ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
INSTITUTE OF REGIONAL AND LOCAL DEVELOPMENT STUDIES (RLDS)

THE IMPACT OF RESETTLEMENT PROGRAM ON FOOD SECURITY AND ENVIRONMENT IN TIGRAY REGIONAL STATE:

THE CASE OF KAFTA-HUMERA WEREDA

BY:GEBREGZIABHER GEBREYOHANES DESTA

February 2009
ADDIS ABABA UNIVERSITY

THE IMPACT OF RESETTLEMENT PROGRAM ON FOOD SECURITY AND ENVIRONMENT IN TIGRAY REGIONAL STATE: THE CASE OF KAFTA HUMERA WEREDA

A THESIS PRESENTED TO THE SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY

IN PARTIAL FULFILMENT FOR TE DEGREE OF MASTER OF ARTS IN REGIONAL AND LOCAL DEVELOPMENT STUDIES

BY: GEBREGZIABHER GEBREYOHANES DESTA

FEBRUARY 2009

ADDIS ABABA

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

THE IMPACT OF RESETTLEMENT PROGRAM ON FOOD SECURITY AND ENVIRONMENT IN TIGRAY REGIONAL STATE: THE CASE OF KAFTA HUMERA WEREDA

A thesis presented to the School of Graduate Studies of Addis Ababa University in partial fulfilment for the Degree of Master of Arts in Regional and Local Development Studies.

BY: GEBREGZIABHER GEBREYOHANES DESTA

Approved by Board of Examiners	Signature
1. Woldeab Teshome Chairman, Graduate Committee	
2. Assefa Tolera (Advisor)	
3. Ignatius Mberengwa (Examiner)	

ACKNOWLEDGMENT

First, I would like to extend my great appreciation and respect to my Advisor Dr: Assefa Tolera for his assistance in giving me valuable advice, suggestions and comments at every stage making the work more articulate. I sincerely thank him for his guidance and sense of responsibility from the inception to the completion of this thesis.

I am exceptionally grateful to Ato Teshale Atsbaha, for his friendly professional advice. Furthermore, he has granted me relevant references and materials such as hypsometer, clinometers and meter, which helped me in measuring tree dimensions and weights.

I own my gratitude to the BoANR and in particular to Ato Nigus Esmael who helped all technical advices and relevant reference materials. I would like also to appreciate the Kafta Humera WoANR stuff members for their commitment in availing all relevant data sources.

I acknowledge to the office for Coordination of Resettlement in Tigray head Ato Kassa Gugsa and to the western zone resettlement task force head Ato Abraha Teklu for they provide me materials and reliable data.

Finally, I wouldn't have been where I am now with out the help of my enumerators. I really appreciate them to their dedication in undertaking the survey data collections carefully.

LIST OF ACRONYMS

BCRT.....	Bureau of coordination of Resettlement in Tigray
BoANR.....	Bureau of Agriculture and Natural Resource Development
BoPED.....	Bureau of Planning and Economic Development
BoFED.....	Bureau of Finance and Economic Development
CSA.....	Central Statistics Authority
CED.....	Commission on Environment and Development
DECSI.....	Dedebit Credit and Saving Institution
DBH.....	Diameter above Breast Height
ECA	Economic Commission for Africa
EPLUAD	Environmental Protection Land Use and Administration Desk
FAO.....	Food Aid Organization
FGD.....	Focus Group Discussion
GDP.....	Gross Domestic Product
GIS.....	Geographic Information System
Hr (Ha).....	Hectare
KHW.....	*Kafta Humera Wereda*
Masl.....	Meter above Sea Level
RP.....	Resettlement Program
RTF.....	Resettlement Task Force
TRS	Tigray Regional State
WB.....	World Bank
WBED.....	World Bank Environment Department
WFP.....	World Food Program
WHP	World Health Program
WoANR.....	Wereda Office of Agriculture and Natural Resource
WoARD.....	Wereda Office of Agriculture and Rural Development

LIST OF TABLES

Tables **Pages**

Table 1: National Level Program areas and Target Population.....3
Table 2: Active projects and displaced people.....13
Table 3: Distribution of displacees by cause of displacement 14
Table 4: Population displacement with major dams in Africa.....19
Table 5: Summary of the Household Sampling Size.....33
Table 6: Age distribution of respondents by age category 39
Table 7: Household characteristics and size.....40
Table 8: Educational back ground of respondents 40
Table 9: Mean crop yield and income in the origin.....42
Table 10: Mean crop production and income in the resettlement area.....42
Table 11: Arrival years of resettlers.....43
Table 12: Annual mean physical crop production per hectare per quintal 44
Table 13: Annual average income per hectare per household.....46
Table 14: Average livestock ownership comparison..... 48
Table 15: Average household wealth on livestock comparison.....48
Table 16: Summary of control and experience group.....54
Table 17: Average number of trees.....55
Table 18: Average number of trees and their volume in one hectare (100*100m).....58
Table19: Land tenure and environment.....59
Table 20: Hectarage loss of forest.....60
Table 21: Sustainability of resettler households.....64
Table 22: Number of regional (zonal) level households resettlers.....65
Table 23: Location of resettler household's families.....67

LIST OF FIGURES

Figures **pages**

Figure 1: Crop production comparison 45
Figure 2: Income comparison of the resettlement program.....47
Figure 3: Prevalence of log remains in and around farmlands.....51
Figure 4: Sample of densest control group.....52
Figure 5: Sample of sparse Control group 52
Figure 6: Sample of semi-densest control group.....53
Figure 7: Sample of sparse Control group 53
Figure 8: Sample of densest Experience group 56
Figure 9: Sample of sparse experience group.....56
Figure 10: Sample of bare plot experience group.....57
Figure 11: Prevalence of Elephants along Tekeze River.....62

TABLE OF CONTENTS

No	Contents	page
Acknowledgement		i
List of Acronyms		ii
List of Tables		iii
List of Figures		iv
Table of Content		v
Abstract		Viii
	Chapter One: Introduction	**1**
1.1	Background of the research	2
1.1.1	Objectives of the current resettlement program	2
1.1.1.1	Pillars of the program	2
1.1.1.2	Key principles and approaches, national level program areas and target population	2
1.1.1.3	National level program areas and target population	3
1.1.2	Background of the study area	3
1.1.3	General description of the study area	4
1.2	Statement of the problem	4
1.3	Objective of the study	5
1.4	Research questions	6
1.5	Significance of the study	6
1.6	Scope of the study	7
1.7	Limitation of the Study	7
1.8	Organization of the study	8
	Chapter Two: Conceptual frame works and review of literature	**9**
2.1	Concepts and definition	8
2.2	Review of related literature: Theoretical framework	12
2.2.1	Development- induced displacement and resettlement (DIDR)	12
2.2.2.1	Displacements induced by development projects	12
2.2.2.2	Number of displaced people as a result of DIDR	13

2.2.2.3	Types of development projects causing displacement----------	13
2.2.2	The negative consequence of DIDR----------	14
2.2.3	Types of population movements----------	15
2.2.4	Methods of forest demarcation----------	16
2.3	Review of related literature: Empirical evidence----------	18
2.3.1	Global and African resettlements----------	18
2.3.2	The African resettlement experience: Dams----------	20
2.3.3	Environment, population and Agricultural Development in Ethiopia----------	21
2.3.4	Environment and development----------	21
2.3.5	Impact on environment and Host Communities----------	24
2.3.6	Impact of villagization on environment and host----------	25
2.3.7	Resettlement and the environment----------	25
2.3.8	Common causes for the failure of resettlement operations----------	25
2.3.9	Is population resettlement the solution?----------	26
2.3.10	Improving and understanding the dynamics of resettlement----------	27
2.3.11	Creating resettlement options----------	28
2.3.12	Does the resettlement areas ever become home? ----------	29
	Chapter Three: Methodology of the study----------	**30**
3.1	Methodology of household survey----------	30
3.1.1	Methods of data collection----------	30
3.1.2	Sampling procedure----------	31
3.1.3	Sampling size----------	32
3.1.4	Methods of data analysis----------	33
3.2	Methodology pursued during tree inventory----------	33
3.2.1	Area calculation and coverage----------	33
3.2.2	Volume calculation----------	33
3.2.3	Sampling method----------	35
3.2.3.1	Control sample of forest areas----------	36
3.2.3.2	Experience sample forest areas----------	36
3.3	Assumptions----------	37

	Chapter Four: Results and Discussion	**39**
4.1	General characteristics of respondents	39
4.1.1	Age distribution	39
4.1.2	Marital status	40
4.2	Implementation of the program	41
4.2.1	Food security (economic) condition	41
4.2.1.1	Mean Crop production and income	41
4.2.1,2	The before and after implementation comparison of the resettlement program	43
4.2.1,2.1	Average crop production comparison	44
4.2.1.2.2	Income comparison	45
4.2.2	Environment	49
4.2.2.1	Resettlement and environment	50
4.2.2.2	Measuring the impact of resettlement on forest	50
4.2.2.3	Forest coverage comparison	52
4.2.2.4	Land tenure system and environment	58
4.2.3	Wild animals	61
4.2.4	Sustainability of the resettlement program(RP)	62
4.2.5	Tools or optional instruments to support sustainability of the resettlement program	70
	Chapter Five: Conclusion and Recommendation	**77**
5.1	Conclusion	77
5.2	Recommendation	79
	References	82
	Annexes	86
	Annex – A: Questionnaire for resettler households	86
	Annex – B: Check lists	94
	Annex – C: Name of tree species occurred during forest inventory	102
	Annex – D: Objectives principles and pillars the current resettlement programme	103
	Annex – E: Map	110

ABSTRACT

This thesis has attempted to identify the top major factors influencing the resettlement program namely, the resettlers food security condition and the environmental sustainability in Kafta Humera Woreda. Here sources of information are primary and secondary sources. By employing a simple random sampling method 5 kebele's are selected and a total of 86 households' heads selected in undertaking the household survey.

Further more, data for the measurement of forests was collected using rectangular plots (50m*50m). In addition, the impact of resettlement program on food security and environment is evaluated by implementing the ''before and after evaluation technique''.

According to this study, by using resettlement intervention, government seems achieved food security for the major resettler households. More specifically, the productivity and production level of the origin and the resettlement areas are compared, and the result showed that, the annual per house hold mean crop production and the rate of livestock possession in the resettlement area has exceeded across all years to the original physical production. This implies that resettlers are better off in the resettlement area. However, on the other hand, when we see the environmental sustainability concern on the other side, however, government seems giving low attention.

As a result of the resettlement program in the woreda (11 kebelle's) a total of 11,504,579.5 trees are lost. Furthermore, the loss of forest in terms of volume (biomass) as a result of the program has amounted to 24, 278, 27,488.23cm^3.

CHAPTER ONE

INTRODUCTION

The Regional State of Tigray is one among the ten regions in Ethiopia, sharing boundaries with Amhara region in south, Afar region in the east, Eritrea in the northern and Sudan in the west, TRS, Bureau of Finance and Economic Development, GIS centre 2002. Agriculture is the mainstay of the regional economy and the basis for the livelihood of the majority of the people in the region. However, it is very traditional and depends highly on rainfall. According to the TRS, BoPED, 1998: 6-7 the regional income survey revealed that agriculture contributes about 57% of the regional economy and the average land holding size per household ranges from 0.5 to 1 hectare, (BoPED, 1998: 7).

The region is characterised by land degradation, high population pressure, small farm size, landlessness, drought, environmental degradation, diminished soil fertility and traditional farming practices. All contribute to continuing low level of agricultural production, which as a consequence resulted into persistence food insecurity.

On the other hand, currently the western part of the region has a considerable amount of land underutilized, which is suitable for farming activities. Most of these areas can accommodate both commercial and small-scale farming practices and yet are scarcely populated and have room to resettle more people. In view of this, resettlement can play a crucial role by moving people from the famine affected areas to the western part of Tigray. It may be for this purpose, currently, the regional government of Tigray is implementing resettlement programme as part of the broader rural development strategy. Furthermore, the implementation of resettlement program ought to be assessed if the planning of the current resettlement program has over looked some decisive issues during the implementation process.

According to the Bureau of Agriculture and Rural Development (BoARD), recent estimates of the total forest coverage of Tigray is estimated to be 55,000 hectare amounting to 1.06% of the total land area, (cited in Alem G/wahid 2006:5). And according to the recent estimate, the study area (Kafta Humera) will remain for complete deforestation and complete loss of wild

life between 6-7 years unless well organized and planned effort is exerted on the implementation of resettlement program.

1.1. Background of the Research

Here it should be clear that, since intention of this thesis is to evaluate implementation of the current resettlement program, therefore, before evaluation it is first necessary to portray the pillars, principles and objectives of the current resettlement program on refined bases, but for your detailed information refer annex – D, and you will gate the objectives, principles and pillars of the current resettlement program on crude basis.

1.1.1. Objectives of the Current Resettlement Program

The main objective of the resettlement program clearly stated in the document entitled as "***Voluntary Resettlement Program (Access to improved land), Volume II, New Coalition for Food Security in Ethiopia, 2003:5-8***" is to enable 440,000 chronically food insecure households to attain food security through improved access to land in potential area on voluntary basis.

1.1.1.1. Pillars of the Program

According to the Voluntary Resettlement Program (Access to improved land), Volume II, New Coalition for Food Security, in Ethiopia the initiation of the voluntary intra-regional resettlement rests on four major pillars, namely: voluntarism, availability of underutilized land, consultation with the host communities and proper preparation

1.1.1.2. Key Principles and approaches

Key principles and approaches of the resettlement programme has stressed on voluntarism, partnership, self-help and cost-sharing, transparency of program design, iterative, 'learning by doing' approach, capacity building, environmental concerns, development process, self reliance, income and employment creation, community management, intra-regional and provision of minimum infrastructure. For your further information please refer Annex – D.

1.1.1.3. National Level Resettlement Program areas and Target Population

Table 1. The program is under taken fully in the following resettlement areas.

Region	Program Areas	No of population	House holds
Tigray	*Kafta Humera, Tsegedie*	200,000	40,000
Amhara	North Gondar, *Tegede, Metema, Quara, Tacharmachiho*	1,000,000	200,000
Oromia	*West Wolega, East Wolega, Ilubabor,* Jimma	500,000	100,000
SNNPR	*Sheka, Kefa, Benchmaji, Dawro, Konta, South Omo*	500,000	100,000
	Total	**2,200,000**	**440,000**

Sources: DPPC, 2002 – 2003 regional states number of affected population (1994-2003) & the Voluntary Resettlement Program (Access to improved land), Volume II, New Coalition for Food Security in Ethiopia, November 2003, Addis Ababa, pp: 20 & 23

1.1.2. The Study Area

Ethiopia is located in the Northeast of Africa, extending from latitude 33^0E to 48^0E and longitudes 3^0N to 14.5^0N. It covers an area of 1.127 million sq. km and boarders with Sudan to the West, Kenya to the south, Djibouti to the northeast and Eritrea to the north. According to CSA 2007 population and housing censes, the current total population of the country is 73,918,505, and out of which 83.83% lives in rural area. Ethiopia's economy is mainly based on agriculture as it accounts for more than half of the GDP, 90% of total exports and 80% of total employment. In spite of its key role in the country's economy, the performance of the agricultural sector remains low, (MEDaC, 1999 cited by Abay, 2005 pp: 2)

Tigray is located in the Northern part of Ethiopia. It covers an area of 80,000 km sq of landmass, most of which is highland and plateau interspersed within low laying hills and flat land. Its altitude ranges between 1,500-3000 m.a.s.l. (BoPED, 1995). According to CSA 2007 population and housing censes, the current total population of the region is 4,314,456, and out of which 80.47% lives in rural area. According to the new administration set up since 2000, Tigray is divided into seven political zones, namely: East, Central, Northwest, West, South, South - Eastern and Mekelle (the regional capital), and it has 35 rural *Weredas.* Agro-climatically, it is classified into *Kolla* (low land), which is below 1,500 meters above sea level, *Weina Dega* (mid high land) which rises to 2300 meters above sea level.

The mean annual rainfall of the region varies from 450 to 900 m.m (BoPED, 1993), which makes the region usually deficit in food.

Agriculture is the mainstay of the regions economy and the basis for the livelihood of the majority of the people. However, it is very traditional and highly depends on rainfall. The regional income account survey shows that agriculture contributes to the regional economy (GDP) about 57 percent. Of the total area of the region only 19 percent is cultivable and the average land holding size per household ranges from 0.5 to 1 hectare, (BoPED, 1997).

1.1.3. GENERAL DESCRIPTION OF THE SPECIFIC STUDY AREA (KAFTA HUMERA WEREDA)

Kafta-Humera woreda is located in the Western zone of the region and is bounded by the latitude $13^0\ 43^1$ to $14^0\ 28^1$ North and longitude $36^0\ 20^1$ to $37^0\ 31^1$ East. The woreda covers an area of approximately 640,000 hr, consisting heterogeneous mix of flat plain, undulating plains, undulating to rolling, and chain of complex mountains, isolated hills, valleys and gorges. The area climatically varies from *Woina Dega* to *Kolla* reflecting an altitude ranging in 1849 metre around *Bil - Amba* to 560m around *Tekeze* River. Its mean annual rainfall ranges between 900 and 1,100 mm (BoPED, 1997), which is fair and sufficient amount to produce lowland crops such as cotton, sesame and sorghum. In addition, the lowland areas of the western flank are rich in natural resource potential, which are covered with grass, bushes and trees. Out of the total area of the *woreda*, about 34.5% (220,518.6 hr) is cultivable. Furthermore, 46.9% (300,309.5 hr) is located in lowland and the rest 53.1% in high land, (Land Use Study of the *Kafta Humera Wereda,* Volume 4, pp: 2), for you further information on population, accessibility, climate and physiographic conditions, please refer annex – D.

1.2. STATEMENT OF THE PROBLEM

To reverse the wide spread tragic food insecurity and poverty situation in the region, and in line with food security and poverty reduction policies and strategies, the Tigray Regional Government has designed and is implementing food security and poverty reduction programs. Among others, the safety net and resettlement programs are under operation.

However, both past Ethiopian's experience and other parts of the globe exhibits most resettlement programs were not successful. The experience of Ethiopia under the *Derg* regime for instance was critically criticised that resettlement was poorly planned and randomly executed. Moreover, critics charged that, the government forcibly relocated peasants, which finally resulted into environmental degradation, famines and deaths.

This time the efficiency and sustainability of the current resettlement program is becoming debatable, and there are several issues with respect to the impact of resettlement program on environment and development, some among others: sustainability of the resettlement program, does the achievement in food security offsets the loses in environment on the result of the program.

Therefore, the intention of this paper is to assess and analyze the broad issue: ''under what circumstances and conditions the resettlement program could be implemented so as to minimize the damage to environment and improve the level of regional food security?''.

Moreover, other researchers in the area have tried to assess the impact of resettlement program emphasising either on food security or environment. For instant, Abay Woldu, 2005 has assessed on the prospects and constraints of Kafta Humera resettlement program for only two years (2002/03 and 2003/04) on resettlers livelihood changes emphasizing on food security situations. Moreover, Alem Gebrewahid, 2006 has assessed environmental implementation of the wereda under consideration for only three years (2002/03, 2003/04 and 2004/05). Furthermore, Kinfe Gebrelibanos, 2006 has studied the achievement and challenges of the current resettlement program of the region by taking ganta- Afeshum (one of the sending wereds) as a case study. But this study intends to critically assess the overall **implementation** of the programme for five years emphasising on both food security and environment, in Kafta Humera Wereda.

1.3. OBJECTIVES OF THE STUDY

Broad Objective

The major objective of the study is to assess the implementation of resettlement program for the area under consideration emphasising on food security and environment.

Specific Objectives

- To evaluate the achievement of resettlement program goals, that is to review the resettlement plan and performance of the *wereda* (district) level resettlement program.
- To identify the environmental damage resulted from resettlement.
- To assess the impact of resettlement program on food security and livelihood changes.
- To assess the attitude of resettlers towards the program.
- To assess sustainability of the resettlement program.

1.4. RESEARCH QUESTIONS

Based on the objectives of the study the following research questions posed to guide the research.

- Is the program sustainable?
- What are the levels of forest damages?
- What are the levels of achievements in food security and livelihood as a result of resettlement program?
- Was the program's implementation as per the plan?
- What are the weaknesses and achievements of the current resettlement program?
- How could resettlement program best be implemented?
- What tools or instruments are available to support resettlement program?

1.5. SIGNIFICANCE OF THE STUDY

One of the major policy issues of the current government is combating poverty using different instruments, within this framework resettlement and safety net programs are being widely employed.

Thus, this study will have paramount importance for resettlement program implementers, donors, government, researchers, and for any stakeholder who in one way or another is involved in similar areas.

1.6. SCOPE OF THE STUDY

In Tigray Region the government is implementing resettlement program in two *weredas*, namely: *Kafta Humera* and Tsegedie. However, due to time and financial constrains the study is confined only to *Kafta Humera wereda*. Furthermore, the main focus of this study will be on the following issues:

- Changes in resettlers (food security) livelihood; and
- Environment, but the impact of resettlement on environment is too diverse and pervasive; thus this study is mainly confined to the forest in the *wereda* under consideration.

Lastly, assessment of the implementation of current resettlement program will mainly cover on the fiscal years 2003 – 2007.

1.7. LIMITATION OF THE STUDY

During the implementation of this study some unforeseen problems have encountered, among others:

- Demarcation problem of the resettlement grazing and ranching areas, because the land holding system seems intermixed with the *Kafta - Sheraro* forest reserve areas.
- Some respondents were observed refraining from telling the truth. For instance, when they were inquired to tell their actual mean crop yield they pretend as if they had no enough harvest, but on the other side, when they were checked through the cross checking questions they accepted they are better off in the resettlement areas. Furthermore, they completely deny the illegal land holding they had in the state forest reserve area
- Methodology problem: - In determining the forest coverage before the resettlement program, here after which is termed as **"control area"** sampling problem has encountered, for that matter the methodology employed here is purposive method.
- Furthermore, during the tree inventory period (for time and financial constraints) shrubs and plants less than 10 cm diameter at the breast height are fully excluded in this study.

1.8. ORGANIZATION OF THE THESIS

The thesis is organized into five chapters. The first chapter is an introductory part including the background, problem statement, scope, significance and limitation parts. The second chapter, however, included the related conceptual, theoretical and empirical reviews. The third chapter is concerned with the methodology part. The fourth chapter, however, has embraced the results and findings, with extra emphasis on program sustainability and other optional instruments supporting to the program. Finally, the last chapter includes conclusions and some concluding remarks of the thesis.

CHAPTER TWO

CONCEPTUAL FRAMEWORK AND REVIEW OF LITERATURE

2.1. Concepts and Definitions

Resettlement: - Resettlement and land settlement concepts are referring to the redistribution of a given population that is either planned or spontaneous. For Ethiopia, resettlement seems to be the most appropriate as it suggests relocating people in an area other than their place of origin. In such a context, resettlement means moving people to new location (Pankhurst, 1998, cited in Abay, 2005:11). In addition, a number of researchers suggest and conceptualize resettlements differently with their context under consideration, however almost all refer the notion to both the process and the outcome of resettlement. So resettlement may be spontaneous, planned, refugee, and/or immigration, thus, resettlement generally refers to acclimatization (accustom to a new climate or situation) and the early stage of adaptation.

Resettlement tends to be organized in a rush in response to emergencies such as famine, floods, fires, war etc... The overall rationale is generally to save lives. But unlike food aid and relief shelters to ensure immediate survival, resettlement aims to provide lasting solutions and guarantee long-term sustainable livelihoods, (Pankhurst, 2004, cited in Alem, 2006:13).

According to the World Bank, destinations of resettlement should be to areas with underutilized agricultural potential and where movement of people could take place spontaneously or as a result of planned interventions. However, the driving force for the need to launch resettlement programs could vary from case to case (World Bank, 1978. cited in Alem, 2006:13). Irrespective of the concept of resettlement, how do we conceptualize the term population migration?

Migration: According to Kinfe, (2006: 6), it is defined as the movement of individuals or groups from one place of residence to another when they have intention of remaining in the new place for some substantial period of time.

In addition to fertility and mortality, migration is one of the three processes of population change. It has an impact on population growth and population composition. It can produce a social integration as well as social conflicts. It is a familiar and important part of the working of many societies, it remains one of the most difficult concepts to define and measure. One reason for this is that the definition of migration can change depending on the issue being considered, (Ibid)

Food Security: - It is defined in its most basic form as access by all people at all times to the food need for healthy life. Achieving food security has three dimensions; it is necessary to ensure a safe and nutritionally adequate food supply both at the national level and at the household level. Second it is necessary to have a reasonable degree of stability in the supply of food, both from one year to the other and during the year. Third, the need to ensure each household has physical, social and economic access to enough food to meet its needs, (WHP, 1993, cited in Alem, 2006: 11).

Depending on its intensity, **food insecurity** can be of two types 'Chronic' Food insecurity and 'transitory,' food insecurity. The former is a sign of poverty and often caused by a constant failure to acquire enough food. The other type, 'transitory' food insecurity is caused by a short term fluctuation in production or price of food. The latter type in most cases takes a form of famine and requires an urgent and coordinated effort to withstand its shocks. Ibid
Food security means "ensuring that all people at all times have access to the food they need for a healthy and active life. Increasing food production contributes to food security within communities and nations by making more food available and by generating employment and income. But increased production alone can not guarantee food security, (FAO, cited in Alem, 2006:12).

Biomass:- is frequently defined as the total amount of above ground living organic matter in trees per unit area, (Brown, 1997 cited by Mengisteab, 2006 pp: 6).

Forests:- are defined as land under natural or planted stands of trees with crown cover more than 10 percent and area of more than 0.5 ha; whose primary use is forestry, (Brown, 1997 cited in Alem G/wahid 2006: 13).

Forest is one of the natural resources that conservation, development, and utilization of which affects biodiversity, human health and food security in many ways. Forests have social, economic, environmental, cultural and spiritual benefits. The economic and social benefits of forests include: the use of full wood as energy; the use of some trees for food; production of timber; and medicine production. The following are some of the environmental services of forests: carbon storage; clean water; Habitat for flora and fauna; erosion protection; soil desalinization; water shed production; and biodiversity conservation. All these benefits are vital factors even in ensuring food security.

Forests help maintain favorable and stable conditions needed for sustained agricultural productivity. Trees prevent soil erosion, enhance soil fertility and maintain soil moisture. Trees are used to stabilize sand dunes and arrest desertification. Deep-reaching tree roots can help mobilize nutrients from far below the ground level for use by food crops. Wind breaks and shelter belts protect crops from drying, damaging winds. Trees also provided farms with material for fence posts, poles and farm implements. Trees provide shade for livestock, important to their health and productivity in hot dry areas. (Ibid)

Implementation process

Any resettlement program at initial stage and from the outset is expected to include the following components as an implementation processes.

1. Establishing the administrative framework for planning and administrating the program including identification and training of resettlement officials at all levels of the community;
2. Informing the affected persons of the anticipated project;
3. Initiating a framework for involving the affected persons in the planning process, and
4. Establishing a communication link between the organization responsible for planning the relocation and those affected by the relocation, (John and Tod 1997).

Impact Evaluations

Impact evaluation means assessing or evaluating the effect or impact of a program comparing either those participated with non-part or those participated before and after. Impact evaluations look beyond the immediate results of policies, instruction, or services to identify

longer-term as well as unintended program effects. It may also examine what happens when several programs operate in unison. For example, an impact evaluation might examine whether a program's immediate positive effects on behavior were sustained over time. Some school districts and community agencies may limit their inquiry to process evaluation. Others may have the interest and the resources to pursue an examination of whether their activities are affecting participants and others in a positive manner (outcome or impact evaluation). The choices should be made based upon local needs, resources, and requirements. Regardless of the kind of evaluation, all evaluations use data, which are collected in a systematic manner. These data may be quantitative such as counts of program participants, amounts of counseling or other services received, or incidence of a specific behavior. The choice of which to use should be made with an understanding that there is usually more than one way to answer any given question, (Rossi and Freeman, 1993, pp: 2, Web site: www. Evaluation wiki.org/wiki/index).

2.2. THEORETICAL FRAMEWORK

2.2.1. Development-induced Displacement and Resettlement (DIDR)

DIDR means development-induced displacement and resettlement. Yet what is the development that brings about displacement in the first place? Are all the displacement inducing activities necessarily 'development'? Perhaps even more importantly, the World Bank guidelines say explicitly that programs for the displaced ought to be carried out as 'development projects' What does this mean? By what criteria might a project for the displaced be construed as development?, (Dolores, 2001: 19)

2.2.1.1. Displacements induced by development projects

The kinds of development projects that lead to involuntary displacement are diverse. They include urban relocation, from slum clearance and renovation to the installation of infrastructure for water projects, roads, and rail. In rural areas, forestry projects, mining, and the creation of biosphere reserves and national parks often displace people. Road projects and other kinds of environmental infrastructure may require urban, suburban, peri-urban, or rural relocation. Perhaps the best studied examples of development-induced displacement and resettlement (DIDR) are dam projects, which displace people from the reservoir area and disrupt social systems and ecosystems both upstream and downstream,(Dolores, 2001: 3).

In contrast, dam-related displacement in China is estimated to have accounted for only 34% of DIDR between 1950 and 1990, (Ibid).

2.2.1.2. Number of displaced people as a result of DIDR

Among the World Bank projects that involved displacement, 63% of the people displaced were done so by dams (World Bank 1994:14).

According to Stanley (2004), there is no precise data which exists on the numbers of persons affected by development-induced displacement throughout the world, is nearly 10 million, though this number is shockingly high, Stanley 2004: 03. The number most commonly cited is approximately 10 million people per year displaced throughout the world; over the last 20 years this would mean 200 million displaced, (Cernea 2000:11).

The following table is composed of data from the (World Bank Environment Department) WBED. According to the WBED report, these are projects sponsored by the World Bank.

Table 2. World Bank active resettlement projects and displaced people, 1993

Region	Projects	Percentage	People	Percentage
Africa	34	23.3	113,000	5.8
South Asia	29	19.9	1,024,000	52.1
East Asia	58	39.7	588,000	30.0
Europe/Central Asia	5	3.4	27,000	1.4
Middle East/North Africa	7	4.8	32,000	1.6
Latin America	13	8.9	180,000	9.1
Total World Bank	**146**	**100**	**1,963,000**	**100**

(**Source:** WBED, 1996, Cited by Stanley, 2004: 4)

2.2.1.3. Types of development projects causing displacement

The types of development projects causing displacement range across a wide spectrum. For the purposes of this research guide, these types of projects have been divided into three categories:

- Dams,
- Urban renewal and development, and
- Natural resource extraction, World Bank, 1993.

On top of these, Cernea has further stated the lists of causes of DIDR including a variety of resettlement situations, for example he noted that displacement can be caused by forestry projects, mining, thermal energy plants, biosphere reserves and parks, conversions in land use, transport corridors, urban renewal projects, urban and environmental infrastructure projects, conservation projects, road projects as well as dams, Cernea (1996:17).

Table 3. Distribution of displacees by cause of displacement in World Bank projects (active in 1993) with resettlement

Cause	Projects	%	People	%
Dams, irrigation, canals	46	31.5	1,304,000	66.4
Urban infrastructure, water supply, sewerage, transportation	66	45.2	443,000	22.6
Thermal (including mining)	15	10.3	94,000	4.8
Other	19	13.0	122,000	6.2
Total World Bank	146	100	1,963,000	100

Source: World Bank, 1993

The above table, showing data from the WBED report, gives a breakdown by cause of displacement of the distribution of people displaced by World Bank projects, (Ibid).

2.2.2. The Negative Consequences of DIDR

Koenig (2001), in his edition has summarized the negative consequences of DIDR on several countries by reviewing main ideas of the prospective authors; furthermore, this paper would also like to condense his long statements as follows: According to Koenig, the attempts at improving resettlement were not all successful. First, despite planning and the participation of social scientists, results remained problematic. For example in Mexico during the *Papaloapan* dam construction, the failure of the commission to provide infrastructure, housing, health, and educational resources undermined the efforts of the social scientists to reconstitute livelihoods, (Koenig, 2001: 7-9).

This model also elaborated in regard to voluntary settlement experiences throughout the world. This model emphasized the processional phases of resettlement initiatives:

1) Recruitment, the process by which resettlers are selected;
2) Transition, the initial few years of adaptation to the new site;
3) Potential development, in which settlers begin to invest particularly in economic activities;
4) Handing over and incorporation, which concerned the integration of relocated settlers into more effective political units, including an ability to get along with hosts, (Ibid).

While the first two phases were virtually always part of the resettlement experience, the latter two were more problematic. It was not inevitable that resettlers would find conditions that would permit either economic (Phases 3) or political (Phases 4) development. Phases 3 and 4 could occur in any order, but it appears that Phases 4 more problematic than phase 3, especially in resettlement situations that were closely supervised by government authorities. This model drew not only on resettlement experiences, but also upon general development theory. For example, it noted the importance of forward and backward linkages (e.g., sources of inputs and markets) to make farm production successful, stressed the importance of regional growth beyond the resettlement area, and drew on contemporary models of integrated rural development. It was also drawn upon by numbers of researchers to improve resettlement projects, (Koenig, 2001: 9).

2.2.3. TYPES OF POPULATION MOVEMENTS

In classifying the types of population movement into voluntary and involuntary, in the first place we have to see them, in terms of how manageable the cause of the movement is, and it has nothing to do with the nature of implementation of the programme and accordingly we can have several types of movements that can be distinguished as voluntary. First, there is the permanently nomadic way of life, characteristics of the pastoralist population. Secondly, there are several households whose farming system involves periodic or temporary but regular movements between different locations. Within this group one can distinguish migrant labour strategies that involve travel to acquire off-farm employment either in rural or in urban sectors. Then, there is more or less permanent pattern of rural – urban migration associated with a partial shift out of agricultural production. All the stated movements are voluntary in their nature that may or may not involve resettlement.

On the other hand, there are a significant amount of involuntary population movements, out of which the development induced projects make a lion share to the involuntary population movements, (Cook & Falloux, 1994, cited by Kinfe Gebrelibanos, 2006, pp 6-7).

2.2.4. METHOD OF FOREST DEMARCATION

According to the Guidelines for Forest Demarcation, published by the Natural Resource Management and Regulatory Department of the Ministry of Agriculture (2001, pp: 22-28) if the area is small homogeneous and the terrain is gentle to flat forest demarcation is made by chain surrey. However, if the area is big, heterogeneous and the terrain is undulating, forest demarcation is done by the help of GIS, area photo and topomap.

2.2.4.1. MEASUREMENT ERRORS

In forest inventory there are two groups of errors:

i. **Sampling error:-** This results from the fact that only part of the population is surveyed and estimates (parameters) are derived from the sample. Thus, estimates of the population become subject to errors because the population is not uniform. The estimated parameter may then deviate from the true population value. Such error may be expressed through the standard error of the mean (S).

ii.Non-sampling error- a rises from:

a) Measurement error;
b) Mistakes in recording information;
c) Mistakes from faulty compilation;
d) Calculation mistakes, (Ibid).

2.2.4.2. SAMPLING DESIGN

The basic inventory designs are of two types.

I. **Probability sampling-** which includes:

a) Simple random sampling- the foundation for most sampling designs;
b) Cluster sampling;
c) Stratified random sampling;
d) Two-stage sampling;
e) Sampling with varying probabilities;

II. Non-random sampling

a) Selective sampling, some times referred as purposive sampling

b) Systematic sampling, (Ibid).

Determination of sample size (number of sample units)

Natural Forest:- during sampling, to obtain estimates of population parameters, increases in the sample size results in a reduction of the standard error and thus a narrowing of the confidence limits.

From experience, common designs practiced in our country are the simple random sampling, the stratified random sampling, cluster sampling and systematic sampling. Here which one to select, among those designs, needs certain knowledge of the condition of the forest in advance? Owing to the nature of most of our natural forests (thick undergrowth difficult to penetrate and poor internal road or path network) cluster sampling is suggested to be most appropriate.

However, in forests where it is possible to use GPS under the given canopy, the simple random sampling is preferred. Generally, if conditions allow the best choice is to use the simple random sampling, (Ibid).

2.2.4.3. SIMPLE RANDOM SAMPLING

Random sampling is the selection of 'n' sample units by chance from a population of 'N' units. In random sampling, each sampling unit should have an equal chance of being selected. Designing a forest inventory is choosing an optimal design.

Therefore, different alternatives such as the use of the following must be thought.

i. Remote sensing imagery interpretation versus field work. The former involves less man power, equipment and operating expenses than field work.

ii. Unrestricted versus stratified sampling

iii. Random versus systematic sampling or cluster

iv. Circular versus square or rectangular plots etc, (Guidelines for Forest Demarcation, Natural Resource Management and Regulatory Department, Ministry of Agriculture February 2001 Addis Ababa. Pp: 22 – 28).

2.3. REVIEW OF RELATED LITERATURE: EMPERICAL EVIDENCE

2.3.1. GLOBAL AND AFRICAN RESETTLEMENT

When we trace back to the historical background of both the worldwide and African resettlement practices, involuntary resettlement caused by various development projects is only the subset of a much larger issue in all developing countries and especially in Africa, major causes of the forced movements are interminable conflict, devastating natural disasters, and demographic explosion that have no counterpart in human history, (Cerena and Guggnheim, 1997).

According to Kinfe (2006), after the year 1960, significant amount of population displacement have taken place as a result of massive industrialization, and urbanization, which is caused by the establishment of huge projects, which were the causes for the displacement. In countries like India, China and Brazil, which are engaged in massive industrialization and electrification programs, are precisely the countries with some of the biggest ongoing involuntary resettlement operations.

In china for instance, more than 25 million people were involuntarily resettled in the last four decades as a result of dam construction only. In India too, the aggregate numbers are of comparable magnitude, that is, about 15.5 million people, (Kinfe Gebrelibanos, 2006, pp 9-10).

The cause of population displacement in Africa, however, are painful in the sense that Africa's most important forced displacement are not those initiated by development programmes but those triggered by social and political causes such as wars and civil wars, ethnic, racial and religious persecution or by natural causes such as drought and famine. But this does not leave any room for inference that development projects have not caused forced relocation in Africa. Sizable proportion of population was displaced from their original location in many African countries especially as a result of dam construction, (Ibid).

The major dams that caused a major shift of population are presented in the following table.

Table 4. Population Displacement with Major Dams in Africa

Name of Dams	Country	Number of population displaced
Akosombo	Ghana	84,000
Aswan high dam	Egypt	100,000
Kanji	Nigeria	50,000
Kariba	Zambia	56,000
Kosou	Cote d'Ivoire	85,000
Dadinkowa	Nigeria	26,000
Manantali	Senegal	11,000
Kiri	Nigeria	19,000
	Total	**431,000**

Source; Cerena, 1997 cited in Kinfe, 2006:10

2.3.2. The African resettlement experience: Dams

According to Chris de Wet the African resettlement experience has had only limited success, and certain steps seem necessary if we are to ***ensure the sustainability and consolidation of the gains made in the resettlement process***, for both existing as well as future schemes. These may be presented as follows:

- Build in the participation of resettlers and other project-affected people into the entire project cycle,
- Do not initiate administrative, economic or technological processes that are costly and cumbersome and
- Which run the risk of being unsustainable,
- Promote factors that enhance the live ability of resettlement areas, and keep people living in them. These include :
- Planning settlements so as to allow for growth
- provision and maintenance of services
- Generation of local income opportunities by providing affected people with privileged access to benefits deriving from the scheme, and by allowing them to pursue off-scheme income-generating activities while keeping their rights to resources on the scheme
- Promotion of local marketing opportunities by improved roads and transport facilities
- Granting people in the area firm land rights, so as to lessen the opportunity of conflict and to encourage security and investment in the land

- promotion of improved relations between hosts and resettlers, by ensuring that they participate in, and
- Benefit from, the scheme on an equitable basis
- Seeking to improve the socio-economic position of the marginalized sections of the community, who are usually hardest hit by resettlement
- Monitor schemes on an ongoing basis with regard to the above factors, and seek to develop organizational structures that are flexible enough to be able to respond to such monitoring, (Chris de Wet PP: 23. Website: *See http://www.dams.org/)*

The African experience demonstrates very clearly that relocation is not enough, that a development component is an essential ingredient, if people are not to be left socially and economically worse off.

Kainji is perhaps fortunate in that very little agricultural land was lost to the dam, and that resettlers have been able to re-establish themselves economically by their own initiative, utilizing the lake for irrigation, and the draw-down area for grazing, and that they have been able to find markets for their produce. Not at all resettlement schemes in Africa have been as fortunate, (Ibid)

For better experience, we thus need:

- Conceptualize resettlement as development opportunity
- Sufficient time for the whole planning and implementation process should be given,
- Compensation must be fairly negotiated and be paid in full and upfront - except where e.g. annuities are the preferred option.
- Both fields and houses must be ready before people have to move, so that they can get on with the business of settling in and making a living.
- Allowance should be made for affected people to have a diversity of income sources, including both on - and off scheme sources. In this case, resources and rights are reserved, (Chris de Wet: 23 Website: *See http://www.dams.org/).*

2.3.3. ENVIRONMENT, POPULATION AND AGRICULTURAL DEVELOPMENT IN ETHIOPIA

INTERACTION AMONG POPULATION, ENVIRONMENT AND AGRICULTURE

As far as majority of the Ethiopian population is highly dependent on land (agricultural production), one can easily understand that there is a close relationship among population, environment, and agriculture in the Ethiopian context. The interrelationship among these can be seen as follows. Population growth results in overgrazing, over cultivation, deforestation, and desertification. Similarly, population growth and the corresponding increase in food demand leads to increased land fragmentation and intensive use of land. Cultivation will be continuous and fallow periods will became too short to allow soil to regenerate. Therefore, population pressure hinders agricultural productivity by exacerbating the land degradation problem, (Kinfe Gebrelibanos, 2006: 11-12).

2.3.4. ENVIRONMENT AND DEVELOPMENT

The environment consisting of soil, air, wildlife, and water bodies is linked with the survival of societies and thus inevitable with development. While this is so, some argue that the destruction of the environment is the product of civilization and this may lead to the conclusion that development excludes environmental preservation and vice-versa. On the contrary, there is a contention that a sustainable management of natural resources can attain development. That means, development can be carried through a balanced, prudent, and efficient utilization of natural resources.

In the 1960's and early 1970's the emphasis in relation to environment and development during the period under consideration was that environmental capacity would be the ultimate limit to growth acting as a hinder constraint. By the 1980's the focus of the debate, however, had shifted to stressing the potential complementarities between growth and environmental improvement. Then the idea of sustainable development comes into the scene, (Mankandaya and Richardson, 1992, Cited in Kinfe, 2006: 12).

2.3.5. Impact on Environment and Host Communities:

Ethiopian Current Resettlement Program

On the summary of study papers concerning resettlement program, Assefa Tolera's abstract paper has examined the current status of the socio-cultural and environmental impact of the resettlement programme based on studies conducted by eleven Post Graduate Students of Addis Ababa University in four Regional States. The distribution of the sites was stated as follows: *Chewaqa, Harotatessa, Qeto, Kenaf, Gulelle Nonno and Shanaka in Oromia; Bilbo, Bilate and Salamago in* SNNPR; *Idris* in Tigray; and *Quara* in Amhara.

Issues such as the dispossession of land (and other resources) of the host community, consultation with the hosts, improvements in infrastructural services, tree cutting and forest clearing, impact on biodiversity, soil degradation, and the influence on natural resource management systems were discussed. According to his abstract, the following ideas are clearly stated.

With the exception of a few sites (e.g., *Quara* and *Shanaka*), in almost all sites covered in the studies, dispossession of land and other natural resources were reported by the host communities. In some sites (e.g., *Chewaqa, Gulelle Nonno* and *Bilate*) grazing lands and forest areas to which the local people had free access were given to the resettlers. But, the officials deny there was land dispossession. In fact in sites such as *Kenaf, Qeto and Idris*, the officials argue that the local people who had been displaced from the sites were illegal settlers on those plots. Concerning displacement, the case studies show that physical displacement was reported from very few sites, while in others broader dislocatory effects (dispossession of fallow land, grazing areas, beehive trees, water points and the attendant socio-economic impacts) rather than actual physical displacements were reported. The studies show in some sites there were improvements in (some of) the infrastructural services (e.g., dry weather roads in *Chewaqa, Harotatessa, Quara* and *Bilbo*; telephone and health services for the resettlers in *Idris*; and schools, health centres, and water wells in *Quara*).

There were serious concerns in some sites as regards other issues such as education where host community schools are crowded with additional numbers of students in *Gulelle Nonno*. Not only is there inadequacy of the services, but also the discriminatory treatment between the host and the resettlers is a serious concern to some observers.

For instance, denying the host communities access to the infrastructural services developed in the name of the resettlers (health services in *Gulelle Nonno*, and flour mills in *Kenaf*) will in the long run have negative impacts on the host-resettler community relationships. Despite differences in the scale, there were huge losses of forest and other natural resources with enormous negative impacts on the sustainability of environment. Contrary to what has been set out in the Resettlement Programme Implementation Manual (PIM), forest and wildlife resources were not protected, nor were the resettlers provided with education and advice. In the absence of systematically generated data, it is difficult to comment on the scale of erosion, land degradation and soil fertility loss experienced by the resettlement areas. However, given the scale of the forest destruction reported from the sites covered in these studies, the different cultural practices of the resettlers in dealing with land and forest resources, and the fragility of the ecosystem of the resettlement areas, one can safely argue that the future threat is eminent, *(Assefa* 2005*: 10-11).*

2.3.6. Impact of Villagization on Environment and Host Communities

Here we are going to see lessons from Ethiopia, Mozambique, and Tanzania in relation to the impact of villagization on environment and hosting communities.

Studies in Tanzania are very revealing about the links between land degradation and villagisation. Lindberg (1996) has studied in northern Tanzania to look for linkages between household poverty, land degradation, and social structure. After villagisation, land degradation appeared on a large scale in the area for the first time. Land was intensively used, and the new ploughing techniques increased the risk of soil erosion. The declining soil fertility in the fields became a topic of discussion among the farmers.

Kikula's study of the policy implications of villagisation on the environment in Tanzania (1998) is of further interest here. His study has measured and compared changes in the social and biophysical environment before and after villagisation. He argues that too little time was devoted to planning, such that potential environmental problems received too little attention.

His basic findings are that villagisation led to significant changes in land use, accelerated the depletion of vegetation and accelerated deforestation, led to increased soil erosion, led to land degradation, and meant a complete change in land resource use, including land tenure. He further concluded that:

Even if social gains outweighed the environmental degradation losses, they would not justify the latter. Other countries in Africa which for one reason or another may be forced to embark upon resettlement programmes as a possible long-term solution to the prevailing famines, thus this countries are expected to consider the lessons of the Tanzanian experience. That is, the story does not end with the mere physical resettling of people. Careful planning is required to prevent environmental degradation, (Kikula 1998: 213, Cited by: Christy Cannon Lorgen, 1999).

When we see villagisation in Ethiopia, it was intended to regroup the scattered homesteads, small hamlets and traditional villages of the entire countryside into a completely new pattern of grid-plan villages, laid out in accordance with central directives. This programme was distinct from but related to the programme of villagisation, which began in 1985 (*Hararghe)* and became a nationwide campaign in 1987. By August 1988, 12 million people had been villagised. The official aim of villagisation in Ethiopia was to introduce social and economic change through a socialist agrarian transformation which also included mechanization and cooperativisation. On the contrary others have sought villagisation in different dimensions, for instance some understood as if it contained counter-insurgency elements, (Pankhurst, 1992: 77).

In Mozambique, villagisation took place in a context of war, which is of comparable significance to its outcome as the ideology behind the policy. "The mass villagisation in the 1980s was primarily war-related settlement (both voluntary and involuntary), secondarily an administrative action by officials seeking to meet quotas, and least of all a rural development strategy" (Minter 1996: 269).

By 1990, 1350 communal villages had been created, with 1.8 million inhabitants (14% of the total population and 18% of the rural population. Mozambique's experience with peasant collectivisation has not been very successful (Davison 1988). Out of a million Mozambicans relocated to communal villages by 1981, only 70,000 were involved in agricultural cooperatives, (Davison 1988: 237).

Therefore, it is now simple to understand that villagisation was much more complicated than a simply physical process of shifting people. Its rationale may be social, political, environmental, agricultural, militaristic, administrative, or a mix of several of these.

The motivations for and methods of villagisation have differed between countries; likewise, the implementation and the experience of those villagised have differed considerably within countries.

2.3.7. Resettlement and the Environment

According to Chen Guojie (1987: 2) an assessment held on resettlement in three Gorges dam Projects (China, Shanghai), resettlement is an environmental issue. The success or failure of the resettlement program will be determined not only by whether relocatees have food, clothes, shelter, and employment, but also by whether the environment can sustain the incoming population, and whether there are adequate resources available for economic development. If the relocatee population strains or surpasses the region's environmental capacity, the local environment will deteriorate, natural resources will dwindle, and the standard of living of relocatees will fall. The fact is that the environmental capacity of the Three Gorges area is already strained and the resettlement of relocatees in the region will only make the situation worse. Some serious concerns include population pressures and consequent over plowing, deforestation and soil erosion, and the effects of the project on the rural labor situation. The Population Pressure and over plowing caused the deforestation, erosion and also landslides and finally these all effects resulted to 172 gullies and 210 landslips, (Chen Guojie, 1987: 2-3).

2.3.8. Common Causes for the Failure of Resettlement Operations

According to Cerena (1997) most resettlements undertaken in Africa have caused many problems, and they exhibited failure story. The most chronic causes of the common problems that occurred in resettlement operation are described in very elucidate way as follows:

- ✓ Planning objectives centre on removing people from the site and only marginally assistant to resettlers was typically confined to short term relief.

- ✓ Resettlement components were underfinanced

- ✓ The productive capacities and incomes of those displaced were not restoring within a reasonable transition period. The result was long lasting impoverishment.

- ✓ State resettlement agencies often lack explicit policies, norms, guidelines for re-establishing people productivity, and focus primarily on expropriation without clearly stated goals and procedures.

- ✓ Resettlers and host communities were not informed and consulted in time and they were not invited to join in planning, negotiating and execution.

- ✓ Development agencies charged with the management of resettlement lack the staff skill and adequate organizational capacity.

- ✓ Government agencies tend to prepare resettlement components hurriedly and superficially.

- ✓ The environmental effects for the coming generation arising from resettlement were not anticipated by preparation of studies that have a disastrous effect on environmental management, (Cerena, 1997, Cited by: Kinfe Gebrelibanos, 2006 pp: 10-11).

2.3.9. Is Population Resettlement the Solution? National Parks and Poverty Risks: Cote d'Ivoire

Government of Cote d'Ivoire had intended to prepare and introduce forest management plans for several high priority forest areas, and facilitate what was described as (doubtfully) sustainable commercial exploitation of the forest. During the appraisal, the possibility of resettlement operations came up, as part of a wider set of measures to demarcate limits and improve surveillance and management of 1.5 million ha of gazetted forests, protect the *Comoé* National Park, expand infrastructure, improve logging and the log export system, expand new plantation, and other measures. For the resettlement operations, the Government undertook detailed, (World Bank 1990: 48).

The authorities inform the World Bank late about the full size of the intended displacement which is estimated at about 200,000 people after having understated it previously.

The Bank rejected this proposal, and sought and received agreement on a different approach to resettlement, congruent with Bank policy, which would reduce displacement from about 200,000 to less than 40,000, By the end of the project, seven years later, implementation Report indicated that only 100 people were displaced, instead of the government's intended 200,000 people. The Completion Report did not provide any evidence that the de facto cancellation of the initially intended displacement plans, and even of the reduced plans agreed with the World Bank, has had the negative effects which were announced and were used to justify the planning of massive displacement. After 1997 data are not available. But indications exist that massive commercial logging has significantly expanded in Cote d'Ivoire's forests, with likely more adverse effects on forest conservation than the impact of the residing forest inhabitants, (Cernea & Schmidt-Soltau, 2003: 5)

On the other side, there is a difference of opinion as to whether relocation and development should be implemented separately, or as a joint venture. Some authors argue that the successful resettlement was a low key effort which aimed at returning to the population what they had lost, without making this an opportunity of imposing far-reaching development changes at an already stressful. This means that 'Resettlement and development are thus separate activities. However, others argue strongly in the opposite direction, that resettlement is a potentially impoverishing process, in which 'returning the population to what they had lost' without any active development component, can only leave them worse off than before. Resettlement as development is thus the only possible kind of successful resettlement, (Chris de Wet PP: 23. Website: S*ee http://www.dams.org/).*

2.3.10. Improving and Understanding the Dynamics of Resettlement:

A Case Study of Idris Resettlement Scheme, Kafta Humera Woreda, Tigray Region

This author has examined the current Voluntary Resettlement Programme (Access to Improved Land) based on a case study at settlement site *Idris, Kafta Humera woreda*, Tigray Regional state. The program is one of the various planned resettlement programs practiced by the previous successive regimes of Haile Selassie and Mengistu, which turned out to be

disastrous failures. The study employed the review made by experts on the experience of the previous programs and the program document of the current program to evaluate implementation on the focal site. The study also employed group discussions and field survey.

Regarding the implementation on the ground, the study found that gaps existed in site selection, recruitment of proper target groups, prior preparations, commitments to the host community and consistency with the pillars and key principles and approaches set in the programme document. The paper concludes by recommending that attention be given to those factors that led to the failures of the previous schemes, that due consideration be given to the consistent implementation of the current program documents, that active participation of the target group be fostered and that consultation with a wide range of stakeholders be undertaken. Based on the findings the author suggests that though resettlement programs could be undertaken to achieve food security, because state-sponsored programmes are complex in their nature, they should be considered as the last option, (Asfaw Tilaun, 2006: 23-24).

2.3.11. Creating resettlement options

Options also offer a way to respond to the diverse needs and interests of displaced and affected populations. Yet some researchers in similar area found that involuntary resettlement projects in rural areas generally offered a single option. This was in contrast to voluntary resettlement where at minimum there were always at least two options, participation in the project or not. But, most voluntary resettlement projects evaluated two or more economic packages. Sometimes the choice was even more extensive, as in Brazil where two different projects promoted a number of different packages. In involuntary resettlement the single option proposed tended either to involve major changes (e.g., from lowland riverbank agriculture to hillside systems, from dry land to irrigated agriculture, significant differences in agricultural intensity) or, in contrast, no change at all, as at *Manantali* where the project design assumed that people would just continue the same kind of farming they had been doing. This is despite the fact that some believe that incremental improvements offer some of the best prospects for positive change. Increasing resources means improving the economic options available to people after resettlement, but without associated capacity building, people may not have the skills or resources necessary to make radical changes in economic activity. Even with training, they may try new activities experimentally and incrementally, to see if they offer benefits or not, (Koenig, 2001: 86).

2.3.12. Does the Resettlement Area Ever Become 'Home'?

The Experience with Dams and Resettlement in Africa

This question, which has to be answered in the positive if we are to regard resettlement as successful, demonstrates the importance of taking a long-term view of the resettlement process. According to Fahim, 1983, the *Kom Ombo* scheme (resettlement area as a result of **Aswan**) is the illustration of the point. More than a decade after moving, **Nubians** (Egyptians living in *Kom Ombo*) were still suffering from what Fahim (1983:116) termed as 'resettlement illness', women showed signs of fatigue and depression and people still expressed a desire to return to their old home area. 'The *Kom Ombo* settlement failed in the eyes of most *Nubians* to become a community that could provide a promising future.' (Fahim 1983:68) People stopped maintaining their houses and surroundings.

At *Hirakud* (the Indian first major dam) only 11% of the displaced chose to live in the resettlement colonies set up to improve conditions; no colony benefited from canal irrigation, (Koenig, 2001: 7-9).

Chris de Wet has critically commented on the successfulness and sustainability of African resettlement processes as follows:

Successful resettlement in the African context thus would seem to be fairly modestly defined as involving

- A degree of participation in the planning of resettlement
- Having moved without use of force to areas which were prepared to receive the resettlers.
- The maintenance of basic services by the state
- The ability to survive economically in the new area - largely by one's own initiative
- Identification with the new area, and resultant community formation.

CHAPTER THREE

METHODOLOGY OF THE STUDY

In the over all evaluation, the tool employed in evaluating the resettlement program is the ***''before and after evaluation technique''***. But before coming to the implementation of this technique let's first identify the variables; there are two variables that need to be evaluated namely, the food security achievement and environmental concern. These two variables are different urging distinct methodologies, because the methodology needed to be used for tree inventory is entirely different to the household survey.

i. **Household survey methodology:-** household survey has emphasized on food security to undertake economic measurements and outcomes, here this methodology has used the questionnaire, FGD, case studies, etc.

ii. **Tree inventory methodology:-** tree inventory methodology on the other side has used instruments that help in inventorying and measuring tree dimension and height at the sample plot areas.

3.1. METHODOLOGY OF HOUSEHOLD SURVEY

In this study both the qualitative and quantitative methods are used. The rationale to use these approaches is nature of the research topic, which demands quantitative figures and in many cases perceptions and attitudes of local individuals.

3.1.1. Methods of Data Collection

The data is collected using both primary and secondary sources.

A) Secondary data

Secondary data and information is collected from the Bureau of Finance and Economic Development (BoFED), Bureau of Agriculture and Natural Resource (BoANR), Resettlement Coordination Office, from W*ereda* Agriculture Office reports and also from other published and unpublished documents.

B) Primary data collection

Mainly primary data source are:

- Resettlers.
- Host community members.
- Agriculture office at all hierarchy.
- Resettlement coordination centres at all hierarchy.
- Wereds and Kebele administration.
- Direct researcher's observation.

Primary data are collected from resettlers in the form of questionnaire. Furthermore, focus group discussion (FGD) was also used for the members of the host community. Besides, check lists for the FGD, case studies etc were designed that assists as a leading points in inquiring some selected key informants. These informants include *kebele* level development agents (DA_s), *wereda* administration officials, resettlement program coordinators (at all hierarchy, regional and *wereda* agriculture officers. In addition to the aforementioned techniques the field observation method is also employed.

3.1.2. Sampling Procedure

i) Household Survey

In *Kafta Humera* there are 20 *kebeles*, out of which 11 *kebeles* are centres of resettlement program, namely *Bereket, Shiglil, Turkan, Ruwasa, Erob-Ruwasa, Idola, Adigoshu, Mayweyni, Hagereselam, Wuhdet*, and *Central*. Here probability sampling is used to identify the sample households. Furthermore, the simple random sampling technique was employed in identifying the sample *kebeles*, here 45.5% sample *kebeles* are selected using lottery system. In addition, the systematic random sampling technique is implemented as a statistical tool to identify the sample households, and 1 % of the entire households is selected for the food security (household survey) on the basis of K^{th} item from the sample frame.

ii) Group Discussion

To enrich the data of household survey, Focus Group Discussions (FGD) was used on five sample *kebeles* for resettler community members. For each *kebele* 3 focus group discussions were conducted.

One focus group discussion contained 7 members; 3 youth (2 male and 1 female), 2 women, and 2 adult men farmers. Furthermore, 2 FGDs were conducted per *Kebele* for the host community. Therefore, the study has undertaken a total of 25 focus group discussions; furthermore, to exhaust the data and institutional information with regard to resettlement issues a separate check lists were prepared for discussion.

iii) Case Studies

The study has also conducted two case studies from each *kebele*, key informants were selected on the basis of purposive (non probability) sampling method. Here check lists were prepared in order to guide the case study discussion. These life histories or case studies were implemented in the way they absorb the issues of environment and livelihood changes.

iv) Photographs and Field Observation

In addition to the above mentioned three primary data sources, different photographs are used in protruding the live environmental situations where they are necessary. Furthermore, the researcher's field observations are incorporated as data sources.

3.1.3. Sample Size

As mentioned in the sampling procedure part, among the eleven resettlement *kebeles*, the following five sample *kebeles* were selected on the basis of lottery, namely Adigoshu, Wuhdet (Endaykedash), Central, *Hagereselam (Idris) and Turkan*. The eleven resettlement *kebeles* of the *wereda* under consideration are more or less homogenous, therefore due to population homogeneity, almost 45.5% of the *kebeles* and 1% of the 8,295 households (87 HH) are expected to represent the entire study population: That is:

1. (11 *kebele* * 45.5%) = 5 *kebeles*,
2. (8777 households * 1%) = 87 HHs

Table 5. Summary of the Household Sample Size

S. N^{o}	Name of sample kebeles (Resettlement centers)	Total population (Resettler households)	Sample Size
1	***Adigoshu***	1144	11
2	***Wuhdet (Endaykedash)***	1489	15
3	***Turkan***	3118	31
4	***Hagereselam (Idris)***	1603	16
5	***Central***	1423	14
	Total	**8777**	**87**

3.1.4. Method of Data Analysis

For analysis purpose, the primary data collected through structured questionnaire were analyzed using both descriptive and inferential statistics by using the percentages, averages, ratios, simple tabulation, and graphical presentations. Moreover, the photographs and field observations were also analyzed and presented in narratives.

3.2. Methodology pursued during tree inventory

3.2.1. Area calculation and coverage

Areas were calculated using rectangular method (dividing the given area into rectangles) and then by counting the number of tree that are found in the area of each rectangular size and then by summing and dividing to population number of plot lands, finally these results are expected to represent the area inventoried. In determining the number of plots, critique reconnaissance survey was undertaken randomly at the selected areas.

3.2.2. Volume calculation

Measurement of woody biomass

These are other three methods which help in determining of tree (woody) biomass (Covington et al., 1967, cited by Mengsteab, 2006:7).

A) Unit area method: - All tree materials in a representative plot are harvested and weighed. The tree biomass is determined by converting the sample plot data to an area basis.

B) Average tree method: - A tree or number of trees, considered to be the average biomass is selected for weighing from knowledge of the linear dimension of the trees in the study area.

The tree biomass for the study area is then determined by multiplying the weight of the sample tree or average of the sample trees) by the number of trees in the study area.

C) Regression analysis method: - A number of trees/ shrubs selected either randomly or systematically, are weighed and the mathematical relationship between the weights of the whole trees/ shrubs, or their components, and one or more tree/ shrub dimensions is calculated.

D) Knowing the relevant linear dimensions of all the trees in the study area, the tree/ shrub biomass for the area is determined using the regression function. Here the question which matters in weighting the volume of the sample trees is debatable. In fact some forest analysts argue that sample plants ought to be measured when they are dry (after felling them).

E) However, there are other researchers opposing the measurement of dried trees (after felling them). The former method requires felling a large number of trees which is mini deforestation, arduous as a method, costly and time consuming. This confusion might be an issue if our agenda is to undertake forest stock inventory. However, as long as the intention of this study is simply to measure and exhibit the level of deforestation as a result of resettlement program, simple tree inventory and overall measurement will be considered on a live tree, which is without felling them. Here it should be noted that due to time and financial resource limitation, measurement of shrubs and small trees less than 10 cent meter diameter are ignored.

For this study, the total log and tree volume and merchantable log volume are calculated. The mean volume is calculated using the following formula:-

$$xi = \frac{\sum Xi}{N}$$

where

$\sum$ = denotes summation

Xi = calculated volume per tree

xi = Average volume of tree per sample

N = number of plots

Detailed explanation and calculation procedures for volumes are given below.

Merchantable log volume

Merchantable log volume, which is a pyramid circular area, was calculated using the following formula.

$V = \pi r^2 h$ where V= volume of a log

π = 3.14

r = radius of the tree at breast height

h = log length

$C = 2\pi r$ where C= Circumference of a log at breast height

π = 3.14

r = radius of the tree at breast height

Circumference of the tree was intentionally measured by using meters, because radius of the tree can be simply calculated from circumferences.

Total log volume

Total log volume is the volume of the main stem of a tree up to the merchantable height. Total log volume was calculated for all commercial trees of 10cm DBH and larger. Here it should be clear that, this pyramid circular area is expected to make prism circular area after calculation, because all parts of the tree above breast height are fully excluded in calculating the total tree volume.

3.2.3. Sampling methods

The sample *kebeles* are *Wuhdet, Turkan and Adigoshu*, these were selected on lottery basis, and these *kebeles* are expected to represent the entire *Wereda*,

Before going to see the sampling methodology in detail it is better first to look on the two event groups which are expected to be inventoried for evaluation, and these two groups are termed as control and experience groups.

Control group: - represents the forest coverage which existed before the resettlement program.

Experience group: - represents the actual trees that are available after the implementation of the resettlement program.

3.2.3.1. Control Sample of Forest Areas

Sample plots of the control area are not selected by pursuing all the probable sampling techniques, and so as to decide on the sampling size. Hosting community members and development agents of the sample *kebelles* were expected to tell the sample forest areas. To prevent and to avoid statistical errors (biases). From each *kebelle t*hree sample plots were taken that represent the ex-forest plot. Sample of these areas were selected intentionally on the purposive non probability method by the help of hosting community members and development agents, among numbers of the proposed sample areas, these samples were located near by the farm land sample areas (that does not exceed 3 km), because as we move far from the selected farm land samples the hypothetical typology could wrongly represent to the farm land sample plot, and finally it could distort (bias) the study as a whole.

The specific *kebele* level sample areas are selected as follows: After passing strict reconnaissance on the sample forest, three sample plots are selected, that is, (one from the densest, one from the semi densest, and the third one from the sparse).

Here it should be also noted that, since location of these area is mainly plain and rolling to plain in few areas, which is homogenous in geological formation, the sample size (only for this group) was limited to nine. Thus, the sample size was only nine.

3.2.3.2. Experience Sample of forest areas

In the first place the target population is the actually land cultivated (for farm and house construction areas) by resettlers in *Kafta Humera Wereda*. The sampling frame was the lists of the house hold units. Here the sampling unit is the land of the sampled household unit. Further more, the land that was taken as sampling unit is quadrant shape, which is 50 meter by 50 meter square plot.

A total of 36 sampling plot of land units are selected. These units were selected on the basis of systematic random sampling method. In implementing this sampling size, three households were drawn from the list of one sampling *kebelle*, and hence, from the sampling frame (over house hold lists) a total of 9 households were drawn from the three sample *kebelles*.

However, as far as the level of legal land holding for most households is approximately 2 hectare or 20,000 square meters, which amounts to 8 times (50m * 50m) of the sample unit, and since the total sample plot required from one households land is only 4 plots, where as every house hold has nearly 8 sampling plots.

Then in determining the number of plots, rough reconnaissance survey was made for every resettler's sample land holding. This is to mean that since this area posses almost 8 sample units, where as the maximum sampling unit required in this area is only 4, the mismatch problem was alleviated by undertaking the personal reconnaissance 4 sampling units were selected from 8 sample plots (one sample unit on the densest area, then two on the sparse and finally one on the bare land). On the other way round, the 4 sampling units were selected on the basis of purposive non-probable sampling method. The instrument used during height measurement was Hypsometer, and meter for radius and height measurement.

3.3. Assumptions

- Area homogeneity: The low land area of *Kafta Humea Wereda*, where the resettlement areas locate is flat and homogeneous.

- In determining the loss of forest trees, due to time and finance constraint below 10 cm DBH (Diameter at Breast Height ~ 1.3 meter) are excluded from the tree inventory, and therefore, trees that are measured above 10 cm DBH are expected to represent the population.

- The pyramid circular area is expected to make prism circular area after calculation, because all parts of the tree above and below the breast height are fully excluded in calculating the total tree volume. Here the assumption is that, the radius at breast height is a mid way or an average for the total tree height.

- Diameter of the tree measurement was undertaken at breast height, 1.3 m on average from the ground, which is presumed as the standard breast height.

- Resettlers completely deny the illegal land holding they had in the state forest reserve area in the form of *Mofer zemet*. For this reason their illegal land holding is excluded in sampling and tree inventory implementation. However, according to the field observation and due to their homogeneity character they are considered implicitly as part and parcel of the legal land analysis. Furthermore, by the rough reconnaissance undertaken, their dwelling land (0.3 m^2) for tree availability manifested similar situations to the illegal land holding, that is, still homogeneity character is observed.

- Income from livestock products such as milk, ox labor for ploughing, etc are excluded from the monetary gains on the wealth from livestock.

- The figures which are stated in table 14 on livestock represent the average age range of animals under consideration. Similarly prices of animals it taken by considering the medium age.

- Livestock possession data of the origin is taken only the physical number of livestock which existed during mobilization period, where as the data which represented livestock possession in the resettlement is taken the 2007's actual figure.

CHAPTER 4

DISCUSSION AND ANALYSIS

The question examined in this study is not whether there should be an increase in biodiversity conservation, including an increase in protected areas; which are highly advocated by environmentalists. Nor is the question, whether people's livelihood and rights must be protected and enhanced; which is often arguments of politicians and some other social scientists. Here the question is whether these two considerations are interlocked. The solutions to the dilemmas of protecting both biodiversity and livelihoods clearly revolve around the 'how', not around the 'whether'. The adequacy and effectiveness of means are under scrutiny. This study takes a firm stand supporting the biodiversity conservation by reserving the achievements in food security.

4.1 General characteristics of respondents

4.1.1 Age distribution of resettlers

The age distribution of respondents ranges between 18 and 65 years. This shows almost all the respondents are found in the productive age group. The majority (90.4%) of the respondents laid between the age group 18-50 are an active productive age range. This can be considered as a positive potential for further development of the resettlement areas.

Table 6. Age distribution of respondents by age category (n=85)

S. N^{o}	*Kebele*	18-30	31-40	41-50	51-64	Above 64	Total
1	*Adigoshu*	4	5	4	0	0	**13**
2	Central	5	6	2	1	0	**14**
3	*Wuhdet*	6	4	3	1	1	**15**
4	*Idris*	5	6	3	1	0	**15**
5	*Turkan*	8	14	2	3	1	**28**
Total		**28**	**35**	**14**	**6**	**2**	**85**
Percentage		**32.9%**	**41.1%**	**16.4%**	**7%**	**2.3%**	**100%**

Source: Field survey, 2007

However, 7% of the respondents are in the age group 51 – 64. But the age group above 64 has contained only 2%, and this indicates young and productive prospective resettlers were mobilized from their respective origins.

4.1.2 Household characteristics and size

Table 7. Marital status, family size and sex distribution of respondents (n=85)

		Marital Status				Family Size				Sex
No	Kebelle	Married	Single	Divorced	Widowed	<4	4-5	6-7	>7	M
1	*Adigoshu*	11	1	1	0	5	4	4	0	**13**
2	*Central*	7	1	5	1	5	7	2	0	**3**
3	*Wuhdet*	7	2	4	2	7	4	4	0	**11**
4	*Idris*	12	2	1	0	3	5	5	2	**13**
5	*Turkan*	21	4	3	0	12	8	6	2	**24**
	Total	**58**	**10**	**14**	**3**	**32**	**28**	**21**	**4**	**64**
	%	**68.2**	**11.8**	**16.5**	**3.5**	**37**	**33**	**25**	**5**	**75**

Source: Field survey, 2007

As the above table denotes the majority (68%) of the respondents are married, where as 16%, 12%, 4%, are divorced, single and widowed, respectively. When we look at the family size of the respondents, those with a family size of less than four constitute 37.6%, however, the family size ranging between 4-5 and 6-7, are 33% and 25% of the total respondents respectively, further more, the remaining 5% of the respondents have an extended (more than 7) family size which scored the lowest share. This indicates that, the proportion of respondents with family size greater than four (62.4%) is large family size compared to the regional average family size, According to CSA 2007 population and housing censes, the current total population annual report, the current regional average family size is 4.4. Moreover, the sex distribution of the respondents shows, 75.3% male and 24.7% female, implication of this data shows, the resettlement is mainly dominated by male household headed families.

Table 8. Educational back ground of respondents (n=85)

S. N^{o}	*Kebele*	ILL	RW	1-4	5-8	9-10	> 10	Total
1	*Adigoshu*	2	2	7	2	-	-	**13**
2	Central	1	-	8	2	2	1	**14**
3	*Wuhdet*	4	-	6	5	-	-	**15**
4	*Idris*	3	-	8	4	-	-	**15**
5	*Turkan*	3	5	8	7	1	4	**28**
Total		**13**	**7**	**37**	**20**	**3**	**5**	**85**
Percentage		**15.5**	**8.2**	**43.5**	**23.5**	**3.5**	**5.9**	**100**

Source: Field survey, 2007

- **RW**: represents read and write only, and
- **ILL**: represents illiterate respondent house hold.

As the a survey indicates 23.7% of the interviewed farmers are not able to get the access to formula education, out of which 15.5% are illiterate and 8.2% have adult education; that is, they can read and write to some extent. The reason for low educational background is that, the rural farmers have a very low knows how about the over all advantage of education. They use their full time family labour for their farming activity. How ever, the rest 76.3% have followed the formal education programme, and this encourages resettlers participation in agricultural productivity improvement and land management practices.

4.2. Implementation of the programme

4.2.1 Food security (economic) condition

Here in evaluating the economic condition of the resettlers, the paper will attempt to compare and contrast the economic achievements of both events of the resettlers by employing the before and after evaluation method.

4.2.1.1. Mean Production and Income (from crop)

Major crops cultivated in the study area are sesame, sorghum, cotton, *teff,* wheat, millet, sorghum, barley and flax. But for the low land part sesame, sorghum and cotton are the major top three crops often cultivated. During the survey the resetllers were inquired to recall their physical production per household per annum (for five years of both periods), besides they were also inquired to recall the prices per annum. Then having these data the paper has attempted to manipulate and protrude the following tables by using simple averages of all harvest types.

Table 9. Mean Crop Yield and money value of the crop in the origin

Year (previous)	*Code of the year*	Physical production Per hectare (in quintal)	***Income from crop in Money Value (in birr)***
Year – 1	1	5.08	906.80
Year – 2	2	4.67	888.12
Year – 3	3	4.20	881.60
Year – 4	4	3.42	757.10
Year – 5	5	2.75	487.50
	Average	**4.02**	**784.22**

Source: Field survey, 2007

The above table shows the total annual household level physical production and income, this is manipulated by summing up all kind of crops harvested for the year under consideration. The annual level mean crop yield and income achieved per household is 4.02 quintal per hectare and 784.22 birr, respectively. When we see the trend of mean crop productivity and the total gross income across years of the origin area, both exhibited a trend of deterioration.

During the movement and mobilization year – 5, crop productivity was by far lower compared to the other years, and even almost half to the harvest year - 1. Here it should be noted that previous years are listed on their descending order, for instance year 5 represents the nearest year and year 1 the most previous year.

Table 10. Mean Crop production and income in the resettlement area

Year	Code of the year	Physical production Per hectare (in quintal)	***Income or Money Value (in birr)***
2003	1	7.79	1,631.12
2004	2	8.90	2,741.60
2005	3	8.84	2,798.75
2006	4	7.99	3,808.59
2007	5	4.12	1,606.55
	Average	**7.53**	**2,517.32**

Source: Field survey, 2007

In the resettlement area except the mobilization year 2003 the over all trend of productivity has shown deterioration across years. On top of this, a sharp decline has faced during the harvest year 2007, as the table is manifesting, the average physical product has fall by half from 8 quintal in 2006 to 4.12 quintal in the harvest year 2007, this is because rainfall irregularities. In most resettlement areas the major cause for the decline in the 2007 harvest year is deficit of rainfall.

Here it should be noted that; the fiscal year 2003 and 2004 are analyzed in both periods, this is because there are resettlers who harvested in these year, in their origin area, but joined the resettlement area later. This is to mean that, resettelers didn't arrive to the prospective resettlement centres all together in one year, for your further information, please refer the following table.

Table 11. Arrival years of resettlers by Number of Households

		Arrival years			
S.N	**Kebeles**	**2003**	**2004**	**2005**	**Total**
1	*Adigoshu*	1,144			**1,144**
2	*May woini*	1,874			**1,874**
3	*Wuhdet*	1,489			**1,489**
4	*Hagere Selam*	1,603			**1,603**
5	*Turkan*		2,188	930	**3,118**
6	*Erob Ruwasa*			356	**358**
7	*Ruwasa*		598	1,955	**2,553**
8	*Idolla*		913		**913**
9	*Shiglil*			1,694	**1,694**
10	*Central*			1,423	**1,423**
11	*Bereket*			1,179	**1,179**
	Total	**6,110**	**3,699**	**7,539**	17,348

Source: Field survey, Kebele Rural Development Office, BCRT and WoANR, 2007

4.2.1.2. The Before and After Implementation Comparison of the Resettlement Program

4.2.1.2.1. Crop Production Comparison

In striving to ensure comprehensive food security, the nation in general and the region in particular have faced unstable food insecurity over many times into full-blown famine over the past decades. This problem might be faced due to the significant food gap resulted by its poor agricultural performance. Small holders cultivate most of the land (for food production) is at a subsistence level and in some cases below subsistence that can be described as either chronic or transitory in nature.

For these farmers, agriculture is both a way of life as well as the primary source of livelihood. The food security strategy as a multi-sector strategy touches on different areas of activity, among others, the resettlement program was carried out in 11 resettlement *Kebeles* in this regional state.

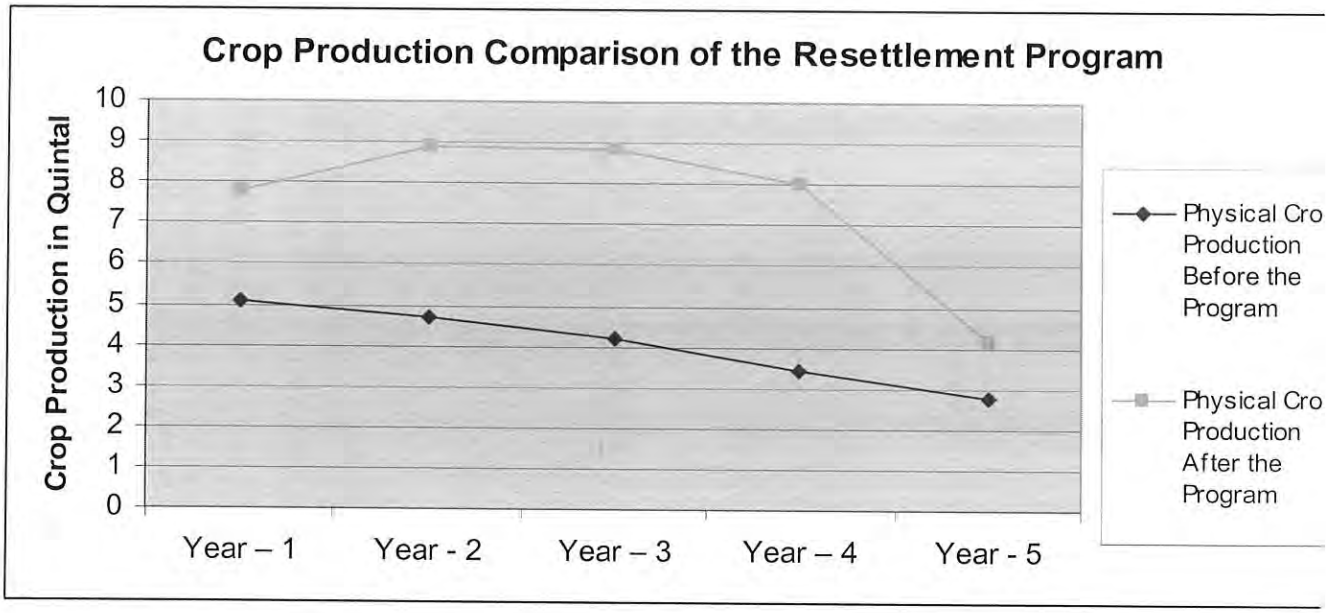
Table 12. Annual Mean Physical Crop Production per hectare per quintal

Year	Annual Physical Production Before the Program (in quintal)	***Annual Physical Production After the Program (in quintal)***
Year – 1	5.08	7.79
Year – 2	4.67	8.90
Year – 3	4.20	8.84
Year – 4	3.42	7.99
Year – 5	2.75	4.12
Average	**4.02**	**7.53**

Source: own survey, 2007

The annual mean physical crop production per hectare per quintal of the origin area is exhibiting deterioration, according to the respondent's response, which is explained in the focus group discussion the main reasons for annual product deterioration is rainfall deficit.

Figure 1 Crop production comparison in quintal



Source: Field survey, 2007

As the above graph is exhibiting the mean crop production in the resettlement area has exceeded across all years to the home origin production, this is to mean that, the amount of mean crop production per hectare per annum in the origin area is much lower compared to the resettlement production, implying that they are now better off. According to the field observation and focus group results majority of the settlers have attained self-sufficiency in food and their livelihood has improved considerably. Regardless of the deforestation problems the area encountered, undeniably, life of the major resetlers seems changed positively.

4.2.1.2.2. Income Comparison

There are a number of income sources by which farmers gain, among which farm and non farm incomes are the two broad categories of income sources. In this regard, this study has assessed only the income sources from farm with main emphasis on livestock and crop income sources. Here it ought to be noted that, differences of the ressetlers earning is evaluated by deploying the before and after evaluation method.

i. Income derived from crop production

Similar to the physical production comparison, this thesis has attempted to protrude the comparison of income from crop sources. As noted earlier this income is nothing but the result of the monetary value of the physical production mentioned above.

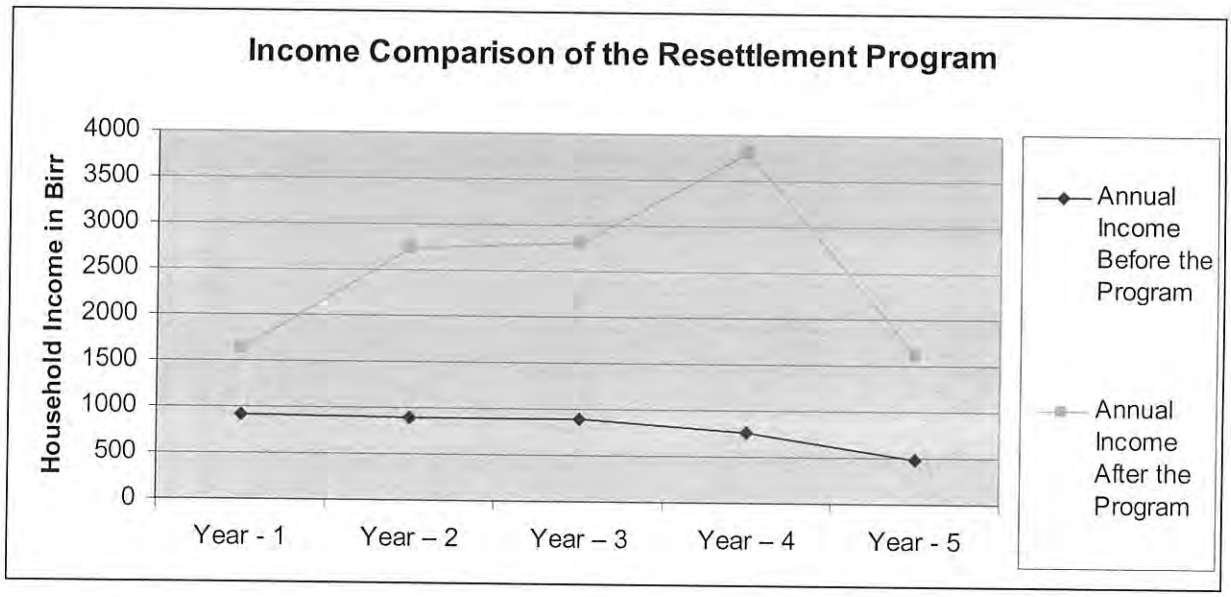
Table 13. Annual average Income on crop per hectare per household

Year	Annual Income Before the Program	***Annual Income After the Program***
Year – 1	906.80	1,631.12
Year – 2	888.12	2,741.60
Year – 3	881.60	2,798.75
Year – 4	757.10	3,808.59
Year – 5	487.50	1,606.55
Average	**784.22**	**2,517.32**

Source: Field survey, 2007

All over years, in the origin area, income of resettling households have revealed a diminishing trend, because previously we have seen that, for the years under consideration physical products have deteriorated across years, and this is the effect which resulted to the fall of annual income in the origin area. For your clarity, it is obvious that, a household can mobilize income other than crop harvest, but here, except the income source from harvest, other income sources are not considered.

Figure 2. Program's Income (on crop) comparison



Source: Field survey, 2007

On the contrary the income level in the resettlement area depicts a gentle increment across all years except the year 2007, and this happened as a result of increment of farm out put market prices. For simplicity, the average sesame price in the year 2003 was 600.00 birr per quintal, for your wonder this price has increased exponentially at a fantastic rate to the level of 2,100.00 birr in the year 2007. A paradox seems happened here, because on one side we have said that sesame price has risen in the year 2007 at unbelievable rate, amazingly! It was 2,100.00 birr per hectare, on the other side the graph is exhibiting income of resettlers have deteriorated by more than two folds. The reason for income deterioration for the year under consideration is resulted by the fall of sesame production and in turn resulted by rainfall deficit.

ii. Livestock wealth as source of income

Animal rearing is another farm activity practiced in the origin and resettlement areas. Furthermore, livestock ownership is the most important in farmer's wealth ranking. According to Kafta Humera Wereda WoANR 2006 annual report the livestock population of the entire wereda includes 171,365 cattle, 59,893 sheep, 75,675 goats, and 25,471 pack animals. The majority of the wereda's livestock population is the local or Abyssinia breed types. Before looking into the income comparison, let's first see the per household livestock ownership in both areas.

Table 14. Average livestock ownership comparison

Average physical livestock ownership per household

Livestock	In origin (a)	In resettlement (b)	Difference (b-a)
Cattle	1.23	2.36	**1.13**
Sheep	0.34	0.73	**0.39**
Goat	0.79	2.42	**1.63**
Donkey	0.2	0.28	**0.08**
Poultry	0.33	0.47	**0.14**
Camel	0	0.11	**0.11**
Total / Average	**2.89**	**6.37**	**3.48**

Source: Field survey, 2007

According to the survey result the above table shows the average per household livestock possession in the origin area for six animals is 2.89 animals, whereas the average livestock ownership in the resettlement area has increased to 6.37 animals per household. Based on the survey result, since there is a difference of 3.48 animals per household as a result of the program, the resettlement area is then better compared to the origin areas in terms of livestock possession. A discussion was held with development agents and resettlers concerning the high outcome of animals stock and the major reasons for high level of livestock possession are as follows:

i) The existence of adequate grazing land.

ii) The existence of near by forest area for fodder.

iii) The existence of adequate water points.

Table 15. Average Household wealth from livestock comparison

Average livestock wealth (income in birr) per household

	In origin (a)	In resettlement (b)	Difference (a-b)
Cattle	2,023.49	3,921.14	**1,897.65**
Sheep	559.34	1,212.90	**653.56**
Goat	1,299.64	4,020.83	**2,721.19**
Donkey	329.02	465.22	**136.20**
Poultry	542.89	780.91	**238.02**
Camel	0	182.77	**182.77**
Total / Average	**4,754.37**	**10,583.76**	**5,829.39**

Source: Field survey, 2007

Similarly, when we see the income comparison between these two areas in Table 15, still net wealth (income) of the resettlement from livestock has exceeded by 5,829.39 birr per house hold compared to the origin area. Furthermore, there are also other marginal incomes gained from livestock production in terms of milk production, ox labor (in ploughing), butter and cheese production. These all contribute to food security of resettlers in the wereda, because an increase in productivity of livestock increases the food security of resettlers.

As was mentioned above, possession of livestock in the origin area is low. Here the most important reasons are forwarded by focus group discussion members as follows: shortage of land, that is poor carrying capacity (high grazing rate and competition), low source of fodder, disease and unsuitability of the area for livestock production are some among others.

4.2.2. Environment

As it is always stated, the region has limited forest cover that is mainly composed of a heavily disturbed natural high forests (in the low lands of the region), bush lands (on the mountain chains of the central high lands), shrub lands (the eastern escarpment of which the *Desea* state forest is prominent and *Mereb* River basin), the *Hirmi* state forest (part of the upper *Tekeze* in the western zone), wooded grassland (scattered in western zone), scrubland (in the lowlands of the escarpment bordering the Afar region), resin bearing trees (in the lowlands of central and western zones) and bamboo and reed (western lowlands).

But these forest resources could dwindle to full deforestation, if adequate attention isn't given in preserving the existing forest resources. The forest resource of the western part seems devastating alarmingly. Data are strongly revealing that crop productivity of the western region is increasing at the expense of forest resources, and forest areas are now changed to farm lands at unbelievable rate.

4.2.2.1. Resettlement and the Environment

Resettlement is an environmental issue. The success or failure of the resettlement program will be determined not only by whether relocatees have food, clothes, shelter, and employment, but also by whether the environment can sustain the incoming population, and whether there are adequate resources available for economic development. If the relocatee population strains or surpasses the region's environmental capacity, the local environment will deteriorate, natural resources will dwindle, and as a result the standard of living of the relocatee falls.

4.2.2.2. Measuring the Impact of Resettlement Program on Forest:

Optional Evaluation Methods:

Option one: Log Inventory Method

This method helps to evaluate the level of deforestation by counting fallen trees at the remaining cut log frustums that are visible to naked eye. Finally, by making simple inventory on the remaining logs for the sample areas under consideration, then level of deforestation would be presented is the method to be employed.

However, the study couldn't deploy this method for the following reasons.

1. There are some farm lands, that does not posses log signs at all, where as there are several numbers of trees that could be seen with naked eye at the edge of the sample farm lands.
2. Fire burns: To clear all trees and bushes for farmlands resetllers are burning trees and finally the medium and lower diameter often flammable trees (that are greater than 10 cm diameter) can burn to ashes, with no log signs.
3. Height and diameter at breast height of the tree can not be measured, and therefore this makes difficult in calculating the biomass loss.

Figure 3. Prevalence of log remains in and around farm lands

Wrong tree cutting system adopted by new settling community.

Log sample

Location: ~7.5 ***km West of Idris***
Sample Kebelle:*Hagereselam kebelle*
Sample Type: ----------
Date: October, 2007,

Option Two: Undertake Control sample tree inventory on adjacent line to the farmland (experience sample) plots.

This study assumes to take the control sample areas near by the sample farm land so as to make simple cross comparison, that is ''***on the researcher decision***'', but still there were a number of problems limiting in conducting this optional technique.

1) **Distortion problem:** As long as these areas are centers of tree sources, where restllers cut trees for varieties of consumption: Such as, for firewood, house construction, agricultural implements, for sales, animal fodder, because these are ranching areas by their very nature due to their proximity to the farm lands, or as far as these areas are adjacent areas highly vulnerable for deforestation, it is therefore, certainly difficult to take this area as control sample plot.
2) **Prevalence of remaining logs**: Numbers of remaining logs becomes apparent. That is actually logs are available on the adjacent line. Please refer the above photo.

Option Three: Conduct the "Control and Experience sample area technique" and proceed tree enumeration accordingly.

Since the aim of this study is to measure the intensity of the manifestation of deforestation as a result of the resettlement program for both (before and after) periods, so far this method is accepted as best option, though low attention is given to regression function. Had the objective been to assess the over all stock measurement the regression functions and more sample plots would have been employed. The study was conducted through two different sample areas, that is the '**Control**' and the '**Experience**' sample areas.

4.2.2.3. Forest Coverage Comparison

Since intention of the research paper is to compare and contrast the coverage of forest before and after the resettlement program, forest coverage ought to be measured for two separate periods. Here two event groups are expected to be inventoried for evaluation, and these two groups could be termed as control and experience groups.

A) Control Sample of Forest Areas

These are ex-forest plots; representing the forest coverage which existed before the resettlement program, because bushes and trees are cleared by resettlers either for farmland or for house construction activities, etc.

Figure 4. Sample of Densest Control group

Location: *~8 km North of Endaykedash*
Sample *Kebelle*: *Hagereselam kebelle*
Sample Type: Control group
Date: October, 2007,

Figure 5. Sample of Sparse Control group

Location: *~1 km East of Adigoshu*
Sample *Kebelle*: *Adigoshu*
Sample Type: Control group
Date: October, 2007

Table 18. Average Number of trees and their volume in one hectare (100m *100m)

Sample area	Control area		Experience area		Difference	
	No of trees	Cm^3	No of trees	Cm^3	No of trees	Cm^3
Wuhdet	236.00	855,773.88	16.68	161,367.09	219.32	694,406.79
Turkan	198.68	707,858.64	25.02	355,435.74	173.66	352,422.90
Adigoshu	409.28	1,103,532.04	54.32	563,952.17	354.96	539,579.87
Total	**843.96**	**2,667,164.56**	**96.02**	**1,080,755.00**	**747.94**	**1,586,409.56**
Average	**281.32**	**889,054.85**	**32.01**	**360,251.67**	**249.31**	**528,803.19**

Source: Field survey, *Kebele* Rural Development Office and WoANR, 2007

The average number of trees in *Turkan* shows nearly 200 trees per hectare, almost half less than *Adigoshu*. This is to denote that the tree coverage control site is greater to all sample sites. Similarly, the tree volume in *Adigoshu* is 1,103,532.04 cm^3 per hectare, which is 3/2 of *Turkan's* tree volume. The total average number of tree in the control sample site is 281.32 trees per hectare; on the other side the experience group constitutes 32.01 trees per hectare. Here the difference (loss of tree) per hectare is 249.31 trees.

Analogously, the total average volume of tree in the control area is 889,054.85 cm^3, however, the volume for experience sample site is 360, 251.67 cm^3. Therefore, the difference in volume (loss of tree) per hectare is 528,803.19 cm^3. This loss seems affecting negatively to the environmental sustainability, implying inequitable access across generations. This problem has to be viewed with regional equity issue.

4.2.2.4. Land Holding System and Environment

There are a number of land tenure forms, to mention some among the forms: Free hold (private tenure) system, state (public) tenure system, community land tenure system, etc. When we come more specific to our nation, as all we know the Ethiopian land tenure system is public, in the resettlement area government has granted nearly 2 hectare per household. Despite of this holding, in addition resettlers have extra land acquisition on illegal basis. In this regard, as you are observing in the following table, the total landholding is 2.66 hectare per household.

Illegal land holding:- is the unlawful way of land holding system commonly practiced in the *wereda*, mainly in the *Kafta Sheraro* forest reserve area. This is a common activity practiced by illegal individuals (resetllers and hosting community) and this activity is often referred to as ***Mofer zemet.***

In fact ***Mofer zemet*** is the worst activity contributing to the environmental devastation, because people engaged in ***Mofer zemet*** activity clear forests to obtain marginal farmlands and simultaneously play a negative role on the wildlife. The illegal land holding size depicted in the following table is the household land holding size obtained on average basis.

Table 19. Land Tenure and environment

S. No	Type of Land Holding	List of the Sample areas (*Kebeles*)						
		Wuhdet	***Central***	***Adigoshu***	***Idris***	***Turkan***	**Total**	**Average**
	Legal for cultivation	1.5	2	2	2	1.8	9.3	**1.86**
1	Legal for Housing	0.3	0.3	0.3	0.3	0.3	1.5	**0.3**
	Sub total	**1.8**	**2.3**	**2.3**	**2.3**	**2.1**	**10.8**	**2.16**
2	**Illegal for cultivation**	0.75	0	0.5	1	0.25	2.5	**0.5**
	Grand total	**2.55**	**2.3**	**2.8**	**3.3**	**2.35**	**13.3**	**2.66**

Source: Field survey, 2007

Since the land tenure system is harming the environment, which results to the adverse correlation between environment and the land holding system. This is a big problem calling for urgent response by all parties particularly, by government for proper forest land management, because if this situation is not reversed, in few years; this forest area may face the possibility of changing to full bare lands.

Loss of Forests

From the survey, in calculating the quantity of loss of trees per hectare, the average figure taken as a common factor is 249.31 trees per hectare. Similarly, the common multiplier factor for biomass loss is 528,803.19 cm^3 per hectare. Please refer table 18.

Table 20. Loss of Forest (in hectare)

Kebele	No of HH	Total Hectare	Loss of Forest per Hectare	
			No of Trees	Cm^3
Adigoshu	1,144.00	3,043.04	758,660.30	1,609,170,263.50
May woyni	1,874.00	4,984.84	1,242,770.46	2,636,000,938.64
Wuhdet	1,489.00	3,960.74	987,452.09	2,094,453,253.80
Hagere Selam	1,603.00	4,263.98	1,063,052.85	2,254,807,633.21
Turkan	3,118.00	8,293.88	2,067,747.22	4,385,832,938.46
Erob Ruwasa	358.00	952.28	237,412.93	503,569,016.03
Ruwasa	2,553.00	6,790.98	1,693,059.22	3,591,094,128.25
Idolla	913.00	2,428.58	605,469.28	1,284,241,652.60
Shiglil	1,694.00	4,506.04	1,123,400.83	2,382,809,813.26
Central	1,423.00	3,785.18	943,683.23	2,001,616,507.83
Bereket	1,179.00	3,136.14	781,871.06	1,658,401,871.21
Total	**17,348.00**	**46,145.68**	**11,504,579.48**	**24,401,998,016.79**

Source: Field survey, 2007

The number of trees per hectare is simply the average number of trees enumerated in the sample plot. According to the average inventory, number of trees that existed before resettlements program has highly exceeded the number of trees actually existing after implementation. As mentioned earlier, the average number of trees that existed in the control area for all sample area has amounted to 281.32 trees per hectare, while the actually inventoried number of trees in the sample experience area is 32.01 trees per hectare.

In this regard anyone can calculate the difference, which makes 249.31, which is loss of trees per hectare. This implies that, on aggregate basis, by the emergence of resettlement a total of 11,504, 579.48 trees are lost from the aforementioned *kebeles*. Furthermore, when we see loss of forest in terms of volume (biomass) as a result of the resettlement program, from the eleven *kebeles* 24,278,927,488.23 cm^3 biomass is lost.

4.2.3. Wild animals

The reserve area, in comparative terms, is at ease from the human and livestock interferences and damages. Wild animals living in the *Kafta Humera* forest are large in number. For instance elephant, Deer, Antelope, Red fronted Gazelle, Gray Duiker, Pig, and Leopard are some among others, KHW. EPLUAD, 2007. Among the numerous wild animals living in the *wereda* elephants are still hosting across *Tekeze* basin. According to the *Wereda's* Environmental Protection, Land Use and Administration Desk 2007 report, on rough estimate basis, the number of elephants is only 9 (nine).

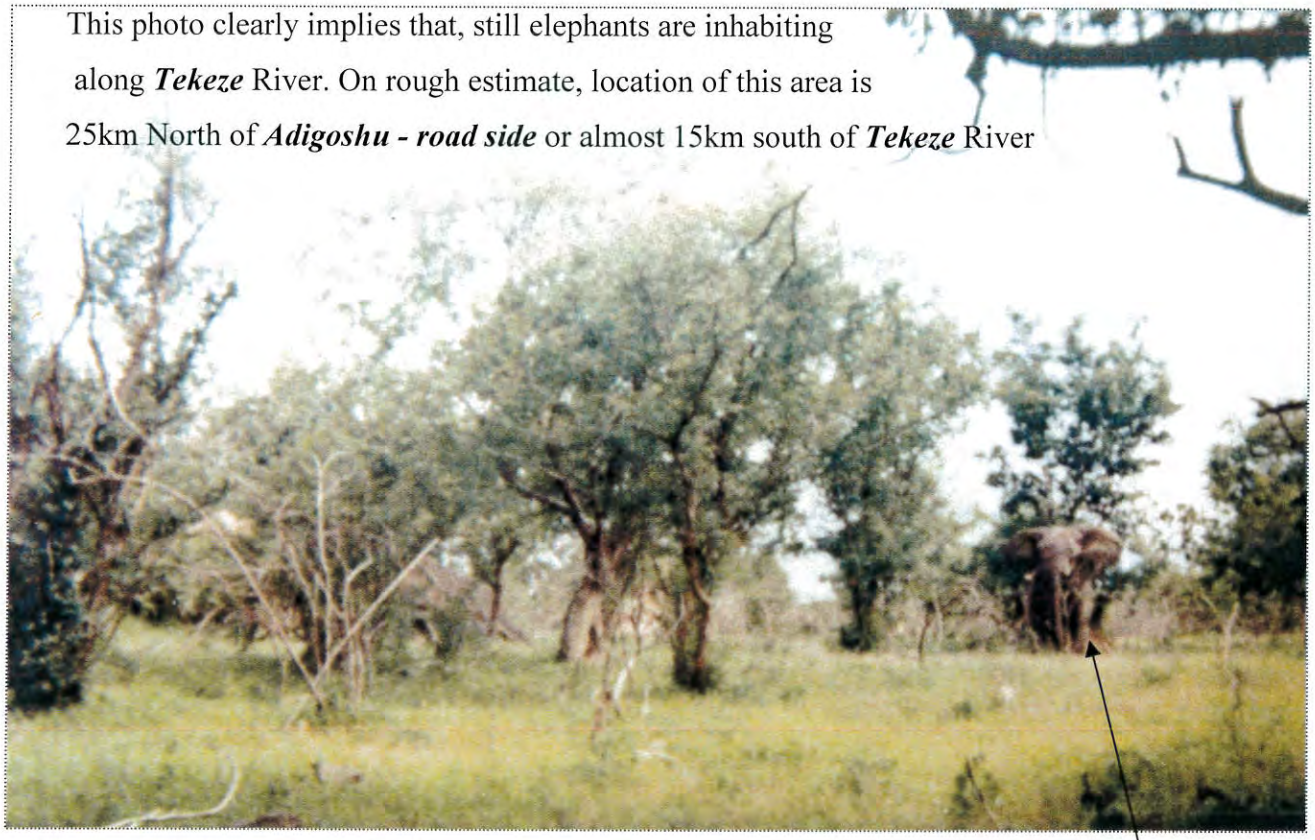
This clearly indicates that elephants are near to fully disappear from the area under consideration. The causes for the problem are surveyed and then summarized as follows:

- Inadequate wild animal feed.
- Pease instability (the area is war zone).
- Implementation of illegal agricultural production in the wild animals habitat.
- Fire burn
- Hunting.
- Deforestation (bush clearing) on wild life habitat.
- Wild honey collection, etc.

In addition to the elephants, there are also other wild animals urging high attentions, that are coming near to disappear from the area, and these include: leopard, greater kudu, roan antelope, gazelles, etc. Thus, all issues discussed around environmental sustainability in general and for forests in particular boldly embrace wild animals, as long as forests are the habitats of wild animals. In this case government and other concerned bodies ought to arrange favorable conditions for wild animals.

Figure 11. Prevalence of Elephant along Tekeze River

This photo clearly implies that, still elephants are inhabiting along ***Tekeze*** River. On rough estimate, location of this area is 25km North of ***Adigoshu - road side*** or almost 15km south of ***Tekeze*** River



Location: ~25 *km North of Adigoshu*
Sample Kebelle: *Adigoshu kebelle (Forest Reserve Area)*
Sample Nature: ----------
Date: 2007, by the office of *Setit Humera* WoANR,

Elephant in the forest reserve area

4.2.4. Sustainability of the Resettlement Program

Sustainable development: - It is a multifaceted concept possessing various definitions. Ordinarily, sustainability can be defined as the ability to subsist in time without external support. Or it is a process which needs reintegration and reconciliation among activities.

According to the CED, the term sustainability development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs after a few years time, (Commission on Environment and Development report, 1987: 01).

Sustainability parameters and components

According to Gilbert, Stevenson, Girardet, Stren, 1996 cited in final draft on environmental assessment report published by best consulting engineer PLc, 2006:67, the concept of sustainability relates to the maintenance and enhancement of environmental, social, and economic resources, in order to meet the needs of current and future generations. The three components of sustainability are:

- **Environmental sustainability**: which requires that natural capital remains intact? This means that the source and sink functions of the environmental should not be degraded. Therefore, the extraction of renewable resources should not exceed the rate at which they are renewed, and the absorptive capacity to the environment to assimilate wastes should not be exceeded. Furthermore, thr extraction of non-renewable resources should be minimized and should not exceed agreed minimum strategic levels.
- **Social sustainability**: which requires that the cohesion of society and its ability to work towards common goals be maintained? Individual's needs, such as those for health and well-being, nutrition, shelter, education and culture expression should meet.
- **Economic sustainability**: which occurs when development, which moves towareds social and environmental sustainability, is financially feasible?

However, when we come more specific to the evaluation of resettlement program, resettlement must focus on sustainability as a critical factor of success. From point view of this paper, sustainability is perceived and delineated only to the resettlement program. More specifically, when we are going to evaluate resettlement program sustainability in *Kafta-Humera wereda*; Two factors ought to be evaluated:-

i. **Sustainability conditions of resettles**, for simplicity, if majority of the resettles (who are expected to attain food security) left the area for any reason, here we can say that the project is not sustainable, because the ultimate objective of the program is attaining food security of the resettles.
ii. **Environmental sustainability**: When we see sustainability with respect to environment it is nothing but maintaining an ecological balance that is, exploiting natural resources without destroying the ecological balance of a particular area. For this reason, more emphasis will be given to the aforementioned two issues.

i. Sustainability of Resettlers

Sustainability in this context will be seen from the point view of resettlers intention, that is from their preference and decision to stay or leave the resettlement area. Or the argument here is, if sustainability of this program is going to be realized, the overall effort exerted on the resettlers ought to be promising, and in this case resettlers will prefer living in the resettlement area because it is assumed that their livelihood is changed, and this in turn realizes sustainability of the program as a whole, vis-à-vis holds true to the other way round argument, that is, they will prefer to leave the resettlement area, if they are worth off.

Table 21. Sustainability of Resettler House holds

S. Nº	Kebele	Total No of house holds (a)	No of HHs wholeft from resettlement (b)	No of HHs who submit release to resettlement (c)	Difference (d) (d)=a-(b+c)
1	*Adigoshu*	1144	32	815	**297**
2	*May woini*	1874	35	853	**986**
3	*Wuhdet*	1489	20	689	**780**
4	*Hagere Selam*	1603	81	1458	**64**
5	*Turkan*	3118	300	1428	**1390**
6	*Erob Ruwasa*	358	14	102	**242**
7	*Ruwasa*	2553	538	1310	**705**
8	*Idolla*	913	178	360	**375**
9	*Shiglil*	1694	268	420	**1006**
10	*Central*	1423	80	43	**1300**
11	*Bereket*	1179	1	870	**308**
	Total	**17,348**	**1,547**	**8,348**	**7,453**
	Percentage	**100%**	**8.92%**	**48.12%**	**42.96%**

Source: Field survey, Zone Resettlement Task Force, and *Kebelle* Rural Development office, November, 2007

In this regard the researcher has collected the actual data of potential returnees from the Western zone office of resettlement taskforce and from prospective *Kebelle* rural development offices, and almost all the reports were same.

Before proceeding to the household's sustainability arguments, first it is good to make readers clear on the meanings of the aforementioned titles of the tables' column.

a) Total Number of Household: - These 17,348 (100%) are the current *wereda* level number of resettled households; here the paper would like to remind readers on the total number of households, at the beginning, the planned figure could exceed the actual size. That is, according to the national and regional level plan the total number of settlers that were expected to resettle were 40, 000, yet the actual size of resettlers that settled in the three consecutive years is only 23,324 households as shown in the following table.

Table 22. Number of Regional (zonal) level House Hold resettlers.

S. N^{o}	*Wereda*	Number of Actual Resettlers
1	*Kafta Humera*	17,348
2	*Tsegediet*	5,976
	Total	**23,324**

Source: Western zone office of resettlement task force, 2007

b) Number of Households Who left the Resettlement site: - Number of these resettlers is 1,547 (8.92%) these are returnees who decided to leave the resettlement area, and who returned to their place of origin.

c) Number of Households Who Submitted Release papers to Resettlement:- These 8,348 (48.12%) are the resettlers who brought release paper from their home *wereda,* or these are resettlers who decided to resettle long, so as to make a livelihood in the resettlement area. These resettlers, since they have already cleared from their home weredas, they will no more claim their land for any default, because they were given solid three year limit in deciding whether to live in or leave the resettlement area.

d) Difference: - These are resettlers who failed to hand over release to either party. Total number of these households is 7,453 (42.96%). According to the government plan, entitled as: Voluntary Resettlement Programme, Volume II pp: 5, government has stated that: "any settler

has land use right for his/her holdings in the original homeland that stays only for 3 years'', however, solid two years have passed to the dead line, because this time, forcibly, resettlers were expected either to bring release from the origin and submit to the resettlement or take release from resettlement and submit to the home wereda. But these resetllers are still with position of indifference stand, or simply they did not decide yet. This implies that they are maximizing double land holding.

In fact the program, as mentioned earlier, wasn't implemented forcibly, but on the free willingness of resetllers, because according to this survey data 100% of the respondents came on voluntary basis. But here what matters is, we need to answer the question ''what are the main reasons which necessitate returnees to return to their home origin?''.

During the field survey, neither of these house holds was interviewed, because they have once left the resettlement areas. Had they been interviewed, they would have forwarded the real reasons which enforced them to return to their home origin, and this is one limitation of this study. By this or that way the cumulative effect in deciding to leave the area implies that, the home origin is better off compared to resettlement area.

Furthermore, resettlers are still with position of indifference, we need also to answer why they are still with indifferent position? According to the statement of western zone resettlement task force officer Ato Tikue Abraha: resetllers are indifferent for a number of reasons these include among others:-

1. Debt problem: there are some sending *weredas* who failed to give release papers, because in previous years resettlers are financially indebted to local micro finance institutions or other governmental creditors such as package programmes. Thus, as far as they failed to repay their remaining debts, then releases may not be allowed.
2. Dareness problem in deciding to hand over their farm land in the place of origin, because they claim to posses double land holding.
3. Traditional and backward thought of original land belongingness. Resettlers feel as if they are socially detached from the original family, simply they don't want to see their original farm land ploughed by other farmers.

ii. Location of resettler family members

Table 23. Location of resettler household's members.

S. Nº	Sample *Kebelle*	Resettlement site		Place of origin	
		Nº of Respondents	Percentage	Nº of Respondents	Percentage
1	*Wuhdet*	**12**	**80.00%**	**3**	**20.00%**
2	*Adigoshu*	12	**92.31%**	1	**7.69%**
3	*Central*	3	**21.43%**	11	**78.57%**
4	*Turkan*	15	**53.57%**	13	**46.43%**
5	*Idris*	8	**53.33%**	7	**46.67%**
	Total	***50***	**58.82%**	**35**	**41.18%**

Source: Field survey, 2007

As the above table is displaying the settlement location of respondent's family members is not implemented as the expectation.

Here, though 58.82% family members of the total sample households are located at the resettlement areas, the 41.18% of the respondent's family members are still residing in their home origin. And this makes project sustainability questionable, because from the out set, intention of the programme was clearly set and it was boldly stated the way that ''each household will make the decision on movement to new settings with or without all family members at the beginning.'' implying that all family members will settle at the new settlements in few years. However, as the data in table 20 is portraying the family movement trend isn't promising, according to the above table 78.57%, 46.43% and 46.67% family members in *Central, Turkan, and Idris Kebeles* respectivelly are residing in their home origin.

For instance, when we see the case of *Central, it* is an extreme case which calls for urgent action to change the attitude of resetllers, in residing in the resettlement site. According to the statement of Ato Hailay Teklu rural development head and development agent of the *central kebele,* the following idea is extracted among his statements.

> **"Let alone family of the resetllers, the households themselves do not consider the resettlement area as dwelling and residence home. On average basis from the 1,423 *kebelle* level total house holds nearly 50 or 3.5% live the whole year in the resettlement area, whereas, the remaining 96.5% leave the resettlement area often at the end of October (after harvest) to their place of origin (family). These people often return at the end of June. In general, resetllers of the study area consider the area as work (income) place but not as a home for livelihood. Thus, the government is expected to take an instant corrective measure in controlling this harmful seasonal migration. Because we are assigned here to serve them otherwise if they are not here for whom do we serve after all."**

According to the *kebelle* level officials and rural development staff members there are a number of loses as a result of resettlers instability at the resettlement area, therefore, since resettlers are leaving the area

1. They do not mind on the fertility level of their land, because they do not under take any land preparation activities, such as bush clearing, removing weeds, and other adjacent activities during the dry season so as to increase land fertility. And since they simply saw seeds on a land that is not well prepared, the level of productivity they gain is too low.
2. This problem is not only attached to low productivity and in turn to food insecurity issue but also to environmental damages. That is:

3. When they leave the area to their origin they sale tree of their houses to the remaining house holds at a cheaper price for fire wood or other activities, and reconstruct after return. And here from the early morning if this worst attempt isn't pruned by governmental bodies, there will be massive impact on deforestation.

iii. Environmental Sustainability

It is quite known that *Kafta Humera wereda* is dominated by the black cotton soil texture which is fragile by nature. This potential and fertile land could turn into desert within these two decades if the existing deforestation trend is not reversed. As a consequence the next generation could face environmental crisis. Now the question is, we had this potential area; on the other hand, currently government has resettled food insecure peoples from the environmentally devastated area to the environmentally rich area.

However, deforestation is increasing at an alarmingly rate, and if we allow this kind of deforestation to continue what will be our destiny? And finally, where do we go after unsustainably exploiting the forest resource? This issue makes sustainability of the resettlement program questionable, because the key principles and approaches of this program clearly states: ''***Due attention will be given to environmental concerns during the implementation of the programme. The resettlement program must be environmentally friendly, that is protecting forests, wildlife, and other natural resources are necessary.***''

Here government is not committed to its words, because the implementation of environmental concerns is not implemented as per the plan. In the strategy there seem implicit expectations on long run effect of increasing production and productivity in the resettlement area by conserving the soil. According to the WoANR (Wereda office of Agriculture and Natural Resource), in the resettlement area, the reaction in combating deforestation is almost negligible. That is there are no promising government interventions on environment activities such as plantation, closure area formation, etc.

Generally, sustainability of the program is now debatable issue, because the **basic element of economic development (food security)** has to ensure sustainable livelihoods, improve living standards, and address environmental concerns, because these are the sustainable outcomes.

Here both the economic attainment and environmental concern are complementary one another, this is to mean that: Environmental protection does not exclude economic development and that economic development must be ecologically viable now and in the long run. In general, sustainability attainment on either factor doesn't necessary mean that sustainability of the project is attained. More specifically, the project is said to be sustainable, if and only if both factors sustained together.

In this regard, optimistically, if successful sustainable resettlement program is to be achieved government and other concerned bodies need to work thoroughly in reversing the actual loses taking place following the resettlement program. In other countries the internal displacements take place as an ultimate objective for plantation, forestry and to develop vegetation.

But, by and large, in our region this movement is often triggered by moving people from degraded areas to potential forest areas (achievement of food security at the expense of forests).

And this time it seems a turning point the government and other concerned bodies to think on the issue, whether to expand or quite the program. According to development agents, information on FGD with host community members and researcher's view, if the resettling households and the environment are to be better off, they ought to at least attain the following points:

- Increase the income levels of resettling households, besides diversity of sources of income need to be assured.
- Property rights and security of tenure.
- Access to services and infrastructure, which is reflected in terms of better health, education, and other related economic and social welfare indices.
- Greater land tenure equity must be realized among resettling groups.
- Institutional capacity of the resettlement offices and desks at all hierarchy need to be optimally stuffed.
- Realize strong (merciless) penalty on violators of the environmental laws.

4.2.5. Tools or Optional Instruments to Support Sustainability of the Resettlement Program

Some concluding remarks that are stated in the recommendation chapter could be among the tools and optional instruments for the program's sustainability, though they are stated as crude and short phrases. To sustain the existing resettlement program situations, government is expected to exert maximum effort in combating major problems of the resettlement program by undertaking strong ecological conservation methods such as reforestation and plantation, so as to minimize the inherently complex human and environmental impacts. Besides, the government need to implement the following suggestion tools or optional alternatives. Here are some proposed tools and optional instruments.

1. Seizing the implementation of further resettlement and displacement Programs, and pursue other strategic alternative options: -

1.1. Assisting seasonal labour mobility

In the analysis part, it is presented that 8.92% of the resettler households have decided to leave the resettlement area, and went back to their home origin. Furthermore, there are 7,453 (42.96%) resettlers who failed to hand over release to either party, who are still hesitating to decide whether to live in or leave from the resettlement area. In these regard: The government has to encourage and organise seasonal labour mobility from the food insecure areas to the potential Western *(Kafta Humera)* area during the crop production peak periods. Often western areas suffer from labour deficit mainly during weeding and harvest periods. It could be for these reason that wages for labourers is increasing sharply from year to year in the western region. On the contrary, in the other part of the region, rural unemployment is the major cause for poverty.

This paradox is created by the prevalence of information asymmetry created between labour supply and labour demand. Sometimes, the labour supply part may be aware of the excessive labour demand in western part of the region, however, the transportation costs may not be affordable. Here the government has to address this problem (by narrowing down) the supply and demand mismatch. As a consequence by encouraging the seasonal mobility of labour the government can change the need for permanent displacement and resettlement.

1.2. Furthermore, in combating food insecurity, the government is expected to increase other alternatives which increase production and productivity of the food insecure areas, and maintain food security of these areas. There might be a number of means which helps to those farmers living in the food in secured areas in augmenting their productivity. Among others the paper would like to proposed the following alternatives for resettlement options

- The intensification of agricultural production in the food in secure home areas.
- Combating rural disguised labor unemployment of the food in secured home areas by:
  - Increasing government expenditure on labor based activities
  - Encourage private investment which involves mainly labor intensive projects

- Educate rural youth as a medium and long run strategy, by subsidizing their education fees, etc.

1. Develop the vegetation coverage of environmentally degraded origin areas

Since most of the origin areas are semi dry lands, which are peculiarly characterized by poor vegetation, these areas can be partly restored with vegetation through the implementation of massive vegetation development oriented programs such as aforestation, reforestation, planting, soil and water conservation projects. These activities ought to be accompanied by enriching the water content efforts by increasing the supply of water reservoir areas, for instance, by constructing micro dams and other allied activities. In fact, though the total surface area of the food in secured areas is large, improving vegetation by launching the aforementioned reforestation and aforestation campaign can significantly contribute in redressing and maintaining the ecological balance of these areas. In this regard we are also creating a better livelihood for those people who are living in these environmentally weak areas, and this attempt can reverse the existing bad situations and discourage further resettlement needs. After all such situations are a win-win game by nature, for they offer a mutual benefit.

2. Accelerate the implementation of national *(Kafta- Shiraro)* forestry

It is believed that, 40% of the Ethiopians total surface area was covered by forest with different species composition embracing variety of wild animals in habitats. This huge biodiversity had dwindled alarmingly due to uncontrolled forest destruction. This might have several reasons out of which population growth (due to absence of awareness in family planning), the agricultural land expansion, absence of land use policy and the lack of attention for forest are some among many. Therefore, due to the above reasons, currently, the Tigray forest coverage has become 2-3%. Still this situation (deforestation) is continuing at an alarming rate and the effect is seen in every corner of the region, i.e. environmental problem; thereby threatening the wellbeing of the society. Therefore, in order to stop this, there is a need for managing forest in a sustainable way

Kafta – Shiraro Wild Life Reserve is located in the *Kafta Humera and Tahtay Adyabo weredas*. The reserve has a total area of about 5,000km^2. Today at unbelievable rate, this forest

is increasingly exploited by the surrounding inhabitants. Planned forest management in these areas will improve the size of flora and fauna distributions, by the reduction of the uncontrolled exploitation of natural forests.

Resettlers need to make sure to be friendly with the national forest reserve area, and adhere to the criteria and guidelines laid down between resettlers and local government (WoANR) for the land tenure dispute, because there are massive areas already illegally owned by resettlers and the host community in the national forest reserve area.

Fully valid and binding legal contracts must be signed between resettler chiefs and the government (on behalf of the national park). Such contracts might not be enforceable, but are enforceable if individual resettlers or host community members found violating the agreements, then they will be accountable. Thus to combat deforestation in this and adjacent areas government has to **dare and dive to the implementation** of the management plan of these area. Here it should be clearly conceptualized that, resettlers are unlawfully and uneconomically utilizing the forest with free ride,

3. Combat '*Moffer Zemet*' farming Practices

Before proceeding to the issue, it is better first to offer some highlight concepts about *Moffer zemet* farming practices: *Moffer zemet* is a system of farming in the low land in the forest area by illegal farmers. These farmers use to cultivate crops on hidden basis. Besides, they graze their animals during crop cultivation and dry seasons. This attempt should be abolished, because *Moffer zemet* farming system is the worst practice contributing to deforestation. It should also be clear that the farmers involved in *Moffer zemet* farming practices are mainly resettlers and host communities; furthermore, it is obvious that these farmers had their own legal farm lands.

To dismantle the notion of *Moffer zemet* strong commitment of government is decisive. In this regard Anti *Moffer zemet* desk (committee) has to be established as independent institution with a permanent activity. In fact the *Kafta Humera wereda* has attempted to combat *Moffer zemet* farming practices by establishing anti *Moffer zemet* committee on temporary basis, though unsuccessful attempt.

Based on the interview with wereda environment protection land use and administration desk officer and by the researcher view some ideas are extracted; and it is better now to jot down the core reasons for the failure of the anti *Moffer zemet* campaigns implemented by the *wereda.*

- Lack of commitment by group members: Since the campaign is implemented on free incentive, accountability issues are compromised.
- Information asymmetry creation problem (nepotism): Some group members inform violator relatives, neighbors, friends, etc the arrival period of anti *Moffer zemet* committee. As a result defaulters and violators escape and disappear including their animals.
- Campaign discontinuity problem.
- Anti *Moffer zemet* membership is not a separate task.
- The penalty set by the Ethiopian criminal law is too loose to combat *Moffer zemet* practices, because the benefit - cost analysis of unlawful farmers' out weighs the penalties.

The following solutions are forwarded based on the assessments, with host community and resettlers focus group discussions and field observation.

- There ought to be sudden supervision for illegal *Moffer zemet* farming practices.
- The level of penalty that must be levied for illegal *Moffer zement* farmers should exceed their annual net income, the way it gives lesson for these criminals, and to other new incoming potential law violators.

- In addition to the criminal laws: Other complementary managerial penalties are also expected to be effected by all stakeholders. All stakeholders have to make a strong integrity each other. Strong integrity is proposed to exist among local Agriculture office, local courts, local police men, militia men, forest scout members, local administration, etc.
- Sounding bonus system must be introduced for sudden supervision committee members, on out put basis during campaign.
- The campaign should be continuous, particularly:
  - At tilling period
  - At weeding period
  - At harvest period

- Dry season (animal feed) period, because the new settlers and hosting communities feed their animals down across *Tekeze* River.

❖ But continuous and sudden supervision during animal ranching period.

❖ There must be commitment in all parties' hierarchy.

4. Introduction and adoption of Irrigation system

The *wereda* as mentioned earlier is a potential area in biodiversity, with better distribution of faire rainfall coverage; this is to mean that water content (humidity) of the area is high. In line to this, in this *wereda* there are a lot of perennial rivers, and some of the major rivers include *Tekeze, Rubasa, Maysegen, Giyts* and others. Regardless of the resource endowments (black cotton soil and perennial rive), still most (investor and smallholder) farmers of the *wereda* produce crops only during wet season. These farmers have refrained in deploying these perennial rivers.

Though there are some irrigation attempts by few individuals in some spot riverbanks, entirely in this *wereda* irrigation activity is not highly practiced. Therefore, it is simple to make a deduction that local farmers still heavily depend on a rain fed (monomodal) production. But the aforementioned perennial rivers are flowing the whole year malfunctioned.

For simplicity, resettlers have faced a sharp crop production decline during the harvest year 2007, please refer table 10, here the average physical product has fall by half compared to the successive three previous harvest year, and based on the interview with wereda's agriculture officers interview, the causes were stated as; irregularities and deficit of rainfall.

When such critique periods happen, undeniably, irrigation access mitigates the problems under consideration.

5. Expand and encourage the scope and services of Microfinance

Microfinance Institutions have evolved as economic development approach intended to benefit low in come groups. These microfinance institutions provide financial service such as micro loans to those individuals that are excluded from formal banking system. When we see this issue within the context of the western region:

Governmental financial institutions such as DECSI (*Dedebit* Credit and Saving Institution) and local moneylenders are very weak to accommodate the entire *wereda* level credit demand. Of course, there are local moneylenders who provide loan at 10% interest rate per month. Besides, in this area there is a special loan form, which is socially and economically accepted by most of the communities. Locally this form of credit is termed "***JURA***", and this kind of credit is commonly effected during July and August.

If any farmer is to get loan on the basis of *Jura*, he has to takes money and repays after harvest in kind. For instance, if the actual market price of sesame is 900.00 birr per quintal. The creditor engaged in *Jura* will offer the credit (a loan amounting one quintal), and later during harvest year he collects double (two quintals of sesame in item). According to the social norms, during repay period market prices are not considered.

Majority of the poor access to financial services through informal finance channels, in the service delivery of the informal financial institution such as: *Jura* system, local money lenders, *Iquib, Iddir*, friends, relatives, traders, etc. Despite of the aforementioned credit access, there are several problems in relation to the poor demand on credit and other adjacent financial services. For instance: limited supply of financial services, high level of interest rate, collateral problems, and lack of funds for loans are the major challenges some among others to expect microfinance institution. Therefore, the absence of well functioning and efficient credit service system is factor in making the bottleneck for credit access.

The role of microfinance in alleviating the aforementioned problems and in poverty reduction as a whole is high, it is, therefore, expected to act as a supplementary capital source of the household unit economy, as it would help in saving and allocation of the most productive way among different potential resource allotments..

CHAPTER FIVE
CONCLUSION AND RECOMMENDATION

5.1. Conclusions

With the general purpose of evaluating the impact of resettlement program, the impact of the resettlement program is identified and determined using measurable indicators. The impact variables considered in this study include: Mean crop productivity, household income and level of deforestation as a result of resettlement program. Inline with the objectives, the major conclusions of this study are stated as follows.

In fact for many years the region has been food deficit, on the contrary it had a potential area (western region) which is suitable for crop cultivation; optimistically, there is no doubt the regional government to launch resettlement program in combating famine and food insecurity, with the nucleus notion and commitment to the natural resource preservation; otherwise disastrous.

Despite the environmental and other problems the process of the current intra regional resettlement has achieved some important lessons compared to the previous regime, according to the assessment of household survey, at minimum the program was implemented based on the interest and free willingness of the resettlers.

When we see the trend of mean crop productivity and the total gross income across years of the origin area, both exhibited a trend of deterioration, furthermore, still in the resettlement area except the mobilization year (2003) the overall trend of productivity has shown deterioration across years. Though, with the aforementioned deteriorating productivity trend, according to the data the mean crop production in the resettlement area has exceeded across all years in comparison to the original land productivity. The households mean annual physical crop production in the origin area was 4.02 quintal per hectare in all kinds of harvested crops, but it was 7.53 quintal in the resettlement area.

Besides, in the origin area, the household's five year mean annual income, only from crop harvest was 784.22 birr, but this figure increased exponentially to 2,517.32 birr in the resettlement area. On top of this, besides the marginal incomes gained from livestock production in terms of milk production, ox labor (in ploughing), butter and cheese production, net wealth (income) of the resettlement only from livestock exceeded by 5,829.39 birr per house hold compared to the origin area.

According to the field observation and focus group discussion results majority of the resettlers have attained self-sufficiency in food and their livelihood has improved considerably. Regardless of the deforestation problems the region encountered, undeniably the life of major resetlers seems changed. Therefore, in this context what can generally be inferred is the program is attaining the success of its objectives in terms of food security program only for livestock raring and crop productivity.

However, the resettlement program has totally ignored the natural resource conservation issues. After all a resettlement program is multifaceted issue, which requires the integration of a variety of activities which address program sustainability. Generally, the program is short sighted, because it seems running to achieve a short run benefit that may not exceed one or two decades.

Other countries displace people to implement forestry projects, with the intention of forest development program and to maintain ecological balance; on the contrary we are under taking resettlement projects at the expense of forestry, here the issue triggering ones mind is what will be the destiny for both generations, if the current deforestation is not stopped at the early stage. Therefore, a difference will happen on the opinions as to whether resettlement is to under take on the expense of forests or not.

Unlike the other kinds of environmental impact intervening agents such as: Investors, Local host communities, National Defense forces, etc, only by the emergence of resettlement program a total of 11,504, 579.48 trees are lost from the aforementioned resettlement *kebeles*. Furthermore, when we see loss of forest in terms of volume or biomass as a result of the resettlement program, from these *kebeles* 24,278,927,488.23 cm^3 biomass is lost.

5.2. Recommendations

Based on the analysis and conclusion part, this section offers some recommendations, which may help in attaining optimal implementation of resettlement program:

- In the *Kafta Humera wereda* substantial amount of loans is used in financing agricultural activities during tilling, weeding and mowing. During these periods facilities of financial support (credit) are vital, because substantial number of ressettlers are suffering by local money lenders, for they impose abnormal interest rates. Thus, financial institutions such as DECSI (*Dedebit* Credit and Saving Institution) have to supply adequate loans to resettlers. In this regard government can combat exploitations of interest which are emanated by the informal financial institutions.

- Average income of resettlers have exhibited a diminishing effect over the last five years, besides since farmers sell their products at lower prices immediately after harvest (to repay credits), resettlers are often offended by the later (high) prices. Therefore, for better and fair market prices, government and other stakeholders have to exert maximum effort in facilitating aggregate marketing services, by establishing local marketing corporations and mini-marketing consultancy services.

- Some prospective (sending) *weredas* have failed to give release papers for resettlers, though resettlers decided to hand over home farmlands. The reason is here, in former years resettlers were financially indebted by local micro finance institutions or other governmental creditors such as package programmes in their origin. Thus, as long as they did not repay the remaining debts, some of the resettlers might be in problem, because their releases are not allowed. In this regard government or coordinators of the resettlement programme have to arrange a system in transferring the unpaid loans from the origin to the resettlement area.

- Government at all level of hierarchy, the community and other concerned bodies together must collaborate to solve crisis in the resettlement process, particularly forest lives seems overexploited because the adjacent communities have exacerbated the deforestation cycle. Here in few years, these so called "**safer places or forests**" may be overwhelmed.

Therefore, to flourish and develop more sustainable livelihoods, massive awareness creation activities must be designed and implemented for the community.

- The security of environment ought to be reserved, that is, individuals and groups of people should capacitate themselves to live harmoniously with nature on a sustainable basis, while meeting their basic needs. Here it should be clearly noted that, environmental sustainability doesn't necessarily mean that, forests ought to be reserved with no human touches, by this or that way forest areas are in touch with human activities. In this regard, what matters is that local (resettlers and the host) communities of the adjacent lines must utilize the area with the principle of environmental security. For instance the communities themselves can minimize level of deforestation by changing traditional practices which negatively affect forests such as causing forest fire, burning forest areas for farm lands, burning of forests to prevent wild animals, burning trees to collect wild honey, excessive ranching and over grazing.

- There are ample policies, strategies and programs pertaining environmental issues in Ethiopia. However, most of them are still 'paper tigers'. There is acute dearth of compelling legislation for natural resource protection and development. The enforceable laws remain a mere declaration of intent. This is to mean that, to penalize violators' government and all citizens have to feel commitment, and all legal decisions passed on violators must be implemented mainly by the local judiciary and executive bodies.

- If resettlement needs to be conceptualized within a wider development context, during implementation, resettlement stuff members should have substantial experience in a wide range of development issues, including knowledge of how to achieve economically, socially, and environmentally sustainable development. Furthermore, even post implementation the area is requiring a much broader base of personnel, because the number and size of personnel actually assigned is too small to undertake all the resettlement and other related issues, thus government has to strengthen multi disciplinary stuff size at all hierarchy

- This study has referred to an extensive literature that already exists on resettlement. Nevertheless, as it should be clear from the discussion, there are still gaps that need to be

studied to decrease impoverishment and reconstitute better livelihoods, so as to secure sustainability. Many questions have raised; for some, finding good answers requires further research. Furthermore, to investigate pros and cons, as a result to formulate policies it requires further research to avoid impoverishment in the resettlement process.

References

Abay Weldu Hagos, Prospects and Constraints of Planned resettlement program in Kafta Humera, August 2005, Tigray, Ethiopia.

Addis Ababa University, 2005, Summary of Study Papers on the Resettlement Program, Research Project Workshop for Social Studies,: Addis Ababa, Ethiopia.

Alem Gebrewahid, (October 2006), Planned resettlement Program: Its impact on environment and Livelihood, , Tigray, Ethiopia.

Alemat Hagos, Socio-economic study of Incense in Kafta Humera Wereda. Published by: Tigray Regional State Bureau of Agriculture and Natural Resource Development. August 2003, Mekelle.

Anteneh Fantahun, (2008) The role of microfinance in poverty reduction in Ethiopia, Tigray, Mekelle.

Asfaw Tihune, 2005, Improving, understanding the dynamics of resettlement: A case study of Idris resettlement scheme, Kafta Humera wereda,

Assefa Tolera, 2005, Impact on environment and host community, A document on the summary of study papers on the resettlement program, AAU, Addis Abeba

Azene Bekele Tesema, Ann Birnie, and Bo Tengnas. (1993), Use full Trees and Srubs for Ethiopia. Identification, Propagation, and Management for Agricultural and Pastoral Communities, Published by SIDA's Regional Soil Conservation Unit, RSCU Technical Hand Book N^{o} 5, Sweden.

Best Consulting Engineers PLC, 2006, Draft final environmental report onTigray Regional road network development study volume -3A.

Braun. S. (1990), The Agriculture Sector in Ethiopia, Rural Development Options. UK.

Bureau of Agriculture and Natural Resource Development (BoANR), 2002, Impact assessment of extentiom intervention (1996-2000), Volume 1 main report.

Cerena and Guggnheim, 1997, Anthropological Approach to Resettlement: Policy, Practice and Theory.

Cernea, Michael M. 1996, ''Eight main risks: Impoverishment and social justice in resettlement''. Washington, DC: The World Bank, Environment Department.

Cernea Michael M, Kai Schmidt-Soltau, 2003, National Parks and Poverty Risks:

Chambers, R. (1989), Sustainable Rural Livelihoods: A key Strategy for People, Environment and Development.

Chen Guojie,1987, The Environmental Impacts of Resettlement in the Three Gores Project, published in Shuitu baochi tongbao (Soil Conservation Newsletter), volume 7, no. 5.

Chris de Wet, Displacement, Resettlement, rehabilitation, reparation and Development, Department of Anthropology, Rhodes University, Prepared for Thematic Review I.3: South Africa. Website: See http://www.dams.org/.

Christy Cannon Lorgen, January 1999 (a), Impact of Villagization on Environment and Host Communities.

_____, 1999 (b). The Experience of Villagisation: Lessons from Ethiopia, Mozambique, and Tanzania, Oxfam-GB

Clay, Jason W. and Holcomb, Bonnie K., 1986,.Politics and the Ethiopian Famine (1945-85), November.

Commission on Environment and Development (CED), 1987, Our Common Future (report).

Economic Commission for Africa (ECA), 2004, Land Tenure Systems and their Impacts on Food Security and Sustainable Development in Africa, Addis Ababa, Ethiopia.

ERA, 2001. Environmental Procedure Manual, Addis Ababa.

Feyeka Senbtta, (2003), the paradox of Forest Conservation and Food Security in Ethiopia. Proceedings of the Food Security Conference UNCC, Addis Abeba , Ethiopia.

Gebray Berhe, June 2006, The Current Ethiopian Land Tenure System, its Impact on Agricultural Production and Soil Management Practices: Tigray, Mekelle.

Gebrekidan Teklu, January 2000, Forest Inventory Manual, Natural Resource Management and Regulatory Department, Ministry of Agriculture, Addis Ababa.

Guy Parent, March 2000, Manual for A woody Biomass Inventory (Qatar), Canada.

Jason Stanley, 2004, Development-induced Displacement and Resettlement (DIDR), Websites: World Bank Resettlement Plans http://lnweb18.worldbank.org/ESSD.

John Bizar and Tod Ragsdale (1997). The Development of Resettlement Policy in China, China. Source of Web site: www. his. Com/~mesas/chinapol.htm.

Kidanemariam G/egziabher, Ethiopian Economy Module for Distance Education, October 2004, Mekelle University Mekelle.

Kinfe Gebrelibanos, Achievement and Challenges of the Current Resettlement Program: The case of Wereda Gantaafeshum, Mekelle University, June 2006, Mekelle.

Koenig, Dolores, 2001, Toward Local Development and Mitigating Impoverishment in Development-Induced Displacement and Resettlement. Organized by the Refugee Studies Centre, University of Oxford, Department of Anthropology, American University, Washington, DC USA.

_____, Contradictory Notions of Participation? The Case of Development-Induced Involuntary Resettlement, Anthropology, American University, Washington, DC, USA.

Maekele Yilma, June 2007, Development project induced resettlement and compensation planning (case study) in Messebo Building Material Productions. Private Limited Company, Mekelle, Tigray, Ethiopia.

Mengisteab Hailu, Woody Biomass Estimation of Forests for Sustainable Management at Watershed Scale: The cases of Hawzen and Gemad Watersheds. March 2006, Mekelle

Mesfin Abera, June 2005, the Contemporary Returns and Challenges of Resettlement in Tigray Region, Mekelle.

Michael S. Phillip, Measuring Trees and Forests, A text book written for students in Africa, University of Dares Salaam Published in Great Britain, 1983

Ministry of Agriculture Natural Resource Management and Regulatory Department, 2001, Guidelines for Forest Demarcation, Addis Ababa.

New Coalition for Food Security in Ethiopia, November 2003, Voluntary Resettlement Program (Access to improved land), Volume II, Addis Ababa.

Par Judith de Wolf, 2002, Enhancing Food Security Through Resettlement? The dynamics of crop choices in the Benoue region, North Cameroon.

Punkhurst, Alula, 1992. Resettlement and Famine in Ethiopia the villagers Experience. Manchester university press. Manchester.

_____, (1998), Resettlement in Ethiopia a background Paper, Un published report, World Bank, Addis Abeba.

_____ , (2004), Long Term Implication of Resettlement in Ethiopia. People Space and Migration Resettlement and Displacement in Ethiopia.

Sertse Sebuh, Assessment of Spatial Distribution, Regenerating Capacity, Degradation and Development Prospects of Boswellia Papyrefera in Kafta Humera, Published by: Tigray Regional State Bureau of Agriculture and Natural Resource Development. August 2003, Mekelle.

Tigray Region Bureau of finance and economic development, 1998, An over view in to the regional socio-economic condition, , Tigray, Mekelle.

Tigray Region Bureau of Agriculture and Natural Resource Development, 1998, Land use study of Kafta Humera wereda, Volume 4.

Tigray Regional State, 2004, Woody Biomass inventory and strategic planning project, a strategic plan for the sustainable development, Conservation, and management of the woody Biomass resource, , December, Addis Ababa.

Tesfahun Fanta and Osman Ali, Challenges and Prospects of Food Security in Ethiopia, August 2003, UNCC, Addis Abeba.

WHP. (1993), World Food Security Prospects and Trends. World Hanger Program. Washington. D.C. Source of Web site: http://www.usaidethiopia./sol.htm

Wolde-Selassie Abute, 2003, Resettlement as response to food insecurity: The case of SNNPR, Addis Ababa, Ethiopia. Web site: www.uneue.org(new)

United Nations – Emergencies Unit for Ethiopia (UN- EUE), Hararghe Food Security hampered by long-term drought conditions and economic constraints. Addis Ababa, Ethiopia. Web Site: www.telecom.net.et/~undp-eue/.

World Bank, (1978), Agricultural Land settlement. Washington D.C.

World Bank, 2000 Risks safeguards and Reconstruction and model for population Displacement and Resettlement. Washington DC.

Annexes

Annex – A
Questionnaire for Resettler Households

This Questionnaire is prepared by post graduating student, only for academic use, and the main objective of this questionnaire is to assess the implementation of resettlement program in Kafta Humera Wereda. There fore, since your input to this paper is more valuable, you are then highly expected to cooperate in filling this questionnaire accurately.

													Address			
Age	**Sex**	**Marital status**						**Level of Education**					**Origin**		**Current**	
		a	b	c	d	e		Illiterate	1-4	5-8	9-10	>10	Wereda	Kebele	Kebele	Sub Kebele

I. General and Demographic Data

Key:

a. Married

b. Single

c. Divorced

d. Widowed

e. Married to several spouse

2. House hold Size_____
3. When do you come here? _____ E.C.
4. Where do your family members live at the moment?

N º	Relation to HH head	Education level	Where are they now?		
			In the origin	Here	Why?
1					
2					
3					
4					
5					
6					
7					
8					

II. Readiness and willingness to join the resettlement program

5. How did you come here (became a resettler)?
   a. Voluntarily
   b. Forcibly by officials
   c. By community leaders
   d. I don't know how I came here
   e. Others specify _____

6. What is the main reason which forced you to come here?
   1. Continuous drought
   2. Continuous famine
   3. Low productivity
   4. Land less ness
   5. Severe poverty
   6. Others specify_____

III. Land Holding and Productivity

7. Extension service

On average how do you acquire the level of extension service (Input supply, consultancy of DA, etc.)?

Degree of Extension service acquired	Very good	Good	low	Very low
At origin				
Current				

8. How often do you cultivate? Discuss on the changes (origin Vs current)

Traditionally._____

By employing modern inputs._____

By employing minimum inputs._____

I don't use any input_____

I don't know on the use of input because my land is rented out._____

9. Do you have land acquisition in the origin area? Yes_____ No_____

10. If your answer to the above question is yes on average what was your harvest in quintal, for three major crops? (In the origin area)

Year (EC)	**Crop Type**	**Cultivation in hectare**	**Harvest (Qts)**	**Unit cost**	**Total cost**
Year – 1					
Year – 2					
Year – 3					
Year – 4					
Year – 5					
Total					
Average					

11. Crop harvest in quintal (here in resettlement area)

Year	Crop	Area cultivated In hectare	Harvest (Qts)	Unit price	Total cost
2003					
2004					
2005					
2006					
2007					
Average					

12. Livestock ownership (in number): in the origin area

Types of livestock	Yr – 1	Yr – 2	Yr – 3	Yr – 4	Yr – 5	**Average**	**Unit price**	**Total cost**
Cattle								
Sheep								
Goats								
Donkeys								
Horse / mule								
Camels								
Poultry								
Other								
Total								
Average								
							Total	

13. Livestock ownership (in number): in resettlement area

Types of livestock	**2003**	**2004**	**2005**	**2006**	**2007**	**Average**	**Unit cost**	**Total cost**
Cattle								
Sheep								
Goats								
Donkeys								
Horse/mule								
Camels								
Poultry								
Other								
Total								
Average								
							Total	

IV. Environmental Issues

14. From where do you get tree materials for (house construction and fuel)?

_____

15. If your answer for the above question is forest, to your mind, do you think nearby forests and wildlife resources are protected?

Yes _____ No _____

16. If your answer for the above question is yes, who protects the forest from deforestation? WoANR__ Local administration__ Others____

17. Are you trained /advised about forest protection? Yes_____ No_____

18. If your answer for the above question is yes who offered the education and advice about concerns in forest protection?

WoANR__ Local administration__ Others_____

V. Other Issues

19. How do you evaluate the level of infrastructure provision?

a) Very low b) Low c) Medium d) Good e) Very good

Year EC	Rural road	Health	Safe water	Electric
2003				
2004				
2005				
2006				
2007				

20. What is the distance from your house to the nearest:

Grain Mail _____ (KM)

School _____ (KM)

Access Road _____ (KM)

Health center _____ (KM)

Market Place _____ (KM)

21. What is the level of integration with the host community?

a) Very low__b) Low____c) Medium___ d) Good____ e) Very good____

22. If your answer for the above question is c, d & e, to your mind what could be the possible reasons?_____

_____

_____

23. What are the top major problems you are facing currently? Ex: malaria

_____

_____

VI. Future Plans

24. What are you plans for the future?

1. Stay in resettlement _____
2. Be a trader in and around the resettlement area_____
3. Stay in resettlement as a handicraft man/woman_____
4. Leave the settlement and join my family in other parts of Tigray___
5. Leave the settlement and look for other possibilities_____
6. Any other plan_____

25. Any suggestion

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Thank you!

Annex – B Check lists

Focus Group Discussion (FGD) Check Lists for Host Community

1. What is your reaction to the resettlement program?
    a. I support
    b. It doesn't make change to my life
    c. It doesn't give me any meaning
    d. I don't support
    e. Other specify_____

2. If your answer to the above question is all except "a" why?
    a. Because I lost my farm lands
    b. (the community) lost grazing land
    c. We lost water points
    d. Because there is environmental abuse as a result of resettlement program
    e. Because we lost the free access to the forest area
    f. The intensity for resource competition aggravated.
    g. Other_____

3. Have you participated in the planning and implementation of the resettlement program?
    Yes_____ No_____
4. If your answer to the above question is yes, who organized the meeting (agenda) under consideration?
    a. Kebelle officials
    b. Wereda administration
    c. Zone administration
    d. Resettlement program unit
    e. Other_____
5. Do you think you are marginalized from any infrastructure services, for services that are actually supplied to resettlers? Yes ___ No ____
6. If your answer to the above question is yes, to which kind of public services?
    a) To health services
    b) To potable safe water

c) To primary education

d) To others _____

7. Can you mention any unhealthy relationship (disputes) you faced with the resettlers? If any. Why? When? Where?

_____

_____

_____

8. How do you explain the level of deforestation caused as a result of the resettlement program?

_____

_____

_____

_____

_____

9. List the wild life which disappeared after 1985 EC, if any.

_____

_____

_____

19. What do you think are the possible reasons for disappearance?

a. Animal ranching and free grazing by host community
b. Animal ranching and free grazing by resettlers
c. Discomforts created by the ministry of defense
d. Continuous fire burns
e. Hunting
f. Other _____

11. Any suggestion

_____

_____

_____

_____

Thank you!

Check List for Kebelle/ Wereda / Zone/Officials

1. Do you have the resettlement program's plans that were designed before the implementation or the revised one (if it is revised) yes __ No __
2. Any idea concerning the above question.

   _____

   _____
3. What are the contents of the plan about environment

   _____

   _____
4. Do you think these contents you listed down are really implemented?

   _____

   _____

   _____
5. How /when/ volume of work?

   _____

   _____

   _____

   _____

   _____
6. To your mind, do you think this program has achieved its objective on food security? How? For promising achievements, and Why? For poor achievements_____

   _____

   _____
7. How do you evaluate resettlement's program in terms of social impact
   a. On host community
   - Physical displacement
   - Land dispossession
   - A problem to water points
   - In accessibility to free service on forest (bee hive, etc)
   - Communal problem for grazing lands
   - Others _____

b. On Resettlers

- Malaria problem
- Food aid problem, during inception.
- Infrastructure problem (water, health, sanitation .....)
- Social disinter action (relationship) with host communities.
- Resource conflicts
- Others_____

8. According to the plan, do you think members of the host communities are participated during planning and implementation process of the resettlement program?
Yes___No____Justify_____

_____

_____

9. How do you evaluate the promised supply of basic infrastructure? On their provision and timelines.
   a. Education _____
   b. Health _____
   c. Rural road _____
   d. _____

10. What is the average resettler's land holding size?

_____

_____

11. Do you think there is an illegal land holding (fallowing) by resettlers?

_____

_____

Can you estimate the average in hectare?

_____

_____

12. Any suggestion

_____

_____

_____

Thank you!

Check List for DA / Wereda Agricultural and Natural Resource Office.

1. What is the level of resettlers land holding per household in hectare?
   For all kebele (if you have any copy).

   _____

   _____

2. Total land offered (for resettlers) in hectare, for all activities(for cultivation, for housing, etc), per center.

   _____

   _____

3. Do you think there are illegal land holding by the resettlers?

   _____

   _____

4. What is the average price of local farm out puts?

No	Product	Unit	**2003**	**2004**	**2005**	**2006**	**2007**	Average
	Sesame	Kg						
	Sorghum	Kg						
	Millet	Kg						
	Incense	Kg						
	Sheep	Each						
	Goat	Each						
	Camel	Each						
	Ox	Each						
	Cow	Each						
	Charcoal	50Kg						
	labor	Birr/day						

5. To your mind can you suggest any mechanism which helps in segregating the level of (deforestation and wild animal) resource loss by different agents (resettlers, hosting community and by ministry of defense)?

   _____

   _____

6. Can you estimate the average utilization of fire wood per day per household (resettlers) m^3

_____

7. What is the average charcoal consumption per household per day in m^3?

_____

8. In your opinion, on average what percentage of resttlers are engaged in carbonization process? _____

9. Can you estimate the level of deforestation for house construction and for agricultural implement?

A household on average constructs _____ houses.

On average one house requires ___, ___, ____ amounts of long, Medium, and Short trees respectively.

And these_____ total number of trees can be estimated to _____ m^3 biomass weight.

Can you estimate the average utilization of trees for agricultural implements? ____m^3 biomass or (____ trees)

Can you estimate the average sell of trees? _____ m^3 or (____ trees) fire wood per day per household for additional income.

10. Do you have/ know the plan of resettlement program yes ___ No ___

11. If yes, how do you react on the level of protection of deforestation, for instance (closure area, plantations, _____)

state_____

_____

12. Can you rate the implementation of the plan in combating deforestation?

13. What species became disappearing as a result of resettlement program?

Plant species

No	Name of plant	Disappear	Near to disappear	Remark
1				
2				
3				
4				
5				

Wild animal species

No	Name of animal	Disappear	Near to disappear	Remark
1				
2				
3				
4				
5				

14. What are the possible causes for extinction or disappearance of the stated species

Plant_____

_____

_____

_____

_____

Animal_____

_____

_____

_____

_____

_____

15. How do you compare the level of environmental damage caused as a result of the resettlement program, with pre resettlement situation?

(Try to demonstrate in terms of before and after)

_____

_____

_____

_____

_____

_____

16. On average can you estimate the total wereda level biomass? _____m^3.

17. On average can you estimate the total wereda level forest coverage?_____

18. Having the above information can you prediction environmental losses for the coming 20 years?_____

19. Any suggestion

_____

Thank you!

Annex - C

Name of Tree species occurred during forest inventory

No	Tigrigna	Amharic	scintific name
1	Meker	Ye tigre etan zaf	Boswellcia popyrifera
2	Hanse		Anogeissus leiocarpus
3	Tenkelba		Comretum hart mainnianum
4	Humer	Humer	Tamarindus indicus
5	Weiba	Avalo	Combretem molle
6	Darle		Sterculia Africana
7	Gonek	Ergetidimmo	Dichrostachs cinerea
8	Semok		
9	Dimma	Bamba	Adansonia digitata
10	Sagla		Ficus sycomorus
11	Zibe		Dalbergia melanoxy lon
12	Kermed		Boscia angustifolia
13	Gaba		Kurkura
14	Mekee		
15	Hatsinay		
16	Tsara	Sesa	Albizia gummifera
17	Daero	warka	Ficus Vasta
18	Degdigugn		Lannea fruticosa
19	Afekemu		Ficus hochstertter
20	Gumero		Acacia cafra
21	Kenteb	Kontr	Acacia senegal
22	Sesew		
23	Mosoqua	Somaya	Gteura bicolor
24	Beati Tiel		
25	Aberkika		
26	Che'a	Bazra girar	Acacia abyssinia
27	Aye	Ayeh	Diosphros mespiliformis
28	Seraw		

Annex - D

1.1. Background of the Research

1.1.1. Objectives of the Current Resettlement Program

The main objective of the resettlement program clearly stated in the document entitled as "***Voluntary Resettlement Program (Access to improved land), Volume II, New Coalition for Food Security in Ethiopia, 2003:5-8***" is to enable 440,000 chronically food insecure households to attain food security through improved access to land in potential area on voluntary basis. Food insecurity has many causes, low level mobility of labor, and increased local population pressures on availability of land are some among the problems. The program recognizes that in some localities abundant labor is inefficiently used due to shortages of land. People working in these lands are not able consistently to grow enough to feed themselves, owing to decreasing plot size and degradation in soil quality, as well as recurrent drought. At the same time, in other localities within the same regions available land is inefficiently used due to lack of labor on those particular pieces of land. Constraints on changes in use of land and mobility of labor in rural Ethiopia result in persistence disequilibria in returns to land and labor. Localities experiencing these imbalances may lie within the same regional boundaries. Major constraints to mobility of labor includes lack of information about other areas, high costs of moving and establishing a new farming enterprise, lack of investment in infrastructure, poor availability of services, and unclear tenure status of potentially available land (Ibid).

The newly initiated planned resettlement/access to land/ program seeks to overcome these constraints in localities where they are contributing to hunger. The program will identify localities where acute lack of land constrains food production and those where additional land is available for cultivation. The program will provide information to allow residents of the former to decide whether they wish to relocate to the latter. For those who choose to relocate, the program will defray costs of relocation and establishing a small farming enterprise. The program will provide access to land and will finance investment in infrastructure in the receiving localities to assure provision of services at least at minimal standards. Intrinsic to the aforementioned ideas, objective of the program will mainly be presented in the form of the pillars and principles of the resettlement program (Ibid).

1.1.1.1. Pillars of the Program

According to the Voluntary Resettlement Program (Access to improved land), Volume II, New Coalition for Food Security, in Ethiopia the initiation of the voluntary intra-regional resettlement rests on four major pillars.

1. **The program above all should rest on the voluntary option of the potential settlers.**
   - Settlers will decide to resettle voluntarily.
   - Settlers can return to their original homeland if unhappy about the new setting and shall be eligible to receive some sorts of assistance that they were receiving before they left.
   - Settlers have land use right for their holdings in their original homeland for 3 years.
   - Each household will make the decision on movement to new setting with or without all family members at the beginning.

2. **The availability of underutilized land**

Regional governments have to identify and make sure of the availability of enough land before they initiate planned resettlement programme. According to the current regional survey, the total hectare available is about one million, in Amhara 500,000, Tigray 130,000, Oromia 250,000, and SNNPR 100,000. In identifying land, amounts to be allocated to settlers and to be leased for commercial farming must be identified at the same time. Investment and resettlement plans must be harmonized to ensure that there is adequate land for both needs, and that supply of labor does not depress daily wage rates too drastically, (Ibid).

3. **Consultation with the host communities**

The regional governments have to hold consultations and discussions with the host communities on the necessity of the program. Agreement of the host community for the resettlement of more people in their areas should be the key.

4. **Proper preparation**

The minimum infrastructure set in the plan should be in place before moving people, (Ibid, pp: 5–6).

1.1.1.2. Key Principles and approaches

- **Voluntarism:** - No quotas or compulsion
- **Partnership:** All stakeholder bodies will be involved during implementation of the resettlement program is based on a partnership among the government, donors, NGOs, private sector, the host community, and the individual household settlers.

- **Self-Help and Cost-sharing:** - The resettlement program is not a handout program which reinforces dependency. It is a development program designed to encourage households to stand on their own feet and do things themselves to re-establish their livelihoods.

- **Transparency of program design:** throughout the program, adherence to rules, full and active information on the part of partners is necessary. All activities in the program (i.e. selection of target groups, distribution of package, procurement of materials etc.) will be carried out in a transparent way. All players will have a 'watchdog' role to ensure that transparency is achieved.

- **Iterative, 'Learning by Doing' Approach:** The program will incorporate new operational ideas based on the experiences gained during the first year of implementation. The approach will evolve as experience in the field grows based on the regular monitoring and evaluation system.
- **Capacity Building:** The program needs different management skills and players at different levels will be trained for these new tasks.

- **Environmental Concerns:** Due attention will be given to environmental concerns during the implementation of the programme. The resettlement program must be environmentally friendly (i.e. protecting forests, wildlife, and other natural resources is necessary)

- **Development Process:** The resettlement program is not a handout program. It is a development program designed to assist food insecure households not only to allow them to attain food security, but to generate marketable surplus and improve their livelihood.

- **Self Reliance:** The program will be designed in such a way that it breaks the dependency syndrome created over the years.

- **Income and Employment Creation:** The resettlement program will focus mainly on agricultural activities. But settlers will be encouraged to be involved in different off-farm activities such as small-scale businesses.

- **Community Management:** The community is expected to take a lead role in planning, implementation, monitoring, and evaluation of the resettlement programme. The community will be in the 'driver's seat' in managing the resettlement programme.

- **Intra-regional:** The resettlement program will be carried intra-regionally. However, effort will be made to resettle people from the same area with kin relations in the same locality. This will maintain social fabric created at place of origin such as cultural and land issues.
- **Minimum infrastructure:** Minimum service standards and infrastructure should be established at least similar to original area based on the principle that settlers should not experience deterioration in service delivery, and that the relocation does not result in deterioration in service delivery by host communities. Local hosts should be able to take advantage of new infrastructure on a fee-paying basis. This will help to avoid generation of conflict from the start, (Ibid, pp: 6 – 8)

1.1.2. The Study Area

Ethiopia is located in the Northeast of Africa, extending from latitude 33^0E to 48^0E and longitudes 3^0N to 14.5^0N. It covers an area of 1.127 million sq. km and boarders with Sudan to the West, Kenya to the south, Djibouti to the northeast and Eritrea to the north. According to CSA 2007 population and housing censes, the current total population of the country is 73,918,505, and out of which 83.83% lives in rural area. Ethiopia's economy is mainly based on agriculture as it accounts for more than half of the GDP, 90% of total exports and 80% of total employment. In spite of its key role in the country's economy, the performance of the agricultural sector remains low, (MEDaC, 1999 cited by Abay, 2005 pp: 2)

Tigray is located in the Northern part of Ethiopia. It covers an area of 80,000 km sq of landmass, most of which is highland and plateau interspersed within low laying hills and flat land. Its altitude ranges between 1,500-3000 m.a.s.l. (BoPED, 1995). According to CSA 2007 population and housing censes, the current total population of the region is 4,314,456, and out of which 80.47% lives in rural area. According to the new administration set up since 2000,

Tigray is divided into seven political zones, namely: East, Central, Northwest, West, South, South - Eastern and Mekelle (the regional capital), and it has 35 rural *Weredas*. Agro-climatically, it is classified into *Kolla* (low land), which is below 1,500 meters above sea level, *Weina Dega* (mid high land) which rises to 2300 meters above sea level. The mean annual rainfall of the region varies from 450 to 900 m.m (BoPED, 1993), which makes the region usually deficit in food.

Agriculture is the mainstay of the regions economy and the basis for the livelihood of the majority of the people. However, it is very traditional and highly depends on rainfall. The regional income account survey shows that agriculture contributes to the regional economy (GDP) about 57 percent. Of the total area of the region only 19 percent is cultivable and the average land holding size per household ranges from 0.5 to 1 hectare, (BoPED, 1997).

1.1.3. GENERAL DESCRIPTION OF THE STUDY AREA

LOCATION

Kafta-Humera woreda is located in the Western zone of the region and is bounded by the latitude $13^0\ 43^1$ to $14^0\ 28^1$ North and longitude $36^0\ 20^1$ to $37^0\ 31^1$ East. The woreda covers an area of approximately 640,000 hr, consisting heterogeneous mix of flat plain, undulating plains, undulating to rolling, and chain of complex mountains, isolated hills, valleys and gorges. The area climatically varies from *Woina Dega* to *Kolla* reflecting an altitude ranging in 1849 metre around *Bil - Amba* to 560m around *Tekeze* River. Its mean annual rainfall ranges between 900 and 1,100 mm (BoPED, 1997), which is fair and sufficient amount to produce lowland crops such as cotton, sesame and sorghum. In addition, the lowland areas of the western flank are rich in natural resource potential, which are covered with grass, bushes and trees. Out of the total area of the *woreda*, about 34.5% (220,518.6 hr) is cultivable.

Furthermore, 46.9% (300,309.5 hr) is located in lowland and the rest 53.1% in high land, (Land Use Study of the *Kafta Humera Wereda,* Volume 4, pp: 2)

The main means of subsistence for the majority of the people is agricultural production supported by off-farm income generation such as labour hire out, trading and petty trading (Abay, 2005: 7 – 8). The main crops cultivated by big farmers (investors) are sorghum, sesame and cotton which are marketable crops. In addition to the above crops: *Teff,* Finger millet, Chick pea, Maize, Rap seed, *Bultug* and *Nug* are the major and minor crops of the small peasant farmers.

POPULATION

According to CSA 2007 population and housing censes, the current total population of the *Kafta Humera wereda* is 357,545, and out of which 286,001 (80%) lives in rural area.

ACCESSIBILITY

The main roads *Humera – Gonder* and *Humera - Shire* are all - weather roads linking *Humera* to other areas. Currently these roads are under construction for asphalt pavements. Furthermore, there are other main links contributing transport service to the *wereda* substantially. *Ba'eker –Adiremetse, Humera – Abderafi, Maytemen – Maygaba, Dansha-Tsegedie,* Division-*Embagalay* are some road main networks in the area. Besides the *Humera (Turkan)* Airport station is under construction. However, the electric and telecommunication services are at their rudimentary stage with poor services.

CLIMATE

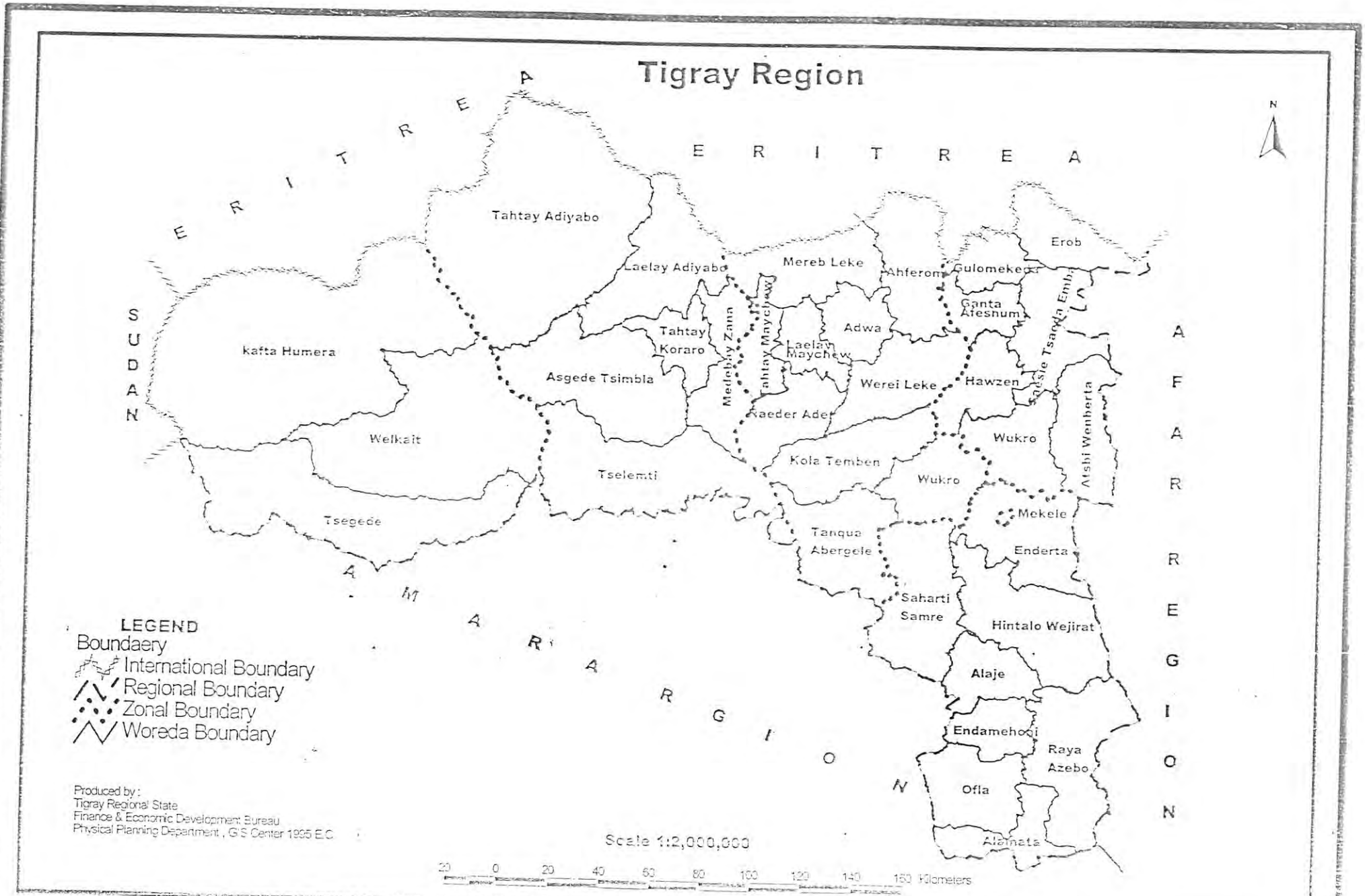
Climate is a controlling physical factor in agricultural land use. It largely determines the nature of vegetation; and its interaction with relief and soils is particularly important for land use. There fore, the adaptation of crops is also dependent upon its climatic conditions, particularly on rainfall and temperature.

The mean annual rainfall of the *Kolla* agro Ecological zone is 581.2 mm 3 years record (1994-1996), and the mean annual rainfall of the *Woinadega* agro-ecological zone is about 1102.5mm. Five years (1993-1997) record, mean annual temperature is 28.5^0c. The mean

annual maximum temperature is 37.6^{0}c and the mean annual minimum temperature is 20.2^{0}c, (Land Use Study of *Kafta Humera Wereda* Volume 4, 1998 Pp: 3 – 4)

PHYSIOGRAPHY

As mentioned earlier, in the study area altitude ranges from approximately 560m. a.m.s.l. in *Tekeze* River (near the Sudan boarder) in the north up to 1849m. a.m.s.l. in the *Bil-Amba (*around *Midacha)* south east of the study area. The altitude difference makes some difference in the area's climatic condition and land forms. In general, the area is characterized by flat plain to undulating plain in the north, north west, west, south west and central part of the project area and chain of mountains, escarpments, valley and gorges in the south, south east, east, and north east, (Ibid).


Tigray Region
ERITREA
ERITREA
SUDAN
AFAR REGION
AMARA REGION
N
Tahtay Adiyabo
Laelay Adiyabo
Mereb Leke
Ahferom
Gulomekeda
Erob
Ganta Afeshum
Laelay Maychew
Adwa
Tahtay Koraro
Medeby Zana
Tahtay Maychew
kafta Humera
Asgede Tsimbla
Werei Leke
Hawzen
Kaeder Ade
Welkait
Wukro
Kola Temben
Tselemti
Wukro
Mekele
Tsegede
Tanqua Abergele
Enderta
Saharti Samre
Hintalo Wejirat
Alaje
Endamehoni
Raya Azebo
Ofla
Alamata
LEGEND
Boundaery
International Boundary
Regional Boundary
Zonal Boundary
Woreda Boundary
Produced by :
Tigray Regional State
Finance & Economic Development Bureau
Physical Planning Department , G/S Center 1995 E.C
Scale 1:2,000,000
20 0 20 40 60 80 100 120 140 160 Kilometers

Declaration

I declare that this thesis is my original work and has not been presented for a degree in other university, and all sources of materials used for the thesis are duly acknowledged.

Name: Gebregziabher Gebreyohanes Desta

Signature _____

Date February 2009

Place _____

This thesis has been submitted for examination with my approval as a university advisor:

Dr: Assefa Tolera

_____