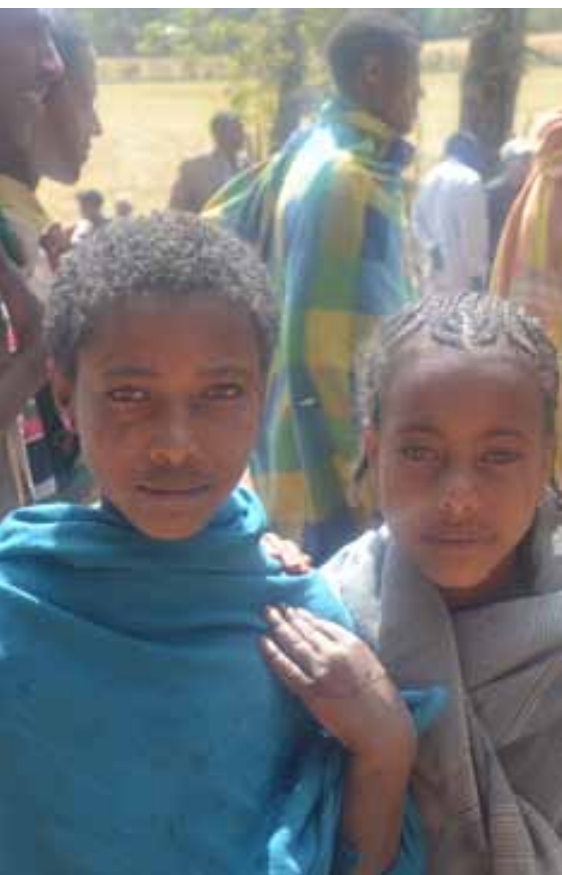
3 = High power- less interested people: put enough work in with these people to keep them satisfied, but not so much that they become bored with your message.

2= Low power, interested people: keep these people adequately informed, and talk to them to ensure that no major issues are arising. These people can often be very helpful with the detail of your project.

1= Low power, less interested people: again, monitor these people, but do not bore them with excessive communication.

Table 8 Summary of Stakeholders Analysis

Keep them Satisfied	Summary of Stakeholders' Analysis Tool			
High	World Bank			Manage Closely
	Eastern Nile Governments (Egypt, Sudan and Ethiopia)		MOFED	
	MoW&E		MOH	
	MoRAD		MOE	
	ARBOARD		(Media Federal)	
			Rural Roads Authority	
Power				
Low	Private Sector		NBI	Keep them informed Adequately
	Think-Tanks		NBD	
			ENTRO	
			CSOs, Municipalities	
			Basin Communities	
			Youth and woman Association	
			Woreda Cooperatives	
			Woreda Women, Children and	
			Youth Affairs	
			Woreda Health Office	
			Woreda Education Office	
			Woreda water office	
		Woreda Medea		
	Low	Interest		High



- **Key Stakeholders of the Project:**

As result of the above analysis, Government as a whole and Ministry of Water Resources in particular is responsible for optimum allocation and utilization of water that flows across or lies between more than one regional government, for drafting water resources laws, for permits, for utilization, management and international agreements regarding trans-boundary Rivers and to supervise meteorological services. It has seven departments comprising among others, Hydrology, Planning and Projects and Meteorological Services Agency. It is responsible for the overall responsibility of developing guidelines related to water resources and watersheds jointly with MoRAD.

Commission for Sustainable Agricultural and Environmental Rehabilitation Work includes efforts in four regions with the objective of developing irrigation in areas vulnerable to drought; Regional Bureaus of Agriculture cover activities regarding irrigation management including extension services and soil and water conservation, Regional Water, Mines and Energy Bureaus Cover activities mainly related to design, implementation and operation of urban and rural water supply

schemes; Environment Protection Agency responsibilities include the development of guidelines on EIA for projects in all sectors. Despite its importance and mandate in the field of environmental management, its role is a very minimum at operational levels. ENTRO is a model basin organization that has achieved best practices in integrated water resources development and management. It WORKS FOR THE SHARED BENEFITS OF COOPERATION. ENTRO, as a regional organization, has a distinct role and profile in working for the sustainable integrated development of the Eastern Nile under the umbrella of the NBI. It serves ENCOM and ENSAPT in their pursuit and provides technical support. Once ENTRO identified/designed project proposal and raised funds for watershed management projects, it responsible during the course of project implementation remains on providing technical backup.

- **Focus Group Discussions Organized:**

Discussions were held with watershed management committee and volunteer beneficiary members (6-10 individuals were participated in each group out of which 3-4 were women. A total of 32-40 individuals were participated in 40 Focus Group Discussions) to understand community participation, the role of women, the engagement of specific group of community in specific activities, access and control over the communal resources, to figure-out compensation arrangements and benefit sharing mechanisms etc

Figure 11- Sample Picture from Focus Group Discussions with community (at Keha)

Strength	Weakness
<ul style="list-style-type: none"> • Integration of community engagement and their resource contribution(voluntary) in planning and implementation process • Holistic approach with emphasis to build on human and social capital, • Appropriateness of industrial and local materials used for catchment treatment • Presence of sense of communities ownership to safeguard the project activities/out-puts • Presence of Positive communities' attitude and good feeling about the project • Presence of good lessons and best gulley treatment and area enclosure practices from GTZ • Emphasis on S &Water Conservation schemes and an intention to address the root causes of watershed degradations 	<ul style="list-style-type: none"> • Inadequate CSOs engagement or absence of International NGO in operational Region/Woreda • Significant delays on construction of capital intensive infrastructures and other IGAs(confronting the implementation capacity of the government) • Lack of streamlining saving and credit component to an enhanced livelihood, improved productivity and access to financial products marketing • Unequal communities awareness • Inadequate regulatory framework to reinforce benefit-cost sharing on communal lands(property rights), • Inadequate regulatory framework in internalizing externalities • Pending document/guidelines for equipment procurement, Human Resource-by gender, Water Management committee • More emphasis to S&W activities and inadequate to Livelihood
Opportunities	Threat
<ul style="list-style-type: none"> • Availability of a minimum of one CF per micro-watershed and 3 DAs per Kebele, is a good opportunity to mobilize local resource for sustainable development (compared to the past one or two decades) • Absence of rainfall shortage in the project areas(food secure) • Presence of relevant government policy (both for watershed and land management) is an entry point and enabling environment for interventions 	<ul style="list-style-type: none"> • Cancellation of Credit

BOX 3 Summary of Field Visits/ physical observations, individual/ Group interviews and Discussion

Kebele	Village	Sub-Basin	Type of Scheme Visited	Reason	Total Hectares enclosed	Control measures	Tree/Grass species plant for livestock feed or forage	Out put
Koka-upper-stream in Tsgur-Adigo Kebele	Kaha community micro-basin		Hillside-Terrece	New site selected	330	Physical & biological		Run-off reduced, Silt-trapped, water conserved
Abagey	Gudeyu	Ribb	Enclosure of Jalmeda Gully and Catchment treatment	Upscaled-Best Practice from GTZ	7hac Community own initiative	Physical and Biological (Complete enclosure with restriction of livestock movements)	Bane, Kikuyu & Elephant Grass, vetch, Desimodium, Acacia saligna, A absynica	Run-off mitigated, silt-trapped/ decreased downstream sedimentation

**Chapter 4****4. RESULTS AND DISCUSSIONS****4.1. Activities of Watershed Management Project****4.1.1. Partnership and Institutional Arrangements**

The support for the Nile Basin Initiative has been characterized by partnership among CSOs/NGOs, Governments, Donor Communities and private sector with the view to working together to achieve their common goals, such as build mutual trust and confidence, share vision and knowledge as well as learn from others. The initial partners comprised the World Bank, the United Nations Development Programme (UNDP), and the Canadian International Development Agency (CIDA). These initial “cooperating partners” played the role of concerned facilitators, assisting the process of dialogue. As the NBI moved into the preparation of the Strategic Action Program, the governments of Denmark, Finland, Germany,

Italy, the Netherlands, Norway, Sweden, the United Kingdom, and the United States, together with the Food and Agriculture Organization (FAO) and the Global Environmental Facility (GEF), actively supported the Initiative, directly or through World Bank trust funds. With the first ICCON, the circle of partners has widened as the international development community commits further support for Shared Vision Projects and for preparation of Subsidiary Action Projects

The Amhara Regional National State Bureau of Agriculture is fully responsible for the planning, coordination and management of the natural resources management project (Component-B) in general, and the watershed project (Component-B1) in particular. It has appropriately staffed project coordination units at the natural resource development and conservation division assigned to effectively implement the project in harmony with the activities of other divisions. It is also assisted by a team of technical advisory groups (its office stationed at Amhara Regional BoARD), guided by an expatriate team leader with two/three senior Ethiopian experts. It includes facilitating the sub-regional, regional workshops, conferences, field days, and technical and financial reporting via its woreda offices in the three selected sub-watershed basins (Ribb, Gumera, and Jemma). Federal MoWR&E, MoARD, and MOFED are providing the overall strategic and technical support as well as facilitated national and international training and exchange visits through research scientists/institutes working closely as national, regional, international alliance/affiliates. The regional agriculture research center, with its comparative advantage and expertise in highland agriculture is providing technical backstopping and operational assistance by demonstrating its technological innovations and research outputs aiming at to improve the existing crop-livestock production systems and other off-farm livelihood opportunities in the selected micro-watersheds of Tana-sub basin. While, focused on ADLI-policy and land

titling right issues to ensure food security and poverty alleviation strategies through sustainable watershed development and land management interventions. The institutional arrangement for coordinating and management of natural resources at operational level is the watershed -woreda taskforce, comprising Woreda Agriculture Office (Project Coordination and Management Team, SMS and experts) as sole leading implementer, Health Office, Education Office, Youth, Children and Women's Affairs, Water Office, Rural Road Authority and Woreda Finance and Economic Development as well as press agency as deemed necessary. All were participated on the awareness raising, socioeconomic and environmental planning and implementation process and benefited from different trainings and exchange visits as well. At Micro-basin levels, watershed committees are the lower level community structures guided by kebele chair persons and assisted by other community representative/religious leaders/, Community Facilitators (employed by the project), Development Agents, rural school teachers and health technicians. Nevertheless, despite they have

4.2. Analysis of Planning and Implementation Process

4.2.1. Methodology of Analysis

- **Situation Analysis (project approaches and methodology)**

In order to appreciate the challenges of planning Eastern Nile, trans-boundary water resource development projects against a backdrop of evolving modalities, ENTRO found it important to introduce, albeit briefly the principles, approaches and praxis that inform the preparation of ENSAP projects. The projects were prepared to inform the principle of "multiple countries, one river system" or trans-boundary, "no-border orientation". It has adopted a trans-boundary orientation as a must in order to understand the EN-river as one, integrated hydrologic unit and as a system. Adopting such an orientation in turn required, for the purpose of conducting a trans-boundary and holistic,

scientific study of EN-River System, to disregard political boundaries (No-border-Analysis), for what happened in any segment of the river has invariably downstream and upstream impacts.

Therefore, the watershed management project in Ethiopia has been designed taking into consideration these premises. The Federal Government of Ethiopia and Amhara National Regional States, adopted “community-based participatory watershed development planning and management approach”. According to the field level report from the woreda SMSs, and DAs, the formation of watershed management committees at Kebele and micro-watershed levels was capitalized based on the experience gained from organizing communities as Kebele Development Committees (KDCs) - an outcome of enhanced participatory approaches and the way forward in building trust at lower levels. To enhance communities’ participation in planning and implementation process, the following measures were taken as stepwise approach and achieved accordingly:



1. Trust Built: during this field mission it was observed that there is a positive relationship among the woreda SMSs, CFs, DAs and the community. It was observed that Development Agents and CFs stay and live in their pertinent village they serve. This was an ample

opportunity to the community to know and accept Development Agents/Community Facilitators and in turn helped DAs &CFs to get to know the local people, their lives, local areas, where and when people prefer to meet. It was observed during community and group discussions that DAs/CFs was committed to maintain local values and customs with respectful and good treatment while they handle conversation with local communities.

Outcome:

- DAs and CFs were familiar with local norms and values
- Knew very well the reliable and influential local leaders, who be able to take leadership in community planning and implementation process,
- Confidence has been built among each other.

Nevertheless, even though the trust built and confidence created was encouraging, I believe that building trust is not a one-off activity. Notwithstanding the existing local knowledge and social cohesion among development practitioners and the community, community workers/DAs and facilitators need to understand that building trust



takes time and continues as they work with community and once lost it is difficult to regain.

2. Socioeconomic assessment was conducted: taking into account agricultural systems, the socioeconomic

issues were related to crop-livestock, feed energy, forestry needs, soil and water conservation, seasonal livestock and crop-production labor requirements. The potentials and problems were identified including how they dealt with such issue during the past.

Gender and labor issues pertinent to the role of men and women in agricultural production, seasonal variations in labor needs etc were taken into account. By doing so, it was understood that the following outcomes were gained.

Outcomes:

- From the total working hours, 65% of the woreda experts working time has been spent in the field
- Communities were able to analyze and understand local systems and possible ways to improve their watershed and land management.
- Local people’s desire to increase production and solve the production potential of the land enhanced.
- The existing local efforts, knowledge, skills, problems or gaps as well as new additional skills and technologies required were identified,
- The gender aspect was fully addressed and considered during targeting and 30-40% of the beneficiaries were women when we analyze gender balance of the project. In terms of community contribution to the watershed from the total participation of communities (labor mobilized) per day- 25-47% of labor contribution goes to women.
- December 15-March 30 and January 15-March 30 were identified as slack periods in order not to affect the agricultural calendar while mobilizing and engaging communities’ labor to watershed project. Every HH (both couples) regardless of husband and wife has been contributing their labor during these slack periods. Both women and men worked on voluntary basis for 6-7 hours per day.

3. Environmental Assessment Conducted: even, though it goes hand-in-hand with socio-economic assessment, it was tried to understand the physical and biological environments through employing transect-walk with watershed management committee. As a result of this, land was classified depending on the slope, soil type, and fertility, soil depth, drainage, natural vegetation etc so that farmers could understand and indentify ways the land might improve. As result of this, local community drew maps showing different types of land (supported by SMSs, DAs and CFs). Villages or points where critical gully or flooding occurs, land that need rehabilitation, possible locations of cut-off drains &terracing, nursery sites were marked on the maps. Awareness rose by development agents intensively and made farmers to understand relationship among their farm enterprise, crop-livestock, and forage. Trees, common and private lands/resources and inputs/means to control soil erosion, improve land productivity(crop and livestock yields)

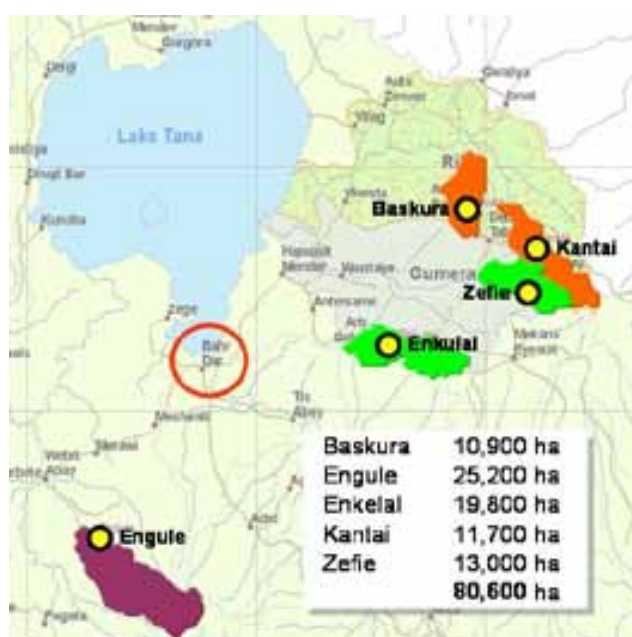
Outcomes:

- Criteria for forming groups and mobilizing local resources and inputs were set out,
- Development Agents, CFs, have assisted the communities and developed/sketched maps of the areas, showing the locations and alignments of natural resources, and roads, footpaths, springs, waterways drainages, nursery sites etc
- A list of different activities were identified/quantified

4. Planning: Devolution of power and responsibilities to lower levels of government administration is an official policy opportunity that has substantially facilitated the community Watershed Management Action Planning process. The process of planning was facilitated by woreda experts, DAs and CFs and communities were involved in prioritizing their problems they can solve easily. Their confidence and decision-making capacity was built

combined with the awareness raised, different trainings delivered on specific and inter/intra-disciplinary courses, experience/exchange visits organized and shared.

Figure 12- Location of Selected Watersheds



The Watershed management planners were not plan in isolation but, at all levels, ensured timely consultation with implementers, watershed management committees, and beneficiaries. Preparation of all designs and plans in each micro-watershed include the necessary arrangements to enhance the implementation, and mainly, at the lower levels, this was performed through active involvement and joint agreement of key stakeholders at lower level. In the ideal case, planners would also be responsible for joint review and coordination as a mechanism to monitor the process and implementation status of watershed projects, provisioning that capacity to do is already built-in by the project.

Outcomes:

- Watershed committee has been organized members but comprising (10-12 members) in turn grouped again into (1:5) small clusters (one group leader to five members). Out of which 40-50% are women.
- Detail Plans were prepared for the community or catchment and approved by the community (on

public communal and private lands). The plans included detail activities and maps for detail conservation, livelihood, institutional/capacity building related activities

- A list of technologies to be used (both indigenous and industrial products were identified)
- Working calendar when to implement each activity for each year (five years plan for the whole project period) has been produced.
- Generally, communities satisfaction, trust and attitude, sense of project ownership, skills and knowledge upgrading etc was enhanced through their active engagement in the planning and implementation process,
- 25 community facilitators(CFs) were employed(i.e. one CF assigned to coordinate and serve 5-7 micro-watersheds)
- Out of 163 micro-watersheds identified in South Gondar, plans were prepared for 122 through community participation

5. Implementation: this is where people put into action what they have decided on.

A good way to ensure the implementation of watershed and land management is compatible-that one group's work (say cut-off drain) does not cause erosion on someone else land. This was achieved by encouraging



local people to mark their plans on community maps and to discuss and resolve potential constraints. The DAs, CFs and local community were decided and agreed on how they are going to measure the results their work during implementation process. Despite, the government has taken a lion stake of responsibility or being able to build the required implementation capacity to fulfill their task, implementation of livelihood sub-components and construction of capital intensive infrastructure related activities are delaying behind their schedule. On the other side, the regional and woreda planning and coordination teams reported that the project is progressing better since March 2011, compared to the past 2 or 3years year. In other words, more emphasis was given to implement soil and water conservation related activities.

Outcomes:

- Improved land management, increased crop production and livestock yield as well as ways to measure these were set out. Nevertheless, provided that the implementation status of project activities are at early stage and communities are not harvested yet the first production with watershed project and majority of livelihood and capital intensive social infrastructures were implanted unsatisfactory, it was difficult to measure the results and impact trends of the project at this stage. Possibly, the likely hood of physical activities for some of schemes can be measured. For instance soil and water conservation activities. Likewise, it was found difficult to measure the economic benefits at this stage, such as the income generated or increased due to watershed project and improved livelihoods, because of the planned IGAs were not being implemented, despite delivering skills to the needy landless individuals and youth. Resources from communal enclosures were not matured and harvested yet to be used for livestock

feed as hay or forage. Generally, the activities being implemented are at good status such as the watershed and land management principles have been practically tested through appropriate physical and biological control measures introduced; with full engagement of community participation, their labor contribution, addressed including gender and sustainability factors. As a result of these sedimentation loads and silt controls were proofed through appropriate conservation technologies, Database Management and Decision Support System has been strengthened and facilitated for improved M&E, nevertheless, tangible benchmarks to be up scaled as best practices were not achieved yet, pertinent to livelihood due to slow motion and time buried over introduction and launching of the project objectives.

- Support to demonstration sites was done at selected 14 FTCs,
- 76 micro-watersheds were identified in 16 Kebeles basically soil and water conservation activities are being implemented on public and private lands

Since, 2009-2011 (2,389 watershed management committees, community leaders, members and woreda experts have received training and exposed to different exchange visits.

- Time has also buried-over introduction (launching project at different levels) and studying watershed needs and identification of activities at micro-basin levels
- The Action Plan pre-supposes that the first Community Action Plans (CAPs) for the development nuclei was made ready and implementation being started-up (following the approval of finance).
- Whereas, Participatory Land Use Plans (PLUPs), for the micro-watersheds as the first phase of expansion from the development nuclei were

their children and women are facing problems in getting access to their schools and local markets. In addition to this, almost all respondents reported that they received all the necessary skills training in the areas of small ruminants breeding and management, poultry production, beekeeping, fattening of shoats, dairy, bamboo and leather processing and production, bakery etc. However, the project inputs were not delivered to the needy, until the final date of this field mission. As a result of this, an unnecessary expectation has been created among the community.



There is a need to create in-depth awareness of watershed management concepts, principles and implications (merits and demerits) way forward to better improve the implementation capacity at grassroots level. Watershed management planning at watershed level is a different subject than planning at the grassroots or meso-level. At higher levels, planning is strategic and concerned with development pathways in selected “development units or domains”, planning frameworks, and identification of priority areas. At the lower level, planning is more of concerned with modus of implementation and procedures that include streaming community participation and gender, their roles, and ensuring the integration of critical elements of community contributions to the watershed development project and benefit-cost sharing. The gender specific activities were incorporated in the project plans; nevertheless, mechanisms for benefits sharing on communal resources were being under discussion among the communities, but not institutionalized.

4.2.3. Analysis of physical Activities to date-under Watershed Management Sub-Component (B1)

The watershed development component of the project represents the most readily measurable and direct benefits associated with the project.

Figure 13 Summary of indicators and Activities Accomplished up to date

Outcome/Expected Results		Data	
Outcome 1: Enhanced sustainability of future agricultural development due to mitigation of land degradation and improved soil fertility and stabilized landscapes with greater fuel wood production	Physical Activity plan For the whole Project Period	Sum of Output/Achievements/ Up to now	Variation
	85,0026 hac	157 Plan were developed	5
	(162 micro-watersheds)	11,488hac (22.09%)	40,512hac
	52,000hac. arable land		31, 608
	33,000 non-arable land		
	0	0	
Outcome 2: Increased crop productivity, production and marketing of agricultural produce and improved pasture management, livestock productivity and veterinary services	795	36	759
Outcome 3: Increased off-farm and agricultural incomes	0	0	
Outcome 4: Enhanced human and capital resources from improved access, water supply and economic / social infrastructure.	21	30	11.64
Grand Total			

From the total budget allocated the watershed development budget shares 50% of the total project cost of the natural resource management. The calculation of budget allocation for watershed development activities (improved land and water use, soil and water conservation activities (SWC) as well as livelihood system improvements reference to gross assessment of watershed costs per hectare. The costs and benefits are assumed to result from interventions that affect around 80,000 ha (80, farmers). The cost estimates for the soil & conservation, water supply, irrigation and social service activities were prepared based of the study undertaken by the Halcrow Group of sample micro watersheds on a cost per hectare or Kebele basis for each of three river sub-catchment areas. The table 7 below shows the total capital cost estimates for the watershed development components, beyond 5 years of the project recurrent costs were approximately 20% of annual capital costs during the project period. Nevertheless, except that we were informed only about 17% was utilized from the total budget allocated for the watershed sub-component. Due to this, significant volume of activities planned to achieve Outcome 2, Outcome 3 and Outcome 4 were not implemented effectively on one hand and the procurement procedures by World Bank stringently demanding government partners to settle their Financial Expenses, after ensuring at least 70% of the first trench has been expended to receive the next installment. As it can be understood under summary of findings (Table 9) below activities planned under institutional capacity building & Project Management such as Training & Exchange visits, awareness raising, workshops and seminars as well as soil and water conservation related were implemented satisfactorily, whereas some of the activities were accomplished as moderately satisfactory and majority were unsatisfactory.

Table 9. Budget Allocation and Financial Expenditure

Budget Allocated for Watershed Development			
Description	US \$m	Utilized	Not Utilized
Livelihood Strengthening	12.7		
SW Conservation	14.9		
Capacity Building	7.7		
Total Cost	35.3		17%

Source: Amhar Regional & BoARD (September 2011)

Table 10 Gender Balance in Training and Exposure Visit in Assessment Woredas Community and Experts Training and Experience Sharing Visits Disaggregated by Gender (both in Farta and Debre-Tabore)

Debre Tabor Woreda			Farta Woreda			Grand Total			Percentage	
F	M	Total	F	M	Total	F	M	Total	F (%)	M (%)
178	709	887	390	1112	1502	568	1821	2389	23.77	76.2244

Source: Pertinent Woreda Agricultural Offices

The progress achieved during the last 22-23 months is encouraging, except significant delays observed in the implementation of planned capital intensive social infrastructures and livelihood activities (off/on-farm linked to IGAs). According to the information obtained from face-to-face discussion with the regional and woreda level staff, this result is achieved due to commendable leadership and drive of the Regional Watershed Coordination team and staff at the respective Woredas, Kebeles, micro-watersheds and integration of community participation and their voluntary contributions in the planning and implementation process. With respect to some original agreed outputs, the actual progress exceeded the expected targets of the Results Framework at this point of time, mainly for soil and water conservation activities. In the project document, it was planned to support covering the areas of 85,026 ha which corresponds to 162 micro-watersheds, 157 micro-watershed plans were developed and being observed during this field

mission. The plans were developed through raising communities' awareness, introduction about the guiding principles of watershed and land use management, objectives, roles of the kebele and watershed management committees, community, government, as well as on the merits/benefits of the project. Accordingly, different community trainings and exchange visits, mobilization and consultative process were performed at different levels. As a result, from 157 micro-watershed plans, it was reported that different soil and water conservation activities are under implementation with 136 watersheds plans.

In terms of land suitability for agricultural activity, about 52,000 ha of land was identified from the selected sub-watershed areas as arable land, of which about 11,488 ha (22% of the target) have been treated with appropriate soil and water conservations measures. From 33,000 ha of lands identified as non-arable but degraded, about 2,392 ha (7%) have been treated with soil and moisture conservation, pasture development and extensive eroded gully treatments. Both mechanical and vegetative conservation measures have been adopted through rehabilitation/construction of about 7,972 ha (9.96% of the total) of hill-side terraces and drainage water-ways. More than 36 community based nursery sites were established and miscellaneous environment friendly and multipurpose tree seedlings are being produced to be transplanted and integrated as biological control for watershed treatment, for forestry and agro-forestry purpose. Through these interventions, several kilometers of civil-work structures valuable for watershed management are under implementation, including terraces, contours & soil bunds, and micro-basins, gully-plugs, denuded grazing lands etc have been constructed on both communal and private lands. Further to this, water points (hand-dug-wells), diversion facilities for irrigation and other rain-water-harvesting/water storage structures are also under construction using roof catchments, but not effective. And several agricultural

high value crop and livestock demonstrations have been conducted effectively at impact assessments indicated reasonable increases in agricultural productivity and income of project beneficiaries from the initial interventions. Project Management and Coordination: Despite, most of these initial activities are labor intensive; the ongoing TA provisioning for M&E is encouraging. It has provided comprehensive monitoring and evaluation mechanism including establishing a sound Management Information System (MIS) in the office of Farta Woreda Agricultural Office. It was reported that experts and SMS working at woreda level in both Farta and Debretabore town woreda agricultural offices were equipped with the necessary equipment (computers and motor-bikes). Following this, a comprehensive baseline report for this sub-component is produced during 2009/10; and assisted in setting up of hydrological monitoring stations across project watersheds and created a time series hydrological data base or bench-marks to help measure watershed development impacts.



Table 11 Summary of Findings

Component/sub-component	Performance during assessment mission July 2010	Assessment during the MTR mission (May 2011)	Assessment during this Situation Analysis (September 2011)
Under Component B: Natural Resources Management Investment: Sub-component-B1:Watershed management:	B1: Satisfactory	B1: Satisfactory	Satisfactory
Theme-A: Livelihood Improvement: Improved better communications			Moderately satisfactory
Improved productivity			Unsatisfactory
Enhance income generation(IGAs)			Unsatisfactory
Them-B:Natural Resource Management			Satisfactory
Soil and water management			
Forestry &Agro-forestry			Moderately satisfactory
Them-C: Institutional capacity building & Project Management Training &Exchange visits			Satisfactory
Awareness raising workshop Skills upgrading Exposure visits			Satisfactory
Institutional strengthening and Capacity enhancement			Satisfactory
Component D: Project Management	Moderately Unsatisfactory.	Moderately Satisfactory.	
Procurement	Satisfactory	Moderately Satisfactory	
Financial management	Moderately Satisfactory	Moderately Satisfactory	
M&E	Moderately satisfactory	Moderately Satisfactory	
Overall Implementation Progress	Moderately Unsatisfactory	Moderately Satisfactory.	
Attainment of Development Objective	Moderately Satisfactory	PDO needs modification to align with the outcomes achievable during the remaining life of the project. It will be modified as a part of mandatory restructuring of this project following the recommendations of this MTR.	PDO modified to align with the outcomes achievable during the remaining life of the project. It was modified as part of mandatory restructuring of this project following the recommendations from MTR (May-June 2011).

4.2.3. Extent of Community Participation

The approach to people's community participation in watershed management in Ethiopia, has been evolving since 1974. Its evolution can be divided into four stages. In each stage people's participation has been described in terms of a five-part project cycle: watershed resources assessment; project activity planning; implementation, maintenance, followed-up on and benefit sharing; and extension efforts. The Community Participation at all the soil and water conservation features associated with this sub-component such as; the ridge-to-sub-basin approach that are being adopted by the project for natural resources management through treatment of upper-basin catchments is considered as an added-value to the improvement of land production and productivity, water retention capacity & stream



discharge, nutrient and sediment load reduction combined with livelihood enhancement interventions with integration of institutional capacity building focuses are highly innovative and relevant. The participation of community has been wisely streamlined starting from the planning stage through awareness raising and training. As a result of this, the integration of the community participation has been built within the planning and implementation process through voluntary labor contributions, since the inception stage to date. It accounts for about 46% (US\$1.7 m) of the total cost of the activities completed, which exceeded the expected share of 30% of the project cost attributed at appraisal.

4.2.4. Maintenance, follow-up, and benefits sharing

Depending on the activities, different plans for maintenance and follow-up were developed. Conservation or enclosure of forage lands were maintained by community guards. Users themselves will be trained to repair and maintain water supply systems and dug wells. The project assisted the watershed communities through

providing industrial inputs such as Gabion Wires, Hand Pumps, Cement etc whereas the community contributes labor regardless of wife and husband for conservation measures designed to control soil erosion/run-off, landslides and gullies. Even though, all hillsides terraced, gullies and denuded land under control are constructed with integration of physical and biological control mechanisms, including forage grasses, leguminous plants and tree seedlings for livestock feed, they are not matured yet to be harvested and used for livestock. Here, the community has already taken the ownership for the management and safeguarding of conservation sites. Nevertheless, the modality for benefit sharing is not institutionalized, yet. But, most of watershed communities are started discussions on developing By-laws. On the other side, some of communities who protected pasture land for their livestock have conventionally developed a benefit-sharing mechanism for collecting grass, legumes, leaves and twigs from enclosures by collecting a nominal charge for using them. The collected fee is expected to be used for further improvement of the protected pasture land for their livestock feed.

4.2.5. Benefits-Cost-Sharing with Eastern Nile Watersheds

What are the benefits and costs to be shared? By whom, which, what and when? Were some of question raised and treated accordingly.

The Eastern watersheds, especially the steeper, upper Ethiopian highlands are severely degraded due to poverty driven-overexploitation of natural resources and constitute the most critical clusters of watershed hotspots, without whose prior restoration all future water resources infrastructure development will be rendered of limited economic benefit to any one of the three countries. In tandem to this, the annual economic cost of watershed degradation is currently estimated at USD 670million, expected to reach at least USD 4.5Billion in 25years. Watershed degradation impacts are not confined in the Ethiopian highlands, but run all along downstream in



Sudan and Egypt, 207.2 Tones of sediments are transported annually from the Ethiopian highlands along the Blue Nile, Tekeze, and Sobat main sub-basins of the Nile. These sediments entail huge costs downstream in Sudan & Egypt, hydropower under performance; high HP infrastructure maintenance costs, dredging costs of clogged irrigation channels, etc. For instance for Roseires reservoir in Sudan alone, the annual maintenance and dredging cost some USD 7.5million. It is also estimated that with the significant reduction of the sediment load from Ethiopia, there would be an annual gain of additional USD 88million worth of electricity production in Sudan. Despite time and scale, a total population of 110million people living in the Eastern Nile watersheds (covers an area of 1,7million km²) will share the benefits from the current integrated watershed management (a system of multifaceted interventions) being implemented in the upper stream catchments of Ribb, Gummera and Jemma of Ethiopian Highlands.

Immediately, the watershed local communities will benefit from an increased agricultural productivity/yield at least by one-third of (11-14 quintals/hac./year-Pulses, Wheat, Barely, Potatoes). According to the information obtained from focus group discussions (FGDs), even though the first year production with watershed project is not harvested yet there, is no doubt to increase agricultural productivity, combined with increasing trends of compost applications and improved farming systems, the yield/productivity will increase by 3-4quintals per ha (than without project) for the first year and expected to double or triple in the following consecutive years. Further to these, even though activities related to improve marketing, health care, education, energy supply, alternative employment, population policy etc are not fully implemented yet; they are expected to improve the income, living conditions and livelihoods of the end users, sooner or later Eastern Nile Watershed Management (ENWSM-ENSP Brief, July 2011).

Nevertheless, beneficial developments were not forgone in the context of upper catchments of Ribb and Gumera (such as agricultural resettlement opportunities in the lowlands), henceforth, there was no community that could expect some payment from the downstream beneficiaries to make its own actions worthwhile. In any case, if such issues are going to happen in the future distribution of funds and compensation arrangements would be requiring sensitive investigation and resolution. For while, the basin communities within the study areas of Tana-basin were not encountered such a problem, anyhow, as far as the project impacts are progressing in the upper sub-basin to down streams, it requires to closely follow-up the negative and positive impacts .

Integrated basin-wide development and water resource management is the goal for ensuring sustainability and productivity of rivers, while unilateral action for maximizing local and national benefits irrespective of negative impacts elsewhere in the system, is least desirable. In moving towards coordinated and collaborative action in the basin, the benefits have to be worth the costs for all parties involved or some benefit sharing and compensating arrangement has to be put in place. To move in this direction it is necessary to improve perception of the potential benefits, from the obvious to the less obvious, and to understand the distribution of benefits and costs in order to achieve an arrangement which stakeholders see as fair. There are two main positive measurable impacts of the proposed watershed management interventions: (i) increased crop, fodder, livestock and wood production (and reduced losses), and (ii) reduced sediment load in the Abbay-Blue Nile River system.

4.2.6. Financial and Economic Analysis

Based on improvements on one hectare representative mixed farming system the main benefits from the watershed development intervention are derived as sustained increases in HH incomes. The sources of increased incomes are increased crop and livestock

productivity, a small increase in cropping intensity due to expansion of irrigate lands, some minor but important shift in cropping patterns in favor of specific fruits, vegetable and pulses, and added value of improved agro-forestry. The project has prepared and revised farm budgets to estimate net benefits that arise from interventions over the five years of the project period. The assumption is that during this period a typical farm with a cropped area of 1ha will, based on improved soil and water conservation measures and livelihoods strengthening interventions, modify its crop and livestock production systems (for different estimated levels of inputs) and that productivity levels will rise at one percent per year throughout the project period. This is much more conservative than the Halcrow background study and is very attainable especially given historical yield increases in Ethiopia. Net Farm HH returns on the basis of one representative hectare of land, at present, without and with the project, for each of watershed areas was assumed and shown

Table 12 Net farm HH returns

Net farm HH returns (Birr) in the three Watershed areas			
	Present	Future without Project	Future with project
Ribb*	4,557	4,259	7,696
Gummera*	4,647	4,350	7,850
Jema	4,391	4,033	7,394

*Both are study woredas

In each area the traditional food security crops, teff, Barely, Wheat, Finger millet account for approximately 70% of the land allocation per ha, with the remainder being pulses, vegetables, oilseeds and root crops (see the details in table 13 below).

Table 13 Annual Crop production from the baseline to the present situation, the case without the project and with the project (rough forecast obtained through focus group discussion and individual farmer's interview compared with the available benchmarks taking the following as major crops Wheat, Barely, Pulses and potatoes cultivated in the assessment areas, of course using rain-fed).

Annual Crops	Present (tone/ha)	Future without project	Future with Project	Present forecast	Reasons for the anticipated increase
Teff	1.0tons/ha	0.9tons/ha	1.16 tons/ha	-	Effective and appropriate soil and water conservation measures were constructed (by the community) at upper catchments (including hillsides) before the current main rainy season (since March 2011). As a result of this, majority of villagers reported that their farmlands located immediately at foot-hills were frequently damaged by flooding, seeds and fertilizers usually washed away by run-offs. These problems have been resolved and farmers are expecting good harvests than before, if the incidence of other risks (pest-infestations) holds not appearing until harvest time.
Wheat	1.70	1.60	1.97tons/ha	1.7	
Barely	1.5tons/ha	1.4tons/ha	1.74tones/ha	1.4	
Maize	2.5	2.3	2.90tons/ha	-	
Finger Millet	12.27	12.27	7.4	-	
Pulses	1.05tons/ha	1.4tons/ha	1.74tons/ha	1.4	
Oilseed	9.35	9.35	9.35		
Vegetable(Oinion)	1	1	4		
Potatoes	9.70	9.70	11.25	10	
Fruits	0	0	2	-	
Cropping intensity	100	100	105	-	

As it can be seen in the table above farmers were received skill training and some inputs such as fruit seedlings (Apple) but not received yet improved livestock breeds. In relation to this since the actual implementation of soil and water conservation activities were started in March 2011, they are at early stage to see the tangible changes in increased or decreased production. All crops are at flowering stage and would be difficult to be sure about the yield to be gained for this main cropping season, provided that there might be various factors that could affect positively or negatively the

amount or quantity of yield to be harvested. So it could be wise to conduct such an assessment every year at the end of crop-harvest. Nevertheless, the farmers interviewed during the assessment have responded based on their general understanding and forecasted as the production will increase by one-third (because of soils conserved and run-offs mitigated) from conventional annual yield/1ha of land for pulses, barley, wheat and potatoes. When we compare this with the baseline information it is somehow corresponding and sounding. In addition to this, farmers were conscious about the application of compost instead of using 100% of inorganic fertilizer. They reported as they started practicing using 50:50 (or 50 compost:50 inorganic fertilizer). As a result of this they do hope the productivity of their land and yield will keep on increase and better improve in the following 2-3 years.

4.2.7. CSOs Engagement

The CSOs engagement in Nile Cooperation is facilitated by the regional secretariat based in Uganda and through National Discourse Forums (NDFs) in each of the ten countries (Burundi, the Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania



NBD Forum Kampala 2011

and Uganda), which currently have a total of over 750 civil society member organizations across the region. With regard to Ethiopia, the Ethiopian Nile Basin Discourse Forum organized different forums at different levels. The

NBDF has been committed to increase awareness on the benefits and cost of Nile Cooperation through conducting advocacy campaigns, multi-stakeholder forums, engaging Media, maintaining a web-based information centre, and promoting awareness of Nile Cooperation through NBD member activities and Network development. Following the same approach, NBDF has been putting all the necessary efforts to better informed NBI policy, planning, design and implementation of programs by using the following activities as a milestone:

- Conducting advocacy campaign for policy development and influence NBI and member governments,
- conducting an influencing strategy for key selected issues in SAPs, and
- Representing NBD Membership by attending and providing feedback at NBI official meetings.

Following this, the Ethiopian NDF 1st National Multi-Stakeholders Forum (MSF) was organized on Sept. 24, 2010 in Addis Ababa. On this forum, 91 participants drawn from Government Offices, Women and youth groups, Academia, & Research inst., Mps, Opinion-Makers, UN Agencies, Donors, CSOs/NGOs, Professional Associations, Media; Trade Unions etc were participated. As outcome of this forum, participant understanding and awareness has been increased on the benefits and costs of Nile Cooperation. Here, on this report, it was underlined that various stakeholders expressed their intent to promoting Nile cooperation towards its positive conclusion. Finally, the following valuable and relevant recommendations were made to address issues of concern raised by participants: 1) there has to be heightened campaign aiming to raise awareness about the Nile Cooperation further; 2) Gender-sensitive networks need to be established in the basin; 3) CSOs relationship among the riparian countries has to be strengthened so as to make the Nile Cooperation effective, 4) More importantly it was recommended that, Youth should be enlightened and take part in the issue of the Nile-discussion forums (campaign

should be conducted at all levels). Subsequently, awareness raising events via member activities were implemented on the occasion of Seminar with Media that was held on the 16th of February 2011 in AA, on “how to increase media engagement in Nile Cooperation”. This Seminar was jointly organized with National Nile Media Network and the Ethiopian NDF. A total of 30 participants exclusively drawn from the media houses (radio, TV, and press-government and private press) have attended and took part on this seminar.

- 17th of February 2011: A Workshop was organized with the Lawyer Groups on “How to address the legal issues surrounding the NBI transition into a river basin commission”. This workshop was organized by the Ethiopian National Discourse Forum, jointly with Ethiopian Lawyers Association. To this end, it was reported that some 23 lawyers had attended the workshop. The objective of the workshop was aiming at to enhance the Lawyers awareness about the importance of water in livelihoods of people; to promote and sustain Nile Cooperation through strong involvement of Lawyers; and Promote NBD and attract more members to it.
- 19th of February 2011, a Seminar with the Youth group: was conducted in Bahir-Dar, Ethiopia on “the role of the Youth in Nile cooperation”. This workshop was also jointly organized by the Green Ethiopia Association and the Eth-NDF, 65 participants exclusively drawn from the Youth Associations.
- 21st of Feb.2011: A Panel discussion was also held with academic & Research Institutions, Addis Ababa University (at AAU) on “Challenges and Prospects for better cooperation in the Nile basin.” This panel discussion was organized by the Dept. of PSIR Addis Ababa University in collaboration with the Eth-NDF and the ISSD. A total of 270 participants drawn from various Faculties (students, professors, researchers, the university senior management including the university president) have had attended the panel discussion. This panel discussion was exceptional event and about 479 people were informed, got high media coverage (FM radios, National Radios, Press) and the NBD joined new members.
- 30th of March, 2011, a Panel Discussion held at Debre-Markos University (DMU) on “The need for Equitable and reasonable water/benefit sharing for the socio-economic development of the communities in the Nile basin” . This panel discussion has been jointly organized by the Dept. of PSIR Addis Ababa University & the Ethiopian Nile Discourse Forum. Reportedly, some 490 participants drawn from various Faculties (students, lecturers, researchers) attended the discussion.
- April 1, 2011: Similarly, the same panel discussion on the same title was held at Bahir-Dar University (BU) on “The need for Equitable and reasonable water/benefit sharing for the socio-economic development of the communities in the Nile basin”. The panel discussion was jointly organized by the Dept. of PSIR Addis Ababa University & the Ethiopian Nile Discourse Forum. More than 350 participants drawn from various Faculties(students, lecturers, researchers have had attended the discussion
- April 14, 2011: A multi Stakeholder forum has been organized Addis Ababa and conducted to raise awareness and facilitated dialogue on the issue of Nile cooperation. The participants of the forum were drawn from different sectors. From this

dialogue and deliberation, the Ethiopian Nile Discourse Forum Position Statement on the Benefits and Cost of Nile Cooperation to Ethiopia has been consolidated by participants as an outcome of the forum. The following points were recommended by forum participants as critical issues of the Ethiopian Nile Discourse Forum Position Statements.

These are:

1. The forum has acknowledged the need for the civil society to play a critical role to bring on board all riparian states to participate and to further enhance the Nile cooperative process.
2. With respect to the Nile Cooperation process, the forum understood the presence of shared benefits as well as shared costs when engaging in the cooperation process and has urged riparian states to give priority to the over arching need for a sustained utilization and management of the common resource- (the Nile River), to help address the Nile communities vulnerability to poverty and to prevent the likelihood of regional food crisis.
3. On the Eastern Nile Subsidiary Action Programs (ENSAP), sustaining shared gains generated from the Ethio-Sudan Interconnection and Eastern Nile Watershed Management project requires political will from EN governments. To this end, it was believed that this will complement national water development efforts and add value to regional gains.
4. The Forum believes the Ethio-Sudan Interconnection and Eastern Nile Watershed Management Projects contribute towards reversing regional environmental degradation, provision of regional



power trade, reducing regional food insecurity and alleviating poverty. However, increased efforts need to be made at national level to ensure the meaningful inclusion and participation of local communities including women, youth and the most marginalized in project processes. The forum also called upon riparian states to renew their political commitment and will to the Nile Cooperation processes and programmes to sustain the gains achieved by the NBI projects and programmes

5. Pertinent to Integrated River Basin Management: The forum has supported and acknowledged the need for a permanent institution to facilitate an integrated Nile river basin management and ensure the coordinated and sustainable utilization of the Nile.
6. On the Comprehensive Framework Agreement (CFA) and on New Regime Building: The forum has appreciated and supported the positions taken by the Nile basin countries of Kenya, Ethiopia, Tanzania, Uganda, Rwanda, and Burundi with regard to CFA and calls upon DRC to sign the CFA and extends its call for Sudan and Egypt to come on board and sign the CFA.

Here, it was made clear that the forum is committed to continuing to advocate for the signing and ratification of

¹³Comprehensive Framework Agreement(CFA)

the CFA¹³ so that Nile cooperation process will eventually lead to the formation and institutionalization of the Nile basin commission that will work to the benefit of all riparian states. Furthermore, the forum also called upon all riparian states to make the transition process from NBI to the Nile Basin River Commission with transparent and inclusive of CSOs and affected communities of the Nile Basin. By doing so, the NBDEthF has proofed its positions and ensured the roles, contributions and of CSOs positions in advocating, awareness raising, and increasing understanding on Nile Basin Cooperative initiative and benefit-cost sharing mechanisms to Ethiopian Civil Servants, CBOs/NGOs, University Communities, UN staff and Interest Groups, thin-tanks as well as enlightening youth in Ethiopia. In other words the NBDEthF supports the Governments' development approach and strategy, trans-boundary equitable resource utilization and benefit sharing, which are the governments' initiative. Here, it could be worthy to raise the point that was raised by one of the NBDEthF-Board members. While I was conducting face-to-face discussion and interview with this Board member, he underlined about the positions and roles of CSOs (NBDEthF) to Nile Cooperation and benefits sharing as follows: he said that "Political elites are nationalists, whereas, CSOs are beyond that, because of environment is a huge system currently challenged by climate change, nations and regions are started working through cooperation. In this junction, the roles and positions of CSOs shall be understood as they are bridging the gap through supporting and strengthening the existing governments' efforts. To use all experienced and knowledgeable people's skills, networks shall come to one dialogue forum, what matters is supporting the existing development efforts and attain healthy co-existence.

4.2.8. Adequacy of Funding for Sustainable Management of Watershed Project

The current funding for watershed development by donor sources combined is many times larger than that from Federal and the Regional Governments. The fund allocated

for the watershed management project is \$35.08million (30-35% share of the whole budget allocated for ITBWMP) and more than 75% of the share when we consider budget allocated for Natural Resource Management (underB1&B2 components). Here, it could be worth full to understand that even though the watershed projects are too costly specific to Ethiopia's context, the fund was raised as per the plan, taking into account that \$200/hectare to implement basic soil and water infrastructures and \$400/hectare including to work in-depth activities such as with inclusions of livelihoods related . As a result of this, the budget allocated for five years is adequate. What is more important is government utilizes with its efficient and effective implementation capacity, including initiatives, designed primarily to support improvements in the effectiveness and efficiency of Regional State and National Government Programmes: (i) support for a programme of capacity building at all levels; (ii) support for cross-learning across projects; (iii) strengthening monitoring and evaluation systems; (iv) strengthening strategic planning and joint review at the regional, woreda/ district and community levels. However, 'enclave' projects having completely separate delivery systems have little to offer in this context.

4.2.9. Integration of the Role and Costs of Communities' Contribution to the Watershed Management Project (Labor and Time)

According to the information obtained from focus group discussions and individual interview, some community members were resistant to accept the free labor contribution to watershed project (at the beginning of the project), opting for wage payments, but they reported that such mentality was changed slowly through training and exchange visits, particularly, after they visited the severity of land degraded in Wollo, North-Shoa and Tigray. Since, then, all women and men stood with self-determination and committed to reclaim their land on voluntary basis (free labor contribution), which is a big support and incentive to improve productivity of their farm-land,

according to them. In addition to this, the training received in the areas of highland fruits plantation (Apple), crop and livestock production, forge development, beekeeping, fattening, tailoring, weaving, leather production, Bamboo-Carpentry, poultry production and dairy were more of incentives, which motivated them to better engage and contribute their labor and time. Now, the communities need from this project is to extend its usual support to the pending activities, such as: construction of water wells, foot-bridges, diversion-wire, roads, schools, health-posts and other on/off-farm activities. Further to this, the community groups and individuals, in Keha, Weybla and Woyenwuha micro-watershed, reported, despite their strong interest to continue to contribute their free labor, 'they also raised their fear as they are started facing with labor shortage, because of the productive labor of youth and landless are mostly engaging their labor on 'Coble-Stones Production' or migrate elsewhere, to urban areas to search for means of survival through selling their labor. Therefore, they strongly requested the project to facilitate IGAs through organizing youth and landless. As some of them are still lagging behind, training and awareness rising should be extended further. Ahead of this, similar interviews and face-to-face discussions were also held with senior project planning, coordination and management team members working at strategic and operational levels, including senior professionals and Managers with extensive work experience in the areas of watershed projects' management, such as: from ENTRO, Organization for Rehabilitation & Development in Amhara (ORDA), SUNARMA (Sustainable Natural Resource Management Association). The Eth.NBD & Board members were consulted and extended their valuable experience, knowledge and technical inputs. Whereas, majority of the government professionals commented that, at this stage the watershed project is basically a pilot project just started with treatments of the upper catchment of Tana-sub-basin and strongly linked with integration of communities' engagement or participation in the planning

and implementation process. This has been reflected through voluntary labor and time contributions. Every community member in each micro-watershed (irrespective of wife and husband), works free of payment under voluntary basis for 60days/year during slack periods agreed (without affecting agricultural calendar). The community labor and time contributions to-date was calculated as it reached 40-46% i.e. when we estimate in terms cash it is around (US \$1.8million) of the total costs of the activities completed up to now, which exceeded the expected share of 30% of the project cost attributed during appraisal stage.

Here, it could be worthy to mention, despite this project is entirely an endogenous project that has been designed following bottom-up approach and built on mobilization of local resources (human as well as physical capitals seeking to enhance the stock of social capitals through use of local knowledge system), and its 'success' can only be judged/measured in the long term, once sustainability is assured on the ground, but not measured by increased out-put. To this regard, the project is community-based watershed project, planned and being implemented by the watershed communities themselves (who are considered as responsible grassroots partners visioning to build sense of project ownership in their respective localities/basins). Hence, integration of livelihood, community participation, and contributions concerns were well articulated and integrated in the planning and implementation process of the watershed management project.

4.3.0. The Role of Women's and their Participation in Watershed Management Project

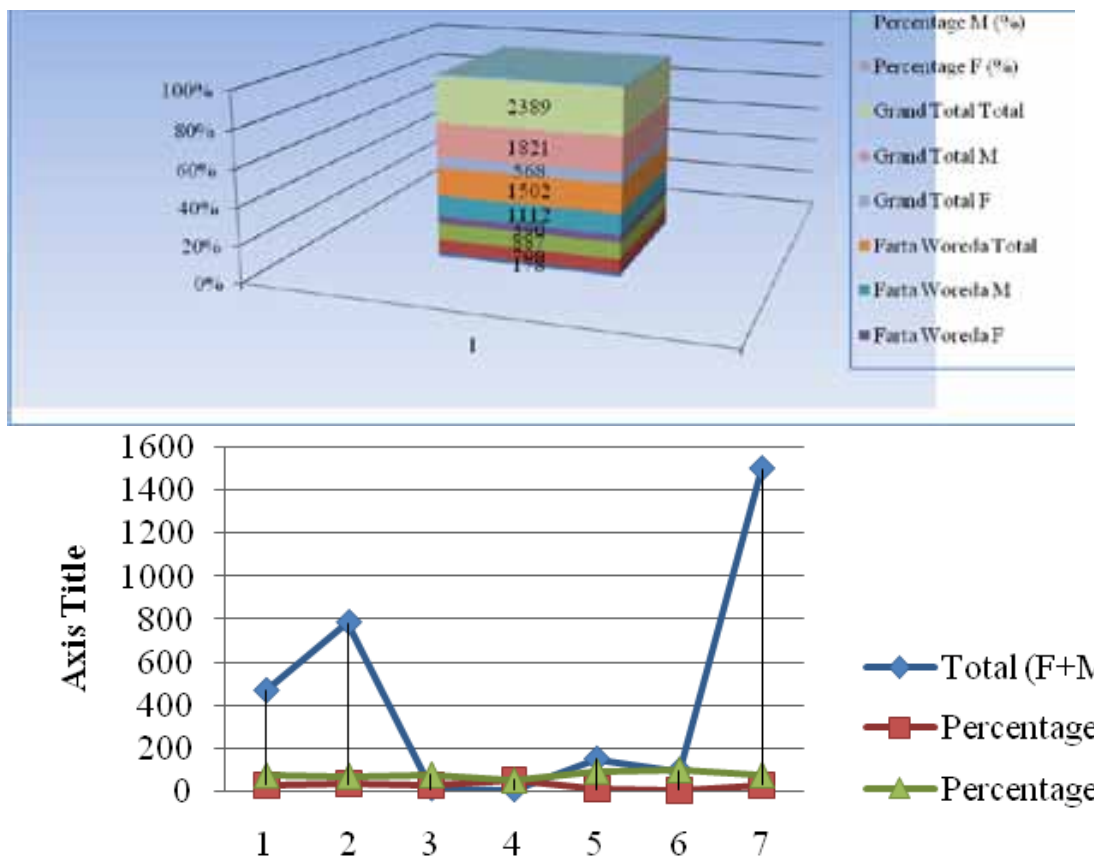
In order to ensure participation of all sections of the community and that they benefit from the project, the project aimed to increase the involvement of women, groups in sustainable management of human and natural resources of the watershed areas. Since the main drive behind forming committees, was the villagers' need of forest products and since fetching water, fodder for milking

cows and small ruminants is largely related to women's tasks, local women are very active in soil and water conservation activities planning and implementation and therefore they were fully involved in the decision making process. The major factors facilitating women's participation in the committees were: the severity of land degradation, training and exchange visits, clear prospect of benefit sharing, support from family leaders, and the family planning interventions. Because women were encouraged to be active members, their participation in CWMCs was by far better, when compared with the past decades. The gender balance in Community Watershed Committee organization is 30-40% are women in the case of Farta wereda and some- times (50:50) in the case of Debre-Tabore Woreda Town City Administration. Whereas, their labor contribution ranges from 27-47% compared to their partners.



The project also aimed to increase the involvement of occupational castes such as blacksmiths, Masons, tailors, Carpenters, and other minority groups of the community in the areas of off-farm activities, as sources of income generation.

Figure 14 Training and Exchange Visits Disaggregated by Gender (%)



4.3.1. Planning of Compensation Packages to Local Communities

This report has illustrated on the bases of an issue that was made clear in a more general context by Ferraro: He said, “Indirect development interventions aimed at promoting conservation may generate ambiguous incentives and could lead to a reduced wildlife population”. When developing conservation packages/mechanisms for watershed management, or analyzing human-ecological-interactions, the micro-economic underpinnings of human behavior should be considered.

Guard against creating dependencies:

Often donors are the principal sources of incentive grants. However, once the community approach takes off and starts to produce tangible results, managers should consider ways to increase community contributions. Whenever outside resources are being used as incentives, managers need to be on guard against creating dependencies that can subvert or weaken sustainability. Here, comes the need for regulation, inclusion of advisory services and extension work, create the productive capacity and capability. Show benefits and include legal enforcements.

The same applies to the institutional context, as may be reflected by Property Rights Regimes for Land Use Management and Wildlife Resources Conservation (Bulte and Horan) in our neighboring country, Kenya. According to Bulte and Horan, their main result was that compensation can be bad for conservation, is driven by the simple insight that compensation payments are akin to agricultural subsidies and can result in an expansion of agricultural activity. The crucial, but simple, assumption that generates these troubling results is that people respond to economic incentives by either a reallocation of labor and habitat conversion, migration, or intensification of agricultural production. It would be difficult to counter this assumption, since this is the very premise that has led to a proliferation

(increase) of compensation programs. Of course, there are cases in which the posited behavioral response is unlikely to emerge; for example, when expansion of the agricultural land/acreage or livestock herd is prevented by other factors. The point is not to argue against compensation programs as a tool to promote conservation. They could certainly achieve their objective. The point is that as an indirect incentive mechanism for soil and water conservation or other schemes contributing to sustainable livelihood and watershed management, but compensation distorts other incentives that negatively impact the bio-diversity conservation of habitat population, and that the net effect could realistically make compensation be detrimental to the conservation of any given conservation schemes or people affected. In relation to this, the issue of ‘compensation’ was illustrated by different groups contacted/interviewed as follows:

During the field visits individual interview and focus group discussions (FGDs) was held in Keha and Weybla-Shembeko (Angua-Microbasin) and Aba-Aregaye Kebele(Gudeyu-Village) Kebeles in Ribb sub-basin under Debre-tabore Woreda city Administration-Agricultural Office; and Sarena(Kurar Gott), Weyenwuha and Zefe micro-basins(Gumera Sub-basin); Baskura and Kantae micro-basins (Ribb sub basins) under Farta Woreda Agriculture Office. All men and women interviewed in all the micro-watersheds visited were responded as follows: “for the time being ‘compensation’ is not their concern because they didn’t face any problem to-date, but they understood if such case prevails to the extent of harming the livelihood and living condition of HHs or group of community members, it could be treated under mutual understanding and following the regulatory framework under the government’s land use proclamation (terms/conditions and procedures exercised for property ‘Valuation’). It is therefore essential that policy makers and practitioners be aware of the potential adverse effects of compensation to prevent undesirable outcomes.

• Management implications of Compensation¹⁴

Prior to implementing a compensation program, policy makers should examine whether such a program generates incentives to convert additional land to agriculture or to increase the livestock stocking rate on existing lands. This may involve experimenting with compensation programs (with treatments and controls) to better understand the magnitude of the potential positive and negative effects. This report suggests that agricultural expansion, immigration from other areas, and developments in the stocking rate should be closely monitored. When the negative effects are sufficiently important, compensation programs may be complemented with various elements to preclude the adverse effects, for example through making payments conditional on limits to habitat conversion or expansion of the stocking rate. It is important to note that alternatives exist to compensate for wildlife damages. For example, direct payments to affected communities based on predator abundance, not damages, may be preferable. In other words, rural communities may be compensated for the various eco-services that they produce (e.g., by not converting habitat). National governments and international development and conservation agencies are increasingly experimenting with this approach (e.g., Pagiola et al). In other cases, complementing compensation payment schemes with institutional reform may be optimal. Such as addressing the lack of property rights to land and wildlife that encourages wasteful use of resources may prove successful. Finally, when the negative effects of compensation are larger than the positive ones, governments interested in promoting conservation may find it optimal to tax rather than subsidize agriculture.

4.3.2. Management of Private and Communal Resources

Introduce Incentives¹⁵

In spite of the selected upper streams of Ribb, Gummera and Jemma watersheds were considered as food secure areas, a distinction needs to be made between incentives for on-farm (i.e. private) soil conservation investments and those for community investments (public goods and service). In any case, clarity is required in implementing food for work as an incentive and food for work as direct food relief. The Federal Rural Development Policy reflects the new ideas and intentions with regard to the role of food aid. It advocates the replacement, where possible, of food for work (FFW) by cash for work (CFW) and, if food is to be used (e.g. for direct relief), it is preferred that food to be procured from local sources so that to encourage local production and productivity, and to discourage food imports.

A different basis needs to be created for motivating and/or compensating farmers to contribute to community work.

Some measures for consideration are:

- Establish a transparent distinction between on-farm work, voluntary as much as possible, and off-farm development activities that can be compensated by FFW or CFW, abandon the application of FFW for on-farm work, and promote the integration of SWC as to become part and parcel of farming practices, to harmonize the above measures with ongoing FFW through the WFP-MERET project, create alternative, off-farm opportunities for employment and income generation [organize self-help groups, mobilizes local saving and credit(landless youth and women), deliver farm inputs for work etc], replace mass

¹⁴ **Compensation test:** this test will be able to ask the question whether the losers from some particular change could be compensated for their loss, while still leaving the gainers better than they were before the change. The compensation has been hypothetical and not needed to take place, unless there is force majeure.

¹⁵ **Incentive:**

mobilization campaigns by voluntary work in farmers own village areas on locations selected by farmers themselves,

- Ensure that farmers exempted from Community Participation are not losing opportunities of working in other schemes of employment generation,
- Ensure that SWC treated areas will be exempted from land redistribution.
- Introduction of such measures requires action at all levels, focusing in the first place on changing attitudes, both of farmers, authorities (strengthen bottom-up planning and implementation) and donors (put more emphasis on impact monitoring, cost effectiveness and timely delivery of committed resources).

The overall objective would be to achieve genuine community participation in watershed development and land management activities by creating sense of project ownership, empowering, facilitating and assisting local communities in:

- Fully integrating SWC & land management activities into farming practices,
- Implementing these on a voluntary unpaid basis, and allowing farmers to take their own decisions with regard to implementation locations.

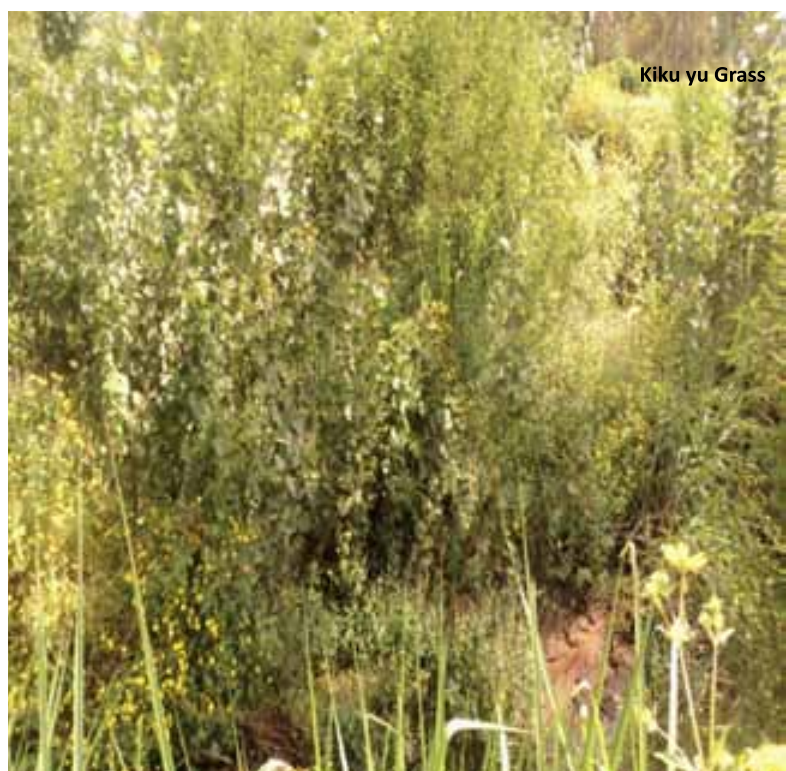
Interventions on Communal Lands:

- **Cut-off Drains:** A pre-requisite for in-farm soil conservation measures is a cut-off drain above cultivated areas. Even by themselves they can reduce in-field run-off and soil movement. However, it is important that water collected in the drain is safely disposed of into waterways.

- **Road and track drains:** run-off from roads needs to be controlled with small check dams and safe outlets to streams.
- **Gully Stabilization:** This was implemented with integrating stabilization of both the gully and its catchment areas with a combination of livestock exclusion (in both catchment area and gully), and vegetative and structural measures (check dams, etc).



Communal Land Enclosure



Kikuyu Grass

The interventions were also integrated with a communal forage development program and safe guarded by the community itself, nevertheless, the cost sharing mechanism and equitable access to resource by the member communities is not yet well institutionalized. Therefore, it requires reinforcing the regulatory frameworks of land use management through strengthening & consolidating 'bylaws' under discussion.

- The qualities of constructed soil and water conservation activities are encouraging, mainly measures taken to integrate and improve the land management issues and options is off-ground but generally farmers requested to be assisted with technical and advisory services. For example, as it was observed during field visits those upper highland streams terraced at slopes ranging from 45 or more than that were covered with fodder grasses and clovers, Micro-basins and pits for planting trees. It was also observed that hilly landscapes with slopes over 60% were well treated (for instance in Zefe micro-watershed). Even though, such steep- slopes are discouraged (based on the type and nature of soil), it was possible to properly treat such landscapes in the case of Farta and Debre-Tabore(thanks to the efforts made by the community, technical & financial assistance). Nevertheless, such landscapes with significant slopes might be fragile and any interference may cause landslides, while the community harvest fodder to take it to their animals. Hence, farmers shall be advised to strengthen the existing effort through integrating plantation of commercial trees and shrub, taking into consideration the depth of soils.

- **Communal Forage Development:** To be effective and sustainable, this is best undertaken at the sub-kebele (village/Gotti) level. This intervention usually requires some form of area closure with cut-and-carry, or controlled grazing or controlled





Elephant Grass

hay production and harvesting. The sites of the interventions vary from steep and degraded hillsides, poorly drained valley bottoms, and stream edge buffers. A key object is to reduce livestock movement. The process of natural re-generation supplemented with over-sowing of herbaceous (*Pennisitum purpureum*, *Panicum maximum*) or tree legumes (*Leucaena leucocephala*) and pigeon pea but this increases costs. The intervention can also be also integrated with communal tree production.

- Communal Tree Production: This is best integrated with communal forage development in area closures. As with communal forage development clear management and harvesting plans need to be established at the outset, with inclusions of cost sharing mechanisms.
- Small-scale Supplementary/full Irrigation: Even though, these schemes were not fully implemented, the skills transferred to the community members in

the areas of highland cash crops and fruits production, for high value marketable crops (vegetables, fruits, or other crops), it highly requires translation of infrastructures planned so far into practice so as to create good social services/market access and high value perishable crops can be grown to better benefit-farmers through improving livelihood diversification opportunities.

4.4. Influence of the Watershed Project on Community Participation

4.4.1. Community Development and Organization of Watershed Management Committee

Since, a sub-basin, micro-watershed, Kebele, village community shares common natural resources and since community participation is effective in managing these resources, and addressed for solving common soil erosion problems; the concept of community development was fostered in each village. Project staff formed a Community Development Committee, which later was named as Kebele/ Watershed Management/ Community Watershed Management Committees (CWMCs), in every Kebele and Micro-watershed basin. The project regularly monitored and supervised construction of soil and water conservation activities to ensure quality in implementation. It was experienced that the sincere and active participants were happy to contribute whatever their labor and time is sacrificed on voluntary and free of payment as in-kin cost matched with project and ideally to share it equally among them. The question, which will be responsible for the maintenance of schemes in the near future? was raised to group members during FGD and responded, once the project staff discussed with us as to why the participation of local people could not be limited to physical labor only, the people will began to maintain completed works by utilizing their own labor and time.

4.5. Short and Long-term Benefits of Watershed Development within and Beyond the Project Areas

The development of mutually acceptable and beneficial investment projects, where the environmental and socio-economic consequences are thoroughly investigated, is believed to support sustainable economic growth and improved social conditions, thereby in the long-term benefits the population of the Nile Basin. The Regional Bureau & Woreda Agriculture Office Project Coordination and Management Team, SMS, experts, Community Facilitators (employed by the project), Development Agents, Health Office (Officers), education office (School Teachers), Youth, Children and Women’s Affairs, and Woreda Finance and Economic Development as well as press agency were benefited from different trainings and exchange visits. Collective action for watershed management has provided multiple economic and environmental benefits – tangible and non-tangible – to the affected rural communities. Despite the

implementation of the project is at its early stage to gauge benefits enjoyed by the communities, this process has allowed smallholders to start investing in profitable activities such as tube nurseries, fruit trees, vegetable farming etc. Institutionalized community-based watershed management has provided technical guidance on resource management practices and helped to create physical impacts by controlling run-off from upper stream catchments. Properly safe guarded environment impacts positively on cooperation for a long lasting institutional solution. Watershed Management Committee has also facilitated in developing linkages with the market enterprises and relevant agencies working in the crop-livestock sector and other on/off-farm sub-sector for the farmers. The long-term National, Regional and Global benefits of this project will be increased reservoir life, improved hydropower generation, improved irrigation efficiency, as well as protection of critical aquatic habitats, carbon sequestration and increased biodiversity. Investment Fair emphasized the need to move from a finance system focusing on fast profitability to one that



Figure 17 Soil and Water Conservation

combines longer term economic returns with shorter term environmental and social returns. In relation to this, despite, each “wereda” is seen as the front-line administrative unit for all development efforts, environmentalists, soil scientists, agriculturalists, sociologists, economists, civil, mechanical, electrical and water engineers, geologists/geophysicist, research institutes, think-tanks and practitioners, CSOs, CBOs, donor communities etc are beginning to merge their discipline and started to look at to link their micro-watersheds-with macro policy as a whole and finding that, with a little creativity, they can convert “problems” into solutions having wider impacts/benefits.

The immediate beneficiaries were policy and decision makers as well as planners and managers of Natural Resources and land management in the EN countries. Enhanced skills in integrated water resource development policy, participatory project planning, coordination and Management coupled with DSS development and application, and backed by appropriate institutional strengthening has improved the basis for strategic planning, identification and implementation of cooperative projects, and helped to design sound technical monitoring & evaluations mechanisms. This was aided to inform decision-making and provided an essential input to the wider process of integration across sectors, such as environment and integrated water resource management, and to the sharing of the benefits from “win-win” development projects. The project was thus benefited other SVP projects, as well as helped to identify, plan, and manage Subsidiary Action Projects, of which the Watershed Management Project(B1 component) was identified as the most important that has taken the lion share (\$ 35.08million USD) of the total budget allocated for TBIWRM Project (\$148 million USD), compared to budget distributed to other sectors.

In the short term, benefits from the fast-track information management system (part of the DSS) has also provided an efficient structure for basin-wide communication and information exchange, which was often been difficult to achieve. This has benefited other projects in the Basin, the Nile Secretariat and the NBI as a whole. The establishment of national and regional task forces and networks was ensured that relevant stakeholders, civil society, including NGOs, university networks, and professionals in the field, and the private sector are actively involved in and benefited from the project and the NBI in general. This has also believed to increase transparency of the NBI activities in the Basin and internationally. Particular attention has been paid to gender issues and the inclusion of women in project activities.

4.5.1. Watershed Development Benefits (Positive)

- **Soil Erosion:** As it can be seen under Figure 12 above, different literatures have witnessed that, the retention of soil nutrients potentially lost through soil erosion by stone bunds is not quite the same as that for soil retention. This is because soil organic matter and nutrients are preferentially removed by a factor of about 1.2 (the nutrient enrichment ratio). Thus, nutrient lost to cropland is the 35 percent of soil passing through the stone bunds multiplied by the factor of 1.2. Thus, some 6,749 tons of the present loss of 16,873 tons of N could be retained behind the stone bunds.
- **Grain Removal:** The reduction in nutrient losses through grain removal can only be achieved by the application of organic (manure, compost) or chemical fertilizer. Organic fertilizers are being used but generally only of fields close to the homestead. The use of chemical fertilizer is conditioned by a farmer’s land, labor and financial assets as well as access to seasonal credit(credit component was taken out despite its importance to watershed development project). Farmers’

perception of the risk to low and variable rainfall is high in the climatic environment of the eastern part of the Abbay Sub-basin and is a constraint to investment in chemical fertilizer for rain-fed cropping, but less so in the high rainfall areas of the western part of the Sub-basin. The current losses of N would require 45,000 tons of Urea.

Clearly, these will have very positive impacts on peoples' livelihoods through increased production, reduced vulnerability, increased livelihood assets and a wider range of livelihood strategies. In terms of sediment reduction the cumulative impact of all the watershed management interventions would be to reduce the current sediment load in the Abbay by 63 million tons from 140 million tons to 77 million tons. Sediment entering the Roseires and Senner Dams and the Gezira-Managil and Rahad Irrigation schemes would be reduced by similar proportions. With the completion of the Karadobi Dam and assuming the full impact of the Watershed Management Interventions annual sediment load would further reduced by 9.4 to 15.5 million tons.

- **Negative Cumulative Impacts**

It must be recorded that these substantial reductions in sediment load will have potentially negative impacts on erosion of sediment of river beds and a potential increase in river bank erosion.

4.5.2. Change and Improvements in Land Use Management

The purpose of this management measure is to reduce the generation of non-point source pollutants and to mitigate the impacts of runoff and associated pollutants that result from new development or redevelopment, including the construction of new and relocated roads, highways, and bridges. The measure is intended to bring about physical impacts by reducing soil erosion and land degradation as a result helped the communities cultivate their land and local governments to use in developing comprehensive



programs for guiding future development and land use activities in a way to prevent and mitigate the effects of floods nonpoint source pollution. As a result of this, even though it was not possible to know the outcome of the

production increase, generally it was predicted that the agricultural production will increase by 1/3 per hectares from the last year's production without the project (11-14Qtls/hectare Barely to 14-18Qtls/ha.,i.e. 3-4 qtls/hac. increment with project). The land is managed by thousands and millions of smallholders, so to understand the situation fully it was deemed necessary to understand the individual farmers' situation. Integration does not mean that implementation has to cover all possible sectors of integrated rural development. It means that watershed development or sustainable land management interventions are put into context one with another. To ensure this, the project has implemented significant S&WC

activities and increased moisture availability to agricultural lands, mitigated floods and run-offs through implementing check dams, bunds, waterways, cut-off drains etc; but promotion of improved stoves as to reduce the need for fuel wood and depletion of forest cover, improve the productivity of the indigenous cattle breed either with intensive management or crossing with exotic germ-plasma, were not exceeded beyond delivering trainings to the communities. As a matter of fact, all these pending activities need to be augmented with IGAs (off/on-farm activities) and other asset building initiatives through encouraging culture of saving and creating access to credit facilities on the basis of institutionalizing Village Level



Saving Associations (VSLAs)-as Solidarity/Trust Self-Help Groups that could be managed by the already organized Kebele and Watershed Management Committees. These VSLAs can grow slowly to Multi-Purpose/Service Cooperatives and at later stage can be linked with the Amhara Regional Microfinance Institution, as way forward for financial sustainability. All these efforts show that emphasis was given to link watershed development with the concept of providing supports to improve livelihoods and living conditions of the people.

4.5.3. Change and Improvements in Reducing Sedimentations

A watershed is a geographic region where water drains into a particular receiving water body.

of flood, vulnerability to drought, loss of soil fertility, increase water holding capacity and reservoir life, efficiency of hydropower, Irrigation, Protection of stream bank etc (MWRM&E June 17, 2007). Here it, could be

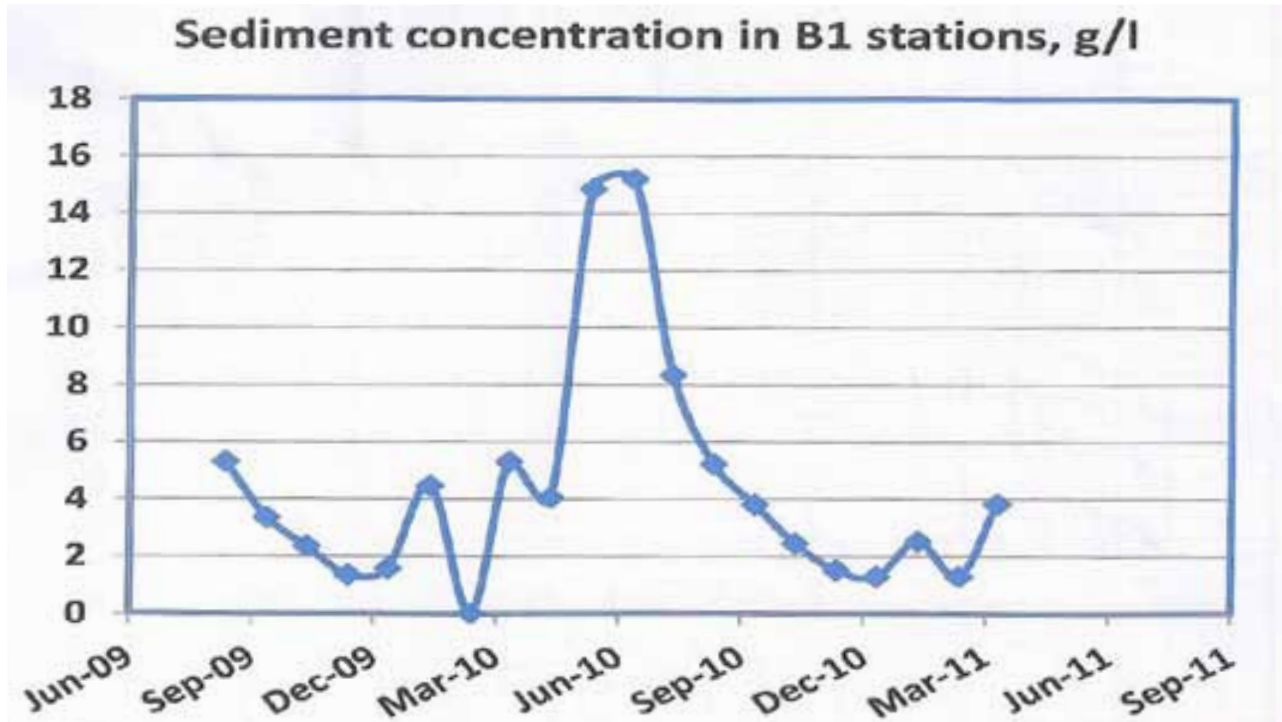


Figure18: Monitoring Sedimentation at B1-Station (Source: Mid-Term Review Report of the Project, May June 2011).

As discussed in the introduction, comprehensive planning is an effective nonstructural tool available to control nonpoint source pollution. Where possible, growth should be directed toward areas where it can be sustained with a minimal impact on the natural environment (Meeks, 1990)¹⁶. Poorly planned growth and development have the potential to degrade and destroy entire natural drainage systems and surface waters (Mantel¹⁷ et al., 1990). Watershed Management refers to establishment of sustainable agricultural systems that should involve the success full management of natural resources to satisfy the changing of human needs while maintaining or enhancing the natural resource base and avoiding environmental or watershed degradation. Any intervention of watershed management could decrease in the frequency

worth full to share the views of Holler. He said, the “Levels of suspended solids increase at a slower rate in stream channel sections with well-developed riparian vegetation (Holler, 1989)”. When upper catchments of watersheds are well treated, areas such as streamside and riverside buffers (Ribb, Gummera, Jemma etc) and wetlands (Fogera Wetlands) and Lake Tana may also have the benefit of providing long-term pollutant removal capabilities without the comparatively high costs usually associated with structural controls. Conservation or preservation of these areas will have also important added-value to water quality protection, will help to save already threatened aquatic and terrestrial animals including flying birds, such as, ‘Wattle Crane’. Integrating, land acquisition programs help to preserve areas critical to maintaining surface water quality. Buffer strips along stream-banks provide protection

¹⁶ Defined land use designations and zoning also protect environmentally sensitive areas such as riparian areas, wetlands, and vegetative buffers that serve as filters and trap sediments, nutrients, and chemical pollutants.

¹⁷ Defined land use designations and zoning direct development away from areas where land disturbance activities or pollutant loadings from subsequent development would severely impact surface waters. Defined land use designations and zoning direct development away from areas where land disturbance activities or pollutant loadings from subsequent development would severely impact surface waters.

for stream ecosystems and help to stabilize the stream and prevent stream-bank erosion. Buffer strips protect and maintain near-stream vegetation that attenuates the release of sediment into stream channels and prevent excessive loadings. Therefore, the concept of benefit Vs cost-sharing between upper and lower streams entails the “carbon sequestration” concept, which is the concept of sharing the costs.

4.5.4. Increase Communities Resilience Capabilities

In livelihoods discourse ‘sustainability’ tended to refer to coping with immediate shocks and stresses, where local capacities and knowledge, if effectively supported, might be enough. There has been high climate variability that impacts on local livelihoods, both through droughts in sub-basin and floods (especially around Lake Tana). For example, the following table (secondary data from Amhara BoARD 2006) indicates both the significance development need as well as lack of adequate institutional capacity in the Tana-sub basin. The current climate change is expected to exacerbate this variability and adds to uncertainties that currently impact on livelihoods and investment in the area. Principles for addressing the food, economic and financial, and climate crises, including: increased investment, particularly public investment, in smallholder farming; increased focus on adaptation for smallholder farmers; development of agro-ecological approaches and endogenous solutions which are based on resources available to farmers; resilience and capacity building to withstand climate change impacts; and recognition of resource constraints as climate change impacts increase.

During high rainfall periods major rivers in the region of give rise to large scale riverine flooding,(occurs only in three months, July-October) particularly in flood plains of Sudan and Ethiopia(Fogera and Dembiya-adjoining lake Tana). See the Table below for the estimated Average Annual Damage (AAD).

BOX 4 Estimated Annual Damage (AAD) of flood (drought) per annum and attributes in terms of USD

Year	Type of Disaster	Average Depth of Lake Tana	Dropped by	Lake surface reduced by	Problems attributed/damage	Attributes in terms of Costs(in USD)	
						Ethiopia	Sudan
2003	Drought	9meters	2meters	35 km2	Exacerbated hydro-power generation demands		1998 flood in Sudan caused a direct damage of USD\$24.3million
2006	Flood			Upwards high soil erosion & loss= 100tons/hac. /year (Ethiopia)	More than 15,00hac. inundated		
					700 people/deaths	USD 5.54 million	USD 25.77million
					242,000 people displaced 2,500 domestic animals were swept away, and many houses were demolished	Increasing signs of stress (local alga blooms and local fish kills induced by pollutions and conversion of shoreline wetlands for settlement, urban development and rice farming	

Source: (ENSAP-Report: on Trans-boundary Context, July 2011)

In addition to this, Lake-Tana also faces significant water and natural resources degradation, including upper catchments degradation resulting in high erosion, soil loss upwards of 100/tons/hectare/year and sedimentation problems (substantial deposition in down-stream rivers and near inflowing river deltas).

The integrated watershed project is progressing to reverse such negative environmental and socio-economic impacts through building-in the integration of community participation, capacity building activities in the planning and implementation process as well as construction of tremendous physical and biological soil and water conservation schemes. Even though, it depends on both time and scale, the collective action and management of upper catchments is progressing good and expected to reverse/reduce sediment loads and depositions, increase the water filtration/percolations/recharge capacity of upper catchments and the lakes natural buffering capacity.

Integrated crop-livestock production or mixed farming systems in the highlands of high rainfall areas of the upper catchments of Ribb and Gummera, in Farta and Debretabore woredas (south-Gonder Zone) in Amhara



Region were being developed through the introduction of appropriate technological, institutional and policy options by a multidisciplinary and multi-institutional team consisting of the regional Research Center. The Amhara Nations Nationalities Regional State, BoRAD and the research system and the farming communities from each of micro-watershed communities participated in the planning and management of soil and water conservation activities in their respective Kebeles, were also jointly engaged in demonstrating the modern technologies/crop seed varieties and livestock cross-breeds (AI).

Over the last 3.5 years of implementation period, the project evolved from skills and knowledge transfers to establishment of more than 30 nursery and demonstration sites (at 14 FTCs) for adaptive research. It had tested component technologies to make local friendly and affordable to communities within Integrated Watershed Management Project (IWSMP). It had tried to address technical, socioeconomic, cultural, and institutional and policy issues for farming communities in for while; only marginal/severely degraded upper catchment areas were addressed.

Choice of communities has been taken into account during testing technologies via development of negotiated action plans and community development plans. Successful technologies included improved barley varieties, multi-nutrient feed blocks, forage development, forage-legume, multipurpose tree plants (forestry and agro-forestry) skills transfer on improved sheep, milk-cow fertility and reproduction but not translated fully into practice. Utilization of factory products/technologies (cement and Gabion-Wires) for degraded land reclamation and terrace of sloppy hill-sides (ranging from 10-70 degree), denuded gullies treatment and enclosure of grazing lands has been ensured. The community approach resulted in closer links between kebele and woreda level government bodies, enhanced bargaining power, and increased collective

insight and vision for innovative conceptualization of development opportunities and options.

A bio-economic model was designed and tested to analyze the effects of technical, policy and institutional options on productivity, income, income distribution and the sustainability of the natural resource base. This resulted in a shift from emergency relief efforts by governments towards greater investment in feed blocks, improved sheep reproduction, and drought tolerant plants. Future efforts will focus on scaling out the work on policy and property rights, and replicating the approach to other target upper and down-stream catchment areas.

4.5.4.1. ENSAP's Linkage with Climate Change

Eastern Nile Subsidiary Action Program recognizes the climate change as it offers not only threats but also opportunities to the three countries, if they act timely. On the one hand, they need to build EN regional and national adaptation and mitigation capabilities; on the other, they also need to leverage the modalities and opportunities various international climate change related regimes, agreements and protocols offer (ENSAP Brief No.: 005 July, 2011). ENSAP promotes a) Clean Development Mechanisms (CDM) as its one of objectives (such as joint Multipurpose Program, Irrigation, Hydropower, watershed Management) are most likely to be eligible, as per the Kyoto protocol, to engage in and negotiate for better terms and earn CER (Certified Emission Reduction) credits and acquire credits and compensation for the three countries on international carbon markets. However, the institutional and human capacity, both at regional and national levels, to engage in and take an advantage of these opportunities is limited. Hence, the objective is to build the institutional and human capacity to engage in the process, along with more immediately, channeling ongoing and planned ENSAP projects into CDM-carbon trade markets. b) Establishment of EN watershed Climate Change Observatory related aiming at to put in place on observatory along with the necessary material and

institutional arrangements. c) Establishment of Eastern Nile Irrigation Information System related aims at to put the required hard and soft-ware components to minimize irrigation water loss and increase use of water efficiency. d) Establishment of EN Climate modeling function related aims to develop and use a new class of regional models which would be more specifically focused on and calibrated to the EN-region.

Nevertheless, prudent resource management strategies should address two contrasting facets of climate change. They should be informed by the possibility of environmental catastrophe but mindful of the capacity of human societies for adaptive responses to risk. Regional strategies that are adopted in the next decade should be flexible enough to take account of a wide range of possible futures; they should reinforce measures that address existing social, economic and environmental problems and they should build in process that enhance social resilience (Downing 1991, p.380)

4.5.5. Change in Income Sources and Livelihood Diversification

The implementation of capital intensive schemes, planned under improvement of livelihood (theme-A) component, like irrigation, roads, bridges, water-schemes, schools, health-posts construction are not started yet. Pertinent to implementation of these social infrastructural schemes, due to their implementation is significantly lagged behind the schedule, all the community members requested badly, to start the implementation as soon as possible. Likewise, the Farta and Debre-tabore woreda Agriculture Offices' project management team raised their fear, if these schemes are not implemented soon, the project might glimpse cancelling-out them. If it continues as it is, it will undermine the orientation of livelihood diversification, market integration and social/institutional, economic/financial, technical and environmental sustainability as a whole.

(i) Benefits from the Reduction in Soil Erosion and Soil Degradation - Ethiopia

• Benefits from Reduction of Soil Erosion and Increased Moisture Retention

Currently, soil erosion on cropland in the highlands of the Sub-basin is incurring an annual accumulating loss (through the reduction in soil moisture holding capacity) of an estimated 25,190 tons of grain per year that will



reach an accumulated loss of 629,780 tons in 25 years times. In the absence of preventative measures this will continue to accumulate each year thereafter. A 100 percent coverage of cropland with bunds or grass strips that is incurring unsustainable soil loss (estimated to cover 2.03 million ha) would reduce current annual losses of soil and soil moisture holding capacity to 40 percent of current rates achieving a saving of 60 percent of current annual accumulating losses. This would yield an accumulating

annual benefit of 15,115 tons of grain per year – in livelihood terms sufficient to sustain 75,575 adults per year, or 1.9 million people by the year 2030.

In addition to preventing loss of soil moisture holding capacity, construction of bunds in moisture deficit areas results in a 7 percent yield increase in crop yield from increased soil moisture retention and thus increased nutrient availability. Thus even bunds on land not suffering from unsustainable soil loss would yield increased benefits. Assuming 30 percent of all cropland with unsustainable soil losses is covered with bunds there would be an annual additional increase in production of 27,400 tons of grain per year - sufficient to feed 137,000 people a year.

(ii) Benefits from the Reduction in Soil Nutrient Losses

Annual gross losses of N are 61,410t/yr and net losses 37,640t/yr (61 percent) after additions and releases from the soil nitrogen pool. Assuming an estimated annual reduction in nutrient losses through burning of dung and residues of about 3 percent, then an annual reduction of about 805 tons of N can be expected producing an annual saving about 4,830 tons of grain can be expected. The reduction in nutrient losses through grain removal by the application of organic (manure, compost) or chemical fertilizer is difficult to estimate. Assuming conservatively that an increase in fertilizer uptake of 50 kgs of urea by 20 percent of farmers is possible, this would yield an annual increase in grain production of approximately 138 kgs of grain per farmer or 69,500 tons/yr additional production. The retention of soil nutrients potentially lost through soil erosion by bunds and grass strips assuming 100 percent coverage of cropland with an unsustainable soil loss rate would achieve a saving of about 25,830 tons of grain. Total benefits accruing from reducing soil nutrient losses amount to 77,360 tons of grain per annum – is sufficient to feed 386,800 people (Cooperative Regional Assessment-CRA for Eastern Nile Watershed Management Project, NBI/ENTRO, July 2007).



4.5.6. The implication of the WS Project on Nile Cooperation

The River Nile has been recognized as an asset of extraordinary regional and global importance, shared by 10 countries relies to greater or lesser extent on Nile waters for basic needs and economic growth).

As result of this:

- the Nile Water is recognized as a potential for both conflict and mutual gain remains at the nexus of security and development in the region.
- the potential, Nine Nile riparian states established the Nile Basin Initiative (NBI) in February 1999 as unprecedented regional partnership “to achieve sustainable socio-economic development” through equitable utilization of, and benefit from, the common Nile Basin Water Resources” has been recognized. Since then, remarkable progress has been made on the implementation of watershed and related project that have a positive implications on the Nile Cooperation:.
- A (trans-national), regional institution was establish, the capacity for basin wide management built-in, and a significant investment portfolio to support watershed development launched.
- Establishment of the Eastern Nile Subsidiary Action Program (ENASP), along with the Equatorial Lake Subsidiary Action Program (NELSAP) was among the main achievements of NBI. ENSAP is an investment program under NBI, being implemented by Egypt, Ethiopia and Sudan, seeks to develop the water resources of the Eastern Nile Basin, in sustainable and equitable manner to ensure prosperity, security and peace for its entire people.
- Henceforth, a framework for sustainable management of selected watersheds has been established by Eastern Nile Watershed Management Project (ENWMP).
- The Eastern Nile Technical Regional Office (ENTRO) has been established, by the three countries (Ethiopia, Egypt, and Sudan), with a head-Quarter in Addis Ababa, Ethiopia; as an executive arm of ENSAP (ENTRO started its Operation in June 2002).
- Based on this, different international, regional, sub-regional and national trainings, workshops/forums, exchange visits and consultative meetings facilitated since 2004-up to date among the riparian countries in general, and Eastern Nile Countries in particular. As an outcome of this it has contributed to governments’

higher officials, Experts, Donor Communities, NGOs, CSOs, Academia, Researchers, Consultants, Private Sector and other think-tanks to build up their skills, and opened up the door for better understanding, and positions for EN-Countries Cooperation and others. As result of the skills obtained and awareness raised, the negotiation, project planning and implementation capacity of Governments' (both technical and institutional) has improved from time to time. The recent consultative meeting held between the Ethiopian and Egypt Governments concerning the construction of the Blue Nile Renaissance Dam (at Guba-western lowlands of Abbay-Basin close to border of Sudan) can be taken as example, Furthermore, the implications of watershed development projects consider the EN-water resource development/management challenges are trans-boundary in nature:

- Avoid conversion, to the extent practicable, of areas that are particularly susceptible to erosion and sediment loss (recurrence of drought, floods; wetland degradation; climate change, growing demand for water etc)
- Preserve areas that provide important water quality benefits and/or are necessary to maintain riparian and aquatic biota; and site development, including roads, highways, and bridges, to protect to the extent practicable the natural integrity of water bodies and natural drainage systems.

The watershed management project pursued joint, multipurpose development will be more complex and time consuming than pursuing separate national agendas. This has helped the eastern Nile Countries to recognize as it is a much more sustainable path because it can have a greater impact on poverty alleviation, sustainable socio-economic development of the basin communities and

international relations than single purpose or national projects. Therefore, the cooperative development and management of the eastern Nile water resource serve as a catalyst for greater regional integration with the benefits that far exceeded those derived from the river itself.

As a result of this:

- capacity in the development and implementation of integrated water resources management policy through the preparation of good practice guides, training, and the provision of demand-driven advisory support to assist riparian governments in addressing policy formulation and implementation issues of institutionalizing concern at the national level has been strengthened,
- capacity in water resources and watershed development project design, preparation, and management through the development of guidelines and compendia of best practices, training, and provision of advisory technical assistance to support the practical application of skills in the development and management of multi-country projects enhanced,
- A decision support system (DSS) for the Nile Basin, with attendant strengthening of human and institutional capacity, to provide a common, basin-wide platform for communication, information management, and water resources analysis to support NBI activities and other SVP and ENSAP projects being developed;
- Eastern Nile Knowledge Base jointly generated and expanded

The Knowledge Base, known commonly as Cooperative Regional Assessments (CRA), is the first of their kind in EN to provide a comprehensive and system wide analysis of

the watershed situation and designed a long term joint program to address the challenges facing sustainable watershed management. The CRAs consist of a series of trans-boundary, EN collaborative analytic studies including documents and projects plans:

- Cross border Watershed characteristics identified,
- Trans-boundary distribution of environmental, social and economic negative/positive impacts analyzed,
- Opportunities for regional cooperation identified,
- Degree of cooperation and process required for effective implementation of the long term watershed management program formulated.
- A number of studies and over 13 investment projects for national implementation were identified and project profiles for these were prepared. These projects were identified based on the anticipated benefits and their distribution, their relationship to other IDEN projects or potential projects and whether the project enhances regional cooperation within the eastern Nile basin.
- Another benefits resulting from the watershed CRA was a vastly extended information base of watershed relevant parameters at ENTRO, including a GIS linked database and mapping capabilities. This information has served us critical input and basis for other development planning and project preparation activities in the eastern Nile.
- Finally the benefits of watershed management on the context of a joint multi-purpose program were elucidated. The objective of the paper was to provide a summary of important watershed management considerations and linkages that should be taken into considerations when developing a joint multi-purpose program of basin wide development investments.

4.5.7. The Implication of the Nile Cooperation on the Benefits of Local Communities

Establishing the frame work for sustainable management will improve the living conditions of the people those depend on these watersheds improved by providing alternative livelihood opportunities, decreasing population pressure, increasing land productivity, protecting the environment, reducing soil erosion, sediment transport and siltation and laying foundation for future. Collective action and the management of catchments treatment enhanced community participation in the planning and management process.

Given the complexity of cross-cutting natural resources degradation, livelihoods and poverty issues, the development of a sustainable watershed management framework took a holistic and multi-sectoral approach to build trust and confidence. The development of a sustainable watershed management framework as well as being an analytical undertaking is also a cooperative process to build trust and confidence. ‘Process and Confidence Building’ were an important as ‘Analysis’.

A “watershed perspective” was maintained during the analysis in order to focus on the unique up-stream-down-stream characteristics of watershed and river basins. A watershed perspective has enabled the identification of basin wide synergies from cooperative trans-boundary interventions. A “Regional process” including the building of capacity, trust and confidence among riparian stakeholders, was made optional through a continuous process of regional stakeholders’ participation on national and regional levels.

4.5.8. Key Lessons Learnt

The project was built on previous regional collaborative programmes between Integrated Tana Beles Water Resource Development and the national programmes with ENSAP, joining the activities at a later stage under the framework of the Regional Nile Basin Initiative. A holistic

approach to watershed management will need to encompass a detailed and comprehensive understanding of the underlying social, economic and policy causes behind land degradation, poverty, food insecurity and a limited range of livelihood possibilities as an alternative income generation activities (IGAs). In more pragmatic terms, achieving sustainable livelihoods in an integrated and holistic way hinges on the causes of specific problems need to be sought in integration of other sectors or disciplines playing a complimentary roles and synergetic effects towards ensuring sustainable watershed and land management(for instance landless community members, particularly youth and women received training and skills in the areas of IGAs is only the picture such as: sheep fattening, poultry production, tailoring and weaving, beekeeping, small-scale-dairy etc are still expecting to receive inputs/support from the project. The other key component that was integrated in the initial project document as an important cross-cutting scheme to watershed project was the 'credit component', but this component has been cancelled out at the later stage (perhaps during revising the PDO). Hence, the need for credit and very low performance on the entry points' related activities are the main challenges learnt to be improved further.

5. MAJOR PROBLEMS ENCOUNTERED

Poverty reduction requires a longer term (both in terms of scale & time), more strategic understanding of the social and political realities of power, and confronts us with ethical choices and trade-offs which are much more complex to benefit-cost sharing in the watershed management projects ...A more historical, less technical way of looking at things can provide a sense of perspective. Hence, issues specific to watershed management, to increase water use efficiency and productivity, to adapting/mitigate climate changes and ensure environmental sustainability through adopting best practices are of such critical intergenerational importance.

As a result of this, the planned activities for the remaining project period includes some capital intensive civil works [such as renovations of health posts, construction of hand-dug wells/small irrigation facilities, community access roads foot bridges etc, which would demand significant investments from the project. Thus it is estimated that, if the work plan is implemented effectively and efficiently, this sub-component would disburse about US\$ 6-7 million on average during the remaining project period (up to 2013).

However, these activities also demand significant technical



and engineering inputs for design, implementation supervision and quality assurance from experts (also see, Mid-Term Review, June 2011). Some of these activities (access roads, bridges, irrigation schemes etc) would also demand appropriate safeguards assessments to ensure that land allocation and acquisition are conducted transparently and in compliance with Government and World Bank's requirements. The consultant sought implementing such capital intensive project activities and aiming to utilize the budget efficiently would be time consuming and challenging compared to the remaining project period, provided that the project will phase out at the end of 2013. This calls upon the attention of regional government for its immediate technical & administrative measures. It requires jointly reviewing and amending the project and submitting cost/no-cost extension request to higher level decision-making (including World Bank) supported by evidence based justification. Therefore, preparation and submission of details of activity specifications and bill of quantities (technical and financial plans) is critically demanding the decision making of the regional and federal governments as soon as possible. In addition to this, a strong recommendation of the MTR being conducted during May-June 2011 is still valid and commendable that the current TA support must be extended until the closing date of the project provided the need for more productive and eco-efficient agriculture systems.

The more deep-seated challenges are delays/ or the time consuming procedures for procurement of project inputs/ items and cancellation of the credit component that has caused lack of rural finance to link and diversify alternative income generation activities with watershed management project that visions to enhance human, physical, financial, social capitals sustainability.

Chapter 6

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

1. The physical achievements under Watershed Management have been outlined above, briefly, as it's at its early stage only focusing on the treatment of the upper catchments of Tana-basin, whereas, the regional and national capacity; collaboration and trust; on basin wide, sub-basin and project level perspective were built. The principles and guidelines of watershed and land use management were well adopted; community participation, livelihood and contribution concerns -in the planning and management process of watershed project are adequately integrated. The stakeholders' involvement and the role of CSOs/EtNBDF, in preserving the benefits, made to-date and transferring skills, or sharing knowledge at all levels has been effective, but it requires to be strengthened further. Particularly, towards support building and



advocacy campaign on institutionalizing benefits-cost-sharing and livelihood concerns in the project implementation strategy of the Eastern Nile (EN) watershed management project. Building “cooperation is not an option but a necessity and precondition” need to ensure that the sustainability of the Nile for future generations could be met, without compromising the current ones; and keep the momentum towards regional integration.

2. Ethiopia now has a substantial capacity building programme to support its decentralization policy and a Ministry of Capacity Building (now merged into Ministry of Civil Service) has been established in 2002. Since then, the “weredas” are seen as the front-line administrative unit for all development efforts. Despite considering financial, administrative and technical capacity that has been built as parts of decentralization process, delays on timely employment of Community Facilitators (CFs) by the project was raised as a main constraint to lack of effective implementation of capital intensive infrastructural activities and other livelihood activities: both in numbers and technical expertise.
3. The local-level impressions of the project, integration of watershed and land management principles are well understood and supported by governments’ guidelines observed being in place: there is an exceptional attempt to mainstream participatory approaches and community contribution in the public sector; they are well-known—and welcomed—by those concerned government bodies at different levels and the beneficiary communities; particularly, women. This has been ensured/ or reflected through active engagement of communities, their labor contribution on voluntary bases to the watershed project. If and only if, the remaining project period

allows the fund made available under the project will fully allow a rapid means of expansion of watershed activities, with the current exceptional delays in Livelihood related activities.

4. However, some perspectives need to be modified to overcome, a number of difficulties. These include: realistic expectations created due to lack of delivering inputs for IGAs and delays in capital intensive infrastructures construction activities—poverty alleviation and livelihoods- two issues are central here: first, an improved natural resource base can contribute to enhanced livelihoods for a growing rural population in Ethiopia (200,000/ annum) but is not a panacea; second, even a moderate degree of equity requires high levels of social organization and an ability among women and the poor to articulate their requirements, together with continuing awareness to ensure that their rights are not overridden.
5. Expectations therefore need to be met more moderate and other measures introduced within a long-term strategic perspective; such as: strengthening social organizations (particularly, through forming village level saving and credit associations as a self help groups in micro-watershed, including women, youth, landless etc will guarantee improved livelihoods in addition to augmenting labor and time contributions to watershed projects. The process requires ‘matching’ contributions from the project, and to link them to a wider range of economic, social and environmental opportunities beyond the five year implementation period.
6. From watershed grants to investment funds with a longer-term perspective(beyond construction of physical infrastructures of soil and water

- conservation), if the saving and credit funds established through local resource mobilization and communities contributions combined with institutionalizing the seed money to be provided by project, could be seen as the beginnings of a core fund to be revolved for investment in the communities and beyond WSD, which could attract further contributions from communities, government/NGOs/Donors, or serve as a basis for negotiating with financial institutions as way forward.
7. Furthermore, the regional state is more strongly involved in planning and implementation of watershed development, with more priority given to physical construction of soil and water conservation activities, while the provision of social service infrastructures and other off/on-farm (IGAs) are implemented unsatisfactorily. Nevertheless, stronger links between regional/sub-regional, national, state, district and community level had benefited in the design and implementation of training, selection and secondment of staff; cross-learning among community, Woredas and states; and created monitoring and evaluation system (this is a conducive situation that can be taken as an opportunity for further improvement).
 8. Roles for Donors Donor approaches are highly variable: some prefer the flexibility of working with NGOs (at the risk of providing 'models' which cannot be scaled up by government); others work closely in support of government initiatives. All are attracted by the focus on poverty alleviation and environmental rehabilitation. What so ever it is both parties in this case the Ethiopian government shall fulfill the agreed terms and conditions under the project contract administration and the donor shall timely full-fill its commitment too.
 9. The current funding for watershed development by donor sources combined was many times larger than that has been allocated for natural resource management from Federal and the Regional Governments, before. There are strong arguments that donor initiatives should be designed primarily to support improvements in the effectiveness and efficiency of Regional State and National Government Programmes, including: (i) support for a programme of capacity building at all levels; (ii) support for cross-learning across projects; (iii) strengthening monitoring and evaluation systems; (iv) strengthening strategic planning and joint review at the regional state, district and community levels. Viewing that 'Enclave' projects having completely separate delivery systems have little to offer in this context.

6.2. Specific Policy and Implementation Strategies

Watershed inhabitants are important watershed resources. They should be the main decision makers in any activity involving their resources. All inhabitants within a watershed (WS) are watershed resource users but based on farming systems approach, a household is recognized as the unit for planning and management. A representative from each household (neighborhood) becomes a member of the users' group (UG). Within a single UG, there may be several interest groups (IGs). The project has taken this into account and organized the UGs into 1:5 (five individual for a group guide and monitored by a leader). Despite creating too many small groups, such small groups are very manageable. The members of each IG could form a group for a particular activity. It could be foot-trail improvement, on-farm conservation, water management system improvement, or community forestry development, according to the interest of the farmers. The sum total of the IGs makes up the UG. A UG may form an executive body or a Kebele watershed management committee (KWSMC), as and when needed. Initially, every watershed

management project should establish UGs. With this, both the project and the local people gain experience in community organization and development. Later, the Watershed Community Development and Conservation Committee (WCDCC), an autonomous community organization, may be introduced as in the case of this project.??

6.2.1. Introduce Watershed Resources Management Measures and Environmental Impact Assessment

The measure is intended to provide general goals for States and local governments to use in developing comprehensive programs for guiding future development and land use activities in a manner that will prevent and mitigate the effects of nonpoint source pollution. A watershed is a geographic region where water drains into a particular receiving water body. As discussed in the conceptual framework of this report, comprehensive planning is an effective nonstructural tool available to control nonpoint source pollution. Where possible, growth should be directed toward areas where it can be sustained with a minimal impact on the natural environment (Meeks, 1990). Poorly planned growth and development have the potential to degrade and destroy entire natural drainage

systems and surface waters (Mantel et al., 1990). Defined land use designations and zoning direct development away from areas where land disturbance activities or pollutant loadings from subsequent development would severely impact surface waters. Defined land use designations and zoning also protect environmentally



sensitive areas such as riparian areas, wetlands, and vegetative buffers that serve as filters and trap sediments, nutrients, and chemical pollutants. Sediment loads in Lake Tana are increasing at alarming rates (5-250t/ha/year). Erosion is highest in the eastern part of the sub-basin & lowest in Western part. Erosion in the Gilgel Abbay has significantly increased silt deposition in the lake and this has extended to the Tana Kirkos Island which is no longer an Island but a peninsula. Although, the lake has a huge storage capacity, the increased sediment deposition can impact the lake in several ways. It increased turbidity, reduced transparency and productivity of the lake, contributing to its aging, affects fish and other biota and alters the morphology of the lake (PDO 2008).

1. Areas such as streamside buffers and wetlands may also have the added benefit of providing long-term pollutant removal capabilities without the comparatively high costs usually associated with structural controls. Conservation or preservation of these areas is important to water quality protection.



Land acquisition programs help to preserve areas critical to maintaining surface water quality. Buffer strips along stream-banks provide protection for stream ecosystems and help to stabilize the stream and prevent stream-bank erosion (Holler, 1989). Buffer strips protect and maintain near-stream vegetation that attenuates the release of sediment into stream channels and prevent excessive loadings. Levels of suspended solids increase at a slower rate in stream channel sections with well-developed riparian vegetation (Holler, 1989).

2. The availability of infrastructure specifically sewage treatment facilities is also a factor in watershed planning. If centralized sewage treatment is not available, onsite disposal systems (OSDS) most likely will be used for sewage treatment. Because of potential ground-water and surface water contamination from OSDS, density restrictions may be needed in areas where OSDS will be used for sewage treatment. The problem here is that the municipalities were not considered as part of the watershed planning and their role and responsibilities is not even cited out in the project document. Hence, the planning and implementation process of watershed development shall reconsider the integration of the municipalities' plans as way forward.
3. Setback (buffer zone) standards: In coastal areas, setbacks or buffer zones adjacent to surface water-bodies, such as rivers, estuaries, or wetlands, provide a transition between upland development and water-bodies. The use of setbacks or buffer zones may prevent direct flow of urban runoff from impervious areas into adjoining surface waters and provide pollutant removal, sediment attenuation, and infiltration. Riparian forest buffers function as filters to remove sediment and attached pollutants,

as transformers that alter the chemical composition of compounds, as sinks that store nutrients for an extended period of time, and as a source of energy for aquatic life (USEPA, 1992). Setbacks or buffer zones are commonly used to protect coastal vegetation and wildlife corridors, reduce exposure to flood hazards, and protect surface waters by reducing and cleansing urban runoff (Mantell et al., 1990). The types of development allowed in these areas are usually limited to no habitable structures and those necessary to allow reasonable use of the property (docks, non-enclosed gazebos, etc.). Factors for delineating setbacks and buffer zones vary with location and environment and include seasonal water levels, the nature and extent of wetlands and floodplains, the steepness of adjacent topography, the type of riparian vegetation, and wildlife values. EPA recommends that no habitat-disturbing activities should occur within tidal or non-tidal wetlands. In addition, a buffer area should be established that is adequate to protect the



identified wetland values (like the case of Fogera plain wetlands). Minimum widths for buffers should be 50 feet for low-order headwater streams with expansion to as much as 200 feet or more for larger streams. In coastal areas, a 100-foot minimum buffer of natural vegetation landward from the mean high tide line helps to remove or reduce sediment, nutrients, and toxic substances entering surface waters (MWCOG, 1991).

4. Slope restrictions Slope restrictions can be effective tools to control erosion and sediment transport. Erosion rates depend on several site-specific factors including soil type, vegetative cover, and rainfall intensity. In general, as slope increases, there is a corresponding increase in runoff water velocity, which may result in increased erosion and sediment transport to surface waters (Schwab et al., 1981; Dunn and Leopold, 1978).
5. Site plan reviews and approval: A site plan review involves review of specific development proposals for consistency with the laws and regulations of the local government of jurisdiction. To ensure that natural resources necessary for protecting surface water quality are preserved, inspection of a potential development site should occur. Inspection ensures that the information presented in any application for development approval is accurate and that sensitive areas are noted for preservation. Inspections should also be conducted during and after development to ensure compliance with development conditions. Depending on the size of the local government and the amount of new development occurring, this inspection could be incorporated into the duties of existing staff at minimal additional cost to the local government or could require the addition of staff to conduct onsite inspections and monitoring. The effectiveness of

such a program depends on the ability of the inspectors to evaluate property for its natural resource value and the practices used to protect areas necessary for the preservation of water quality.

6.2.2. Creating a Favorable Environment for Community Participation

- i. Managers must strengthen their programs so that they are able to support the work of community participation through introduction of initiative such as to link population pressure with watershed development and land use management practice. Encourage local decision-making and integration of family planning program, HIV/AIDS, control and prevention of waterborne diseases within the watershed planning and management project. A national and regional health Bureau and family planning program that promotes decentralization as a means of improving its performance will increase the local manager's ability to get support from community members, local program providers and administrators, and local government authorities. Decentralization helps to bring the decision-making process closer to the people who will be most affected by the decisions. Under decentralization, the program office/bureau at the regional level gives authority to local/woreda/Kebele/micro-watershed levels such to make certain types of decisions concerning resource allocation and the implementation of various programs. Policies that support decentralization permit managers to develop strategies that are appropriate to the local environment, encourage positive attitudes toward family planning, and improve program performance.
- ii. Involve other Voluntary CSOs: Given significant volumes of project activities are not yet implemented; involving other voluntary

organizations in watershed management, mainly, in the areas of community participation and development, training efforts in IGAs and family planning programs is by far demanding. Involving local NGOs in the community based works is often helpful to mobilize additional resources (skill-full personnel) for implementing the pending issues linked with software activities planned to enhance human and social capitals. These additional resources can be used to carry out a variety of activities that the government program may not be able to afford due to limitations of implementation capacity. Such activities planned and implemented by community members who belong to the NGOs, help the community to identify more closely with the watershed planning and management. Furthermore, by adding its own resources to the program, the community is likely to be more interested in program success and to hold watershed project planning managers more accountable for program performance.



- iii. Build the Capacity to Undertake Watershed Management: There is still a need for improved awareness of watershed management concepts, principles and their implications. Watershed

management planning at watershed level is a different subject than planning at the grassroots level. At higher levels, planning is strategic and concerned with development pathways in selected “development units or domains” (as observed in this regional assessment), planning frameworks, and identification of priority areas is made strategically. At the lower level, planning is concerned with modus of building implementation capacity. Watershed management, as an integrated or holistic approach, should be interpreted more pragmatically. Hence, a holistic approach to watershed management will need to encompass a detailed and comprehensive understanding of the underlying social, economic and policy causes behind land degradation, poverty, food insecurity and a limited range of livelihood possibilities.

- iv. Integration does not mean that implementation has to cover all possible sectors of integrated rural development. It means that watershed development or sustainable land management interventions are put into context one with another (e.g. SWC to increase moisture availability to agricultural production; improved stoves as to reduce the need for fuel-wood and depletion of forest cover).
- v. According to focus group discussants and SOWT analysis results, constraints to its effective implementation (mainly in the areas of livelihood related activities in both regional and woreda levels was resulted from low level of implementation capacity: both in numbers and technical expertise, particularly at the lowest levels.
- vi. Identify leaders in the community: Community participation may require new strategies for delivering social services, including new types of

service sites or personnel. Community participation may also require establishing relationships among government, NGO facilities, and private sector and may involve changes in the roles of watershed planning providers as they work more closely with the community. To make community participation effective, resources may need to be transferred from government agencies to the community. This type of change may be met with strong resistance from firmly established interests. Strong leadership that encourages managers to take risks and try out new approaches becomes imperative. Effective leaders will defend the interests of the community and advocate for change among policy makers and other sectors of society.



vii. Maintain development of skills within the community: As the community becomes more involved in implementing the watershed project, community members will need new skills in order to perform their new functions. watershed planning managers can provide different kinds of technical support to community members so that they can assume a greater role in preparing action plans, training volunteers and members of different committees to help implement the program, accounting for resources, monitoring expenditures,

- supervising activities in the field, and monitoring the progress of the program.
- viii. Find resources within the community to encourage and support participation. Incentives that promote change are more effective motivators than incentives that compensate for work done. Incentives can take many different forms and include increased access to agricultural, credit, and small business programs. Managers should emphasize to community members for the improved social and economic status that having a smaller family will eventually bring about.
- ix. Obtain outside sources of funds to initiate community activities. Even when the community mobilizes some of its own resources through donations, levies, user fees, or reallocation of budgetary sources, it may still require additional funds for starting new activities, training volunteers, or equipping satellite service sites. Small incentive grants can help to give the communities the extra push they need to maintain momentum for their community participation initiative.
- x. Guard against creating dependencies. Often donors are the principal sources of incentive grants. However, once the community approach takes off and starts to produce tangible results, managers should consider ways to increase community contributions. Whenever outside resources are being used as incentives, managers need to be on guard against creating dependencies that can subvert sustainability

6.2.3. Information Management and Knowledge

Sharing

Land use planning is a science that determines the type of land use through studying the ecological character of the land as well as its socio-economic structure. It is possible to plan for the appropriate use of the land and to enhance the present management of the land use by utilizing Geographical Information System (GIS) as it began. To this end, our investigators identified and took steps toward developing maps to determine the ecological and socio-economic resources of the Tana-Belese-Integrated Water Resource and sub-Basin watershed that encompasses an area of 80,000 hectares. In relation to this the d-Base Management System has been established at woreda levels but data entry was not fully encoded and updated. Therefore, the MIS shall be strengthened and improved including installations of data protection software or virus safeguards.

6.2.4. Linkages between watershed issues and food security, agriculture and the MDGs

1. Agriculture, Food Security and Climate Change, one of the central challenges for global society is to achieve food and energy security, while maintaining biodiversity. Noting that agriculture is crucial for sustainable development and food security, in particular in Eastern Nile Countries, it requires to call for a shift to more resource-efficient and climate-smart agriculture that creates opportunities and incomes for farmers, and the need to, inter alia: stimulate investment in innovative agriculture; create conducive environments for entrepreneurship; enhance market access for rural communities; and improve access to finance, in particular for micro businesses.
2. Who is the 21st Century's Coming Anarchy of our Planet?: In his influential 1994 article 'The Coming Anarchy', American journalist Robert Kaplan used a description of his travels in coastal West Africa to

describe how 'the political character of our planet is likely to be in the twenty-first century'. One, it is a frightening place. Kaplan painted a bleak picture of West African descent into endemic conflict, overwhelmed by 'disease, overpopulation, unprovoked crime, scarcity of resources, refugee migrations, the increasing erosion of nation-states and international borders, and the empowerment of private armies, security firms, and international drug cartel'; Two, he argued that this volatile and destructive mix was spreading to other regions and would be exacerbated by rising sea levels, changing rainfall patterns and more frequent natural disasters arising from anthropogenic climate change. His core message was that, 'it is time to understand "the environment, as a whole" for what it is: the national-security issue of the early twenty-first century', as the world temperature is keeps on increasing by 40%.

3. Vulnerability and adaptation: In climate change impacts research, the implications of climate change for human well-being are typically described and analyzed in terms of vulnerability. Vulnerability at its simplest can be seen as the potential for loss or harm due to some external stress. Climate change researchers consider vulnerability to be a function of the sensitivity to change of the unit of study (the system, population, region, etc.); the climatic conditions and consequent biophysical changes to which that unit is and is likely to be exposed; and the capacity of the unit to adapt to or cope with the expected changes. Vulnerability differs across households, communities and regions, as the fundamental components of vulnerability differ significantly over space and time.

4. Adaptation: in this context takes place through adjustments to reduce vulnerability or enhance resilience to observed or expected changes in climate, and involves changes in processes, perceptions, practices and functions. Adaptation may be initiated at a variety of scales, from institutionally-driven policies and programmes at national or sub-national levels to household-level adjustments and risk management decisions. The capacity to adapt is affected by a range of interacting social, economic, political and environmental processes, many of which may have little or nothing to do with climate processes. The identification of security risks and the prevention of conflict due to the impacts of climate change can therefore be considered strongly linked to the identification of regions or populations that are vulnerable to climate change because of inadequate adaptive capacity. Expanding climate change adaptation research to include insecurity and conflict issues (or vice versa, to incorporate knowledge of climate change adaptation processes in security analyses) does not require a great analytical or conceptual stretch. As has been recognized in the environment and security literature, vulnerability to climate stress and violent conflicts share many of the same structural determinants: poverty, weak governance, population growth, fractured social structures and resource scarcity. The extent to which climate change may reinforce or amplify the potential for violent conflict in any given region (i.e. to become a 'threat multiplier' or to alter the intensity of existing threat multipliers) will depend upon the degree to which adaptive capacity can moderate the vulnerability of that region's population (Oli Brown and Robert McLema [Brown, Oli] At: 12:01 11 September 2009)

5. Improving infrastructure and management of food could eliminate post-harvest loss by 30-40%. He articulated that agriculture, utilizing current technology and knowledge sharing, could address food scarcity in the face of climate change and that genetic modification is not required, although research should continue to develop seeds resilient to human-induced climate change (Suggestions from, Robert Watson, University of East Anglia, UK).

6.3. Project Planning, Coordination and Joint Review

6.3.1 Research and Training

- a) Although Ethiopia invests 10% its annual budget in the agriculture, while agriculture dependent is growing (200,000 People/year), with this it could be difficult to sustain the environment and economic growth. Hence, population growth should be analyzed beyond figures, but also quality of land which is a question of lands carrying capacity to feed people, depending up on the approaches used and the efficiency of the production system combined with the very traditional farming system that has been practiced since 400years ago. This requires developing systematic approaches to deal with climate change and address all elements of the ecosystems; the importance of sharing experiences between countries facing similar climate change challenges; and the need for synergy between government policies, research agendas, promotion of technologies and the agriculture sector to promote climate-smart agriculture requires further attention and researching.
- b) Studies related to fisheries research that has characterized the trophic state of the Lake Tana as meso-trophic, a detailed limnological assessment of the lake has not been carried out. This is an

important assessment that needs to be carried out. Local alga blooms in and around Bahir-dar,(southern gulf) have developed and increasingly being dominated by the potentially toxic blue green algae. Lake water transparency has declined. Increased nutrient loads(possibly from sewage and about 30,000 pit latrines carried through run-off and storm water and fertilizer and fish kills and possible toxins for other uses. To this end an immediate assessment shall be conducted on the roles and responsibilities of municipalities in planning and management of watershed projects.

Environment and production technology division discussion paper no. 89.

Chapter 7

7. REFERENCES

1. Tana&Beles Integrated Water Resources Development Report(May 2,2008)
2. ENSAP-Eastern Subsidiary Action Program- Trans-boundary Context, Results To date and Next Steps(ENTRO), entro@nilebasin.org
3. Cooperative Regional Assessment-CRA for Eastern Nile Watershed Management Project, NBI/ENTRO, July 2007).
4. Baseline and Needs Assessment of Nile Basin Countries a Regional Synthesis December 2006
5. Environmental Security, Regime Building and International-Law in the Nile Basin(Aaron Tesfaye, Ph.D* Associate Professor, Department of Political Science, William Paterson University, USA)
6. Adato, M. and R. Meinzen-Dick. 2002. Assessing the impact of agricultural research on poverty using the sustainable livelihoods framework.
7. Baseline-Water Resource Planning and Management Project Document, March 2001-NBI-Council of Miniterers
8. The Global Conference on Agriculture, Food Security and Climate Change, 31 October to 5 November 2010 at the World Forum in The Hague, the Netherlands).
9. Allison, E. and F. Ellis. 2001. The livelihoods approach and management of small-scale fisheries. *Marine Policy*, 25(2), 377–88.
10. *Ecological Economics*, 45(3), 331–9. Appadurai, A. 1996. *Modernity at large: cultural dimensions of globalization*. Minneapolis, MN: University of Minnesota Press.
11. Arce, A. 2003. Value contestations in development interventions: community development and sustainable livelihoods approaches. *Community Development Journal*, 38(3), 199–212.
12. Ashley, C. and D. Carney. 1999. *Sustainable livelihoods: lessons from early experience*. London: DFID. Batter bury, S. 2001.
13. *Landscapes of diversity: a local political ecology of livelihood diversification in South-Western Niger*. *Ecumene*, 8(4), 437–64.
14. Bebbington, A. 1999. Capitals and capabilities: a framework for analyzing peasant viability, rural livelihoods and poverty. *World Development*, 27(12), 2012–44.

15. Bebbington, A. and S. Batter bury eds. 2001. Transnational livelihoods and landscapes: political ecologies of globalization. *Ecumene*, 8(4), 369–464.
16. Berkes, F., C. Folke and J. Colding. 1998. *Social and ecological systems: management practices and social mechanisms for building resilience*. Cambridge: Cambridge University Press. Berkhout, F., M. Leach and I. Scoones, eds. 2003. *Negotiating environmental change: new perspectives from social science*.
17. From peasant studies to agrarian change. *Journal of Agrarian Change*, 1(1), 11–56,
18. *Rural livelihoods: crises and responses*. Oxford: Oxford University Press. Blaikie, P. and H. Brookfield. 1987.
19. *Land degradation and society*. London: Methuen and Company. Boyd, E. et al. 2008.
20. Resilience and ‘acclimatizing’ development: examples and policy implications. *Development*, 51(3), 390–6. Broad, R. 2006. Research, knowledge, and the art of ‘paradigm maintenance’: the World Bank’s development economics vice-presidency (DEC).
21. *Review of International Political, Overseas Development Institute*, 1998

Chapter 8

8. ANNEXES

- List of individual contacted
- List of Staff and community members received training and exposed to exchange visits(disaggregated by Gender)
- List of population in the study areas disaggregated by gender
- List of Group and Individual Discussion
- Data Sheet
- Maps of Micro-basins
- Different Pictures/photos



Our Contacts:
The Secretariat
Nile Basin Discourse
PLOT 32, Nsamizi Rd,
Tel +256 414 322 432
Fax: +256 414 323 930
P.O. Box 185, Entebbe - Uganda
Email: info@nilebasindiscourse.org
Website: www.nilebasindiscourse.org