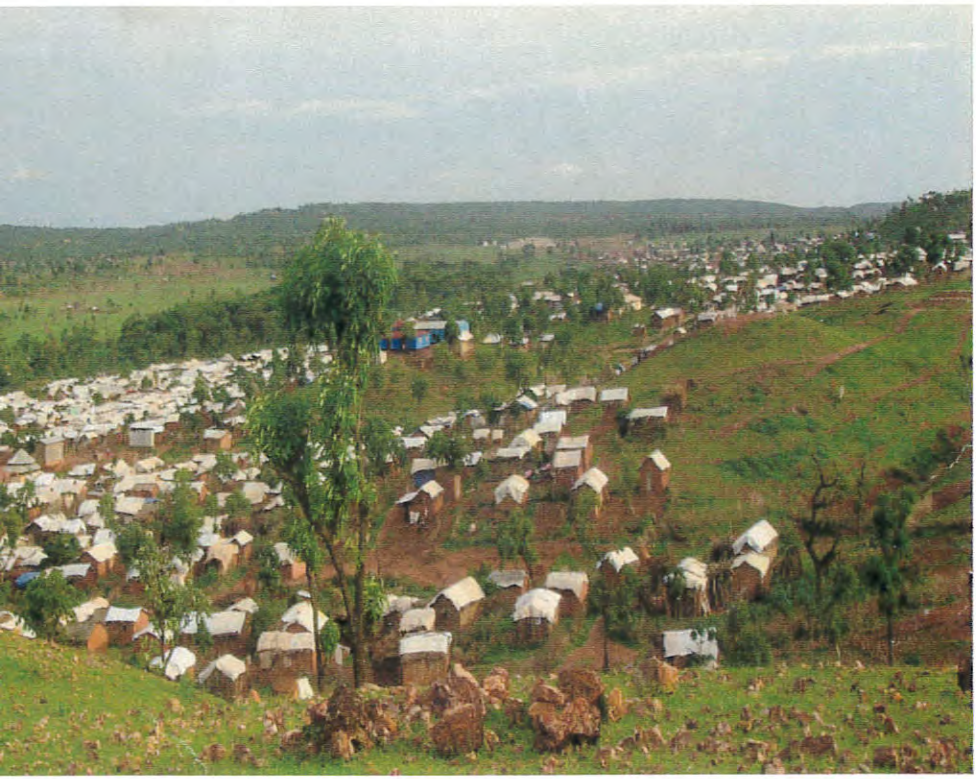
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THE CASE OF ERITREAN REFUGEES IN AND AROUND SHIMELBA CAMP, TIGRAY NATIONAL REGIONAL STATE, ETHIOPIA.

A Thesis Submitted to the School of Graduate Studies of Addis Ababa University in Partial Fulfillment of the Requirements for the Degree of Master of Arts in Development Studies in Environment and Development

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Title

The Need for Integrated Natural Resource Management (INRM) in Refugee Settlement Areas: A Case Study of Eritrean Refugees in and Around Shimelba Camp, Tigray National Regional State, Ethiopia.

BY

Haileselassie Gebremariam Tekleyohannes

DEVELOPMENT STUDIES

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DEDICATION

I dedicate this thesis to my late mother Asefash Zemichael, my father G.Mariam T.Yohannes, my late sister Alganesh G.Mariam and the rest of my family for their affection, encouragement and support.

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ACRONYMS

ARRA	Administration for Refugee and Returnee Affairs
CARE	Cooperative for Assistance and Relief Everywhere
CSA	Central Statistics Authority
DFID	Department for International Development (UK)
EMA	Ethiopian Mapping Authority
EWG	Environmental Working Group
FAO	Food and Agricultural Organization
FFW	Food for Work
FGD	Focused Group Discussion
GRS	Gambella Regional State
GTZ	Gesellschaft fur Technische Zusammenarbeit (German Agency for Technological Cooperation)
HDW	Hand Dug Well
ICARA	International Conferences on Assistance to Refugees in Africa
IDR	Institute of Development Research
IGAD	Intergovernmental Authority on Development
INRM	Integrated Natural Resource Management
IPs	Implementing Partners
IRC	International Rescue Committee
IUCN	The World Conservation Union
NGOs	Non-Governmental Organization
NRM	Natural Resource Management
PRA	Participatory Rural Appraisal
RAD	Refugee aid and development
RESCUE	Rational Energy Supply, Conservation, Utilization and Education (GTZ project, Kenya)
SAFIRE	Southern Alliance for Indigenous Resources
SPSS	Statistical Package for Social Scientists
SWC	Soil and Water Conservation

SWOT	Strength Weakness Opportunity Threat
TDA	Targeting development assistance
TLU	Tropical Livestock Unit
TNRS	Tigray National Regional State
UNCHS	United Nations Center Human Settlements
UNDP	United Nations Development Program
UNEP	United Nations Environment Programme
UNHCR	United Nations Higher Commissioner for Refugees
WARDO	Woreda Agricultural and Rural Development Office
ZOA	Zoud Oust Asia (in Dutch Language South East Asia)

ABSTRACT

In Ethiopia, the Tigray national regional state, due to its geographical proximity to Eritrea, has been hosting around 15,000 Eritrean refugees fleeing from their country of origin crossing the Ethiopian border starting from May 2000 because of the worse political and socio-economic conditions in Eritrea especially after the Ethio-Eritrean war. As large groups of people are settled in an area, they exert pressure on the natural environment especially in the case of refugees where insufficient assistance is provided from relief organizations. The areas of refugee settlement have a direct bearing on the environment and the environment, in turn, has a direct bearing on the welfare and well being of people in the vicinity. And it is not realistic to expect that the current carrying capacity of the refugee settlement area can withhold the increasing number of refugees. This has resulted in local settlers in the area to compete for scarce natural resources which have lead to a growing tendency of conflict between the refugees and the locals.

Therefore, it was crucial to examine the current natural resource degradation level, the socio-economic factors of refugees and locals towards natural resource consumption, assess the cause of resource conflict and evaluate the current natural resource management practices to recommend possible alternative actions and to take the lesson to similar refugee settlement areas.

In order to achieve the objectives, qualitative and quantitative methods were used. Data was collected from primary and secondary sources. The qualitative aspect focused on major PRA tools, while the quantitative aspect was based on formal survey (150 sample households), which was analyzed using descriptive analysis, t-test and Chi-Square test.

The high population pressure has seriously affected and damaged the scarce natural resources and the agricultural productivity of the study area. There is a serious problem of fuel wood, grazing land and water resource scarcity which resulted due to the competition for these resources and lead to a conflict between refugees and the local population. However, Natural resource management practices taken by the concerned bodies to date were found to be minimal compared to the environmental impacts. The result suggests the need for user oriented, integrated, participatory approach to ensure sustainability of natural resource use by refugees and local communities, which is in line with the basic principles of Integrated Natural Resource Management (INRM).

1. INTRODUCTION

1.1 Background of the Study

Out of the global refugee population of around 10 million recognized by the UNHCR, 38.65 per cent were living in Asia, with a further 32.9 per cent in Africa, 20.7 percent in Europe, and just 6.27 per cent in North America (UNHCR, June 2007). These refugees have left their home to migrate to another country, and many more that have left their homes for another part of their country of nationality or birth. They leave for a variety of reasons—from inability to find employment and desire for a better life in another place, to escape from torture, persecution, or imminent danger to their lives. The trend of refugee number had been decreasing for the last five years, but currently due to current crisis in Iraq and Sudan the number is increasing. Given continued insecurity, political violence, lack of human rights, and persecution in the world, it is likely that the numbers of refugees in a broad sense will increase (Encyclopedia Encarta, 2005; UNHCR, 2007).

In general in Sub-Saharan countries particularly in the horn of Africa, there is high refugee mobility in the area. This has been due to civil war, recurrent drought, unemployment...etc. Ethiopia has been known for its long history of hosting refugees. Ethiopia is one of the 110 Nations of the world, which accede the 1951 UN Convention to receive refugees. According to UNHCR and ARRA there are about 100,000 registered refugees and another 100,000 self assisted refugees which majority of them are from Sudan, Somalia and Eritrea are hosted in seven different camps and in different towns of the country respectively (UNHCR, 2007; ARRA, 2006; Blain, 2003).

As large groups of people are settled in an area, they exert pressure on the natural environment. In the case of refugee situations, at the initial stage of arrival, the focus of relief agencies is on saving lives through the provision of food, water, shelter, and medicinal services. However, refugees starting from their arrival in an area begin to make use of the natural resources of the area to meet their need for fuel wood, construction and in some cases cultivation (UNHCR, 2005; Blain, 2003).

The areas of refugee settlement have a direct bearing on the environment. The state of the environment in turn will have a direct bearing on the welfare and well being of people living in the vicinity (UNHCR and IUCN, 2005).

The Shimelba Refugee camp is among the seven refugee camps in Ethiopia which is hosting around 15,000 (as of June 30, 2007) refugees which are largely comprised of the Tigrigna and Kunama ethnic groups of Eritrea. The prolonged presence of large number of refugees in the camp and the insufficient assistance has led to excessive destruction of the environment and deterioration of natural resource base. This is obvious from what can be observed in and around the refugee camp (Shimelba refugee camp progress report, 2007).

Therefore, examining the extent of natural resource degradation in the area and investigating the socio-economic characteristics of refugees and hosting population in relation to natural resource consumption are becoming imperative. This is in order to design appropriate natural resource management approach which is not an option but rather a priority area of research and development.

1.2 Statement of the Problem

Although substantial progress towards reducing environmental degradation was made during the last decade in Sub-Saharan countries, significant environmental degradation still exists and threatens the development endeavor. In Ethiopia, the major environmental problems are land and soil degradation, deforestation and overgrazing (Blain, 2003; Sebba, 2006).

Different literatures show that many recent refugee crises can create adverse environmental degradation. However, the environmental degradation is borne by the refugees and host populations, though varying proportion, depending on the situation. If the influx of refugee is high it can seriously threaten the integrity of local ecosystems and the economic activities dependent upon them (ibid).

In Shimelba Eritreans' refugee camp located in the western Tigray, the refugee number has been growing from time to time. Recently, around 300 new refugees per month enter into the camp (Shimelba refugee camp quarterly report, 2007). New and innovative approaches to reaching these people are urgently needed. It is simply not realistic to expect that the current carrying capacity of the land will withhold the increasing number of refugees and local settlers in the area. It is also not realistic to assume local people in particular and the region in general will not be affected by inappropriate or excessive dependency on the natural resources. Therefore, it is crucial to examine and estimate the current natural resource degradation level to recommend possible alternative actions.

Competition for resources is almost always at the heart of every conflict. Failure to manage natural resources effectively and equitably contributes to conflict—at the regional, national and local levels (Sebba, 2006). There is a growing sign within the study area that conflicts arise between locals and refugees. It is important to begin to think more strategically about how to tackle conflict.

It is clear that decades long civil conflict as well as a recent war with Eritrea, which consumed a disproportionate amount of the country's resources, have contributed to the environmental degradation. Another reason for the degradation in the study area is related directly to unwise management of resources.

In the past, attempts have been made in the direction of rehabilitation and prevention of natural resource degradation. But the effort has been limited in interventions like afforestation, soil and water conservation activities and energy saving activities which are characterized by minimal success rate when it is compared with the extent of the problem (Shimelba refugee camp Report, 2007).

1.3 Objectives of the Study

The General Objective of the study is to examine the extent of natural resource degradation and investigating the natural resource consumption of refugees and host community. It also tries to generate empirical evidences and accordingly contribute to the knowledge and understanding of concerned stakeholders and implementing partners in their future planning.

The Specific Objectives are:

1. To examine the current status of natural resource degradation in the study area.
2. To examine the natural resource consumption of refugees and locals.
3. To assess the existence and causes of resource conflict.
4. To evaluate the existing Natural Resource Management practices and approaches.
5. To draw development, research and policy implications.

1.4 Research Questions

The basic research questions that will be answered through this enquiry are the following:-

1. What is the status of natural resource degradation in the area?
2. What are the natural resources consumption of refugees and non- refugees?
3. What are the major existing resource conflicts and their causes in the area?
4. What are the existing NRM practices and approaches in the area?
5. What are the alternative development, research and policy interventions?

1.5 Significance of the Study

The Refugee camps in different parts of Ethiopia, especially in degraded areas, are under pressure from refugees and lack of intensive intervention of non-governmental organizations (NGOs) and government organizations. Even the extent of degradation has not yet been studied in the area. Thus it has remained somewhat a puzzle as to why the current degradation has not been given the intense attention in the country. This is especially true in the study area where the environmental good scarcity is high and the communities hardly satisfy their basic needs.

The knowledge of the link between refugees and local communities' livelihood with the environment will enable the concerned bodies to design effective measures to stabilize and arrest the degradation in time. In other words the results of this study will help those organizations working in natural resource management to design efficient way of decreasing environmental degradation.

1.6 Scope and Limitation of the Study

This study analyzes the effect of socio-economic, institutional and environmental resource scarcity factors on refugees and local community around Shimelba refugee camp in Tahtay Adyabo Woreda in the Tigray National Regional State.

The study was limited to one Kebele (Tabia) where the refugees and locals commonly share same natural resource base. However, the results of the study and the method of analysis can be applied to other camp areas of the country with similar socio-economic, agro-ecological and environmental resource scarcity conditions. Besides the study used cross sectional data to analyze degradation pattern, but it is known that current decision on natural resource management may not depend only on current environmental situations because, it is a function of past level of environmental condition. So it would be more appropriate if the study had used time series data. But this data was not available and unable to get in the given specific time horizon.

2. LITERATURE REVIEW

2.1 Refugee and Development (RAD) Theories

As part of UNHCR's mandate, several discussions around Targeting Development Assistance for refugee solutions (TDA) were developed within the organization building upon the legacy of the Refugee Aid and Development (RAD) debate. RAD theories, which identified for the first time the multifaceted links and synergies between development and refugee issues (Betts, 1984), were constructed as a follow-up of the lessons derived from the two International Conferences on Assistance to Refugees in Africa (ICARA I and II) of 1981 and 1984 respectively. While ICARA I put the focus mainly on building infrastructural capacity to facilitate the hosting of refugee populations, ICARA II asserted the need that refugee assistance be development-oriented and take into account host populations' needs (Betts, 2004; Betts, 2005; Smith, 2005).

In the early 1980s international attention turned to protracted refugee situations in Africa. Instead of promoting refugees' rights in exile, however, governments adopted an approach grounded in the view of refugees as burdens. As compensation, donors provided large-scale turnkey projects including roads, irrigation, drainage, and buildings in segregated settlement areas. This idea was further developed in two ill-fated International Conferences on Refugees in Africa (ICARA) in the early 1980s. The conferences evaded the central issues of refugee employment, security of status and ability to operate as an economic actor in the country of asylum and the extent to which governments were responsible. While donor countries saw the purpose of the programs to be the permanent settlement of refugees in countries of first asylum, they did not condition aid on the enjoyment of rights.

The host countries saw the conferences as ways to fund development projects unrelated to refugee rights. Even with technical assistance, host countries were unable to demonstrate that refugees actually were a burden or to show how infrastructure projects would help (Meyer, 2006; Betts, 2005).

RAD theories managed to draw attention to the situation of host populations working along the assumption that refugees represent a problem or a burden, rather than an opportunity (Kuhlman, 1990). As Harrell-Bond asks: "Why are refugees and displaced people defined as a welfare problem requiring 'relief' or 'care and maintenance', rather than as people who have problems, but who also have the determination to survive and who are ready to put their energies into productive work that could also benefit their hosts?" (Mehta & Gupte, 2003:18). Recently, it has been recognized that refugee migrations bring both costs and benefits to host countries (Baker, 1995). Refugees generally impose a burden on the local economy, infrastructures and the environment. At the same time, however, refugees can also benefit hosts by expanding consumer markets for local goods, bringing in new skills and indirectly opening up job opportunities for locals thanks to the presence of relief agencies. Thus, the reception of refugees can sometimes be seen as part of a government's broader development plan (Daley, 1993).

In addition refugees impose a variety of security, economic and environmental burdens on host countries, but also embody a significant flow of resources in the form of international humanitarian assistance, economic assets and human capital. These refugee resources represent an important state building contribution to the host state, but security problems and other hindrances inhibit the state's ability to access and control them. Some argue that

the potential benefit for the state and its citizens go beyond the burdens imposed by a mass influx. Refugee resources and security threats potentially provide long-term gains, and, by compelling the state to strengthen its grip on border areas, enable the state to 'harden' its presence there. However, for host states to realize the potential of refugee resources and continue hosting refugees, they must be assisted by appropriate humanitarian programmes (Jacobsen, 2002; Smith, 2005; Amstislavski, 2001).

2.2 Refugee Policy in Africa

In African case, self-settlement of refugees rather than government planned settlement schemes was favored at policy level. Self-settlement schemes have advantage of minimum cost in social, psychological and physical adjustment sustains a better chance to contribute positively in social, economic and political areas (IGAD/UNDP, 2000).

Synthesizing Africa's environmental and refugee statutes needs outlining relevant sections of different international conventions and national laws. The bottom line is that international refugee instruments were adopted well before environment emerged high on the global agenda. Since environmental impacts resulting from involuntary movements were not anticipated, no remedial measures are contained in these international instruments (Kamaru, 2000).

For instance, the Convention relating to the Status of Refugees of 28 July 1951 does not require that refugees be confined in camp situations. In fact the 1951 Instrument states that each contracting State shall accord to refugees lawfully in its territory the right to choose their place of residence and to move freely within its border, subject to any regulations

applicable to aliens generally in the same circumstances. Further, constitutions of several countries require equal and non-discriminatory treatment to all 'persons' residing within any State. The definition of "persons" includes refugees and consequently offers protection by national laws. Refugees are also obliged to respect laws of the hosting nation. The Convention relating to the Status of Refugees, once ratified by a State, cannot be applied selectively to exclude refugees –who are persons governed by the national laws – from enjoyment of fundamental liberties such as freedom of movement, speech and association. Hence, confinement of refugees in camps cannot be justified from an international legal point of view. If the right to movement of refugees is accepted, then new approaches to mitigate the environmental impact that is caused by the high population density in refugee camp areas ought to be addressed (Smith, 2005; Gorman, 1993).

A review of Africa's refugee and environmental laws would be a useful contribution in determining the extent to which refugee-related environmental issues are adequately covered. A focus solely on saving lives in the very short-term is not enough, since an essential condition to achieve humanitarian protection is to analyze the relationship between the governments of host countries and the refugees settled in camps. These relations are deeply influenced by the refugee policies implemented by the host countries whose role is crucial in promoting or preventing livelihood security among the camp dwellers. The focus of refugee environment work is often limited to a single country. However, to comprehend and address environmental impacts, an ecosystem-wide approach could be more appropriate in some cases. This might include working on multi-country shared ecosystems, which may have a bearing on ecological processes in a number of

states, thus influencing regional stability, human welfare and economic development. Ecosystems do not respect political boundaries (Smith, 2005; Betts, 2005; Rutinwa, 2003).

At the national level there is sometimes a need for better coordination and communication between environmental and refugee planners. Many environmental projects in refugee-affected areas are being undertaken in isolation of other environmental activities/processes initiated by the host government or other non-relief agencies. For example some countries have developed Environmental Action Plans or National Biodiversity Strategies and Actions that cover districts that are hosting refugees but refugee environmental impacts or related mitigation of efforts are often not explored in detail. Moreover, few mainstream environmental agencies work with refugee population at the field level (Rutinwa, 2003).

2.3 Refugee Crises and Environment

Political conflicts in various parts of the world are, more and more often, of an extended duration. This means that return to home countries for refugees is increasingly delayed. At the same time, global terrorism and concerns about security have slowed processes of resettlement in traditional resettlement countries and, in some cases, the number of refugees who can be resettled has fallen and their countries of origin have been restricted. The increasing size of refugee population influxes to countries of first asylum has meant that host governments have been reluctant to facilitate local integration; indeed, local integration carries with it a connotation of permanence as well as security problems and resources burdens. Failure to find acceptable durable solutions among these three options have combined to result in increasing numbers of refugee situations worldwide that can be described as 'protracted'(Amstislavski, 2001; Jacobson, 1997).

As regards the relation between refugees and the environment, it is well acknowledged that their impact on the host environment can be severe, as the primary concern of the refugees is safety and welfare and not the protection of the environment and natural resources. In a matter of weeks ten of thousands of people are grouped in crowed refugee camps situated often in barren and treeless areas, where firewood is scarce and expensive. As a result, among the many issues characterizing refugee camps the most important is fuel shortages that can affect not only refugee food security, but also their physical security, especially when they are women. The women of Mtabilia camp (Tanzania), for example, must travel miles to collect firewood and that makes them vulnerable to rape and robbery by gangs of bandits who frequent the region (Rutinwa, 2003; Jacobsen, 1997, Betts, 2004).

2.3.1 Refugee Camps and Environmental Degradation

The rapidly developing refugee crises can produce massive environmental impacts that ripple over the physical domain of the displaced population and its host region. This is often a consequence of a rapid increase in the camp population, compounded by poor prior assessment and logistical decisions (Rutinwa, 2003). The effects of a damaged habitat generate impact on the refugees and the local populations. In the absence of mitigating measures, economic, social, health and cultural impacts can be devastating.

Those who favor keeping refugees in camps argue that since environmental damage is inevitably associated with a mass influx, it is better to concentrate and segregate refugees in camps where environmental damage can be contained rather than spread throughout the receiving region. In camps, it is argued, relief inputs can provide refugees with food, firewood or fuel alternatives and water, and in so doing decrease their need to remove these

resources from the local environment. In addition, segregating refugees will reduce their economic and cultural impact on the local community (Whitaker, 1999).

But camps are associated with a unique set of environmental problems and risks (Gorman, 1993). An initial problem concerns start-up costs. After land has been appropriated, at least partial deforestation occurs in order first to clear land for the camp and then to provide construction materials and fuelwood. Although there is no concrete evidence on the effect of land clearance (particularly long term effects and recovery rates), in semi-arid or already degraded areas, such as the Dadaab complex in Kenya, there were significant ecological consequences associated with land clearance for camps.

A second problem derives from the concentration of large numbers of people in camps. Although relief agencies and host governments claim that by restricting refugees to camps they can be isolated from the surrounding community and environment, in practice refugees cannot be confined to camps unless very strict and effective controls are imposed. Refugees' needs for fuelwood can be only partially met by relief inputs. Relief deliveries are often insufficient to meet everyone's needs, or they can be delayed by months and large number of refugees must then try to meet their needs outside the camp (Wilson et al, 1989; GTZ, 1994). When camps are situated in semi-arid or otherwise ecologically fragile regions this concentrated and localized increase in demand can lead to rapid degradation. The situation is aggravated when refugees have herd animals (although it is often the case that herd animals are not permitted in camps, or that refugees sell them because cash is needed). The problem compounds itself as the supply of firewood, thatching grass or water declines and these resources become treated as commodities. In Malawi, where there was

significant deforestation associated with the Mozambican refugees, Wilson et al. (1989) showed that increased fuelwood collection by refugee wood vendors (whose opportunity costs for collecting wood are relatively low) led to a fall in the effective price of wood, and a consequent increase in local fuelwood use. People also sell fuelwood or exchange it for food rations during times of food insecurity such as during the hungry season before the harvest when food stocks are depleted.

2.3.2 Environmental Degradation in Refugee Settlement Areas

The problem of how to define environmental degradation is a much-debated one. In this paper the term 'environmental impact' refers simply to the process of change that occurs with respect to forests, soil and water. This process is often negative, because the environmental pressures imposed by an influx may lead to loss of woodland and rangeland, increased soil erosion and a breakdown of soil ecology, and reduction in groundwater recharge and deterioration of water sources (Black, 1994b; Hoerz, 1995). However, environmental degradation is partly in the eye of the beholder. What local people and refugees perceive as necessary and even sustainable use of natural resources may be seen by national governments and international agencies as threats to the conservation of particular ecosystems (Jacobsen, 1997).

Usually the most acute degradation occurs during the initial arrival phase of an influx, when often-desperate refugees move into and through an area with little regard for their impact other than to secure their own survival. For example, as reported by UNHCR/FAO (1994), when some 400,000 Rwandan refugees entered the Ngara and Karagwe regions of western Tanzania in April-June 1994, local communities reported that damage was

inflicted on fields and crops as refugees harvested foodstuffs wherever they could and felled coffee plants for firewood or shelter-building materials. However, damage to crops and fields appeared to be a temporary phenomenon, concentrated around the border post where large numbers of refugees were held up for several days after their arrival. The damage was curtailed with the establishment of the camp at Benaco. Local water supplies also suffered from increased demand during the arrival phase (Rutinwa, 2003).

According to the UNHCR, the major environmental problems related to refugee areas are deforestation, soil erosion and depletion and pollution of water resources (UNHCR, 2005). Over the past few decades, evaluating the physical indicators of environmental degradation like deforestation, soil erosion and decline in wild life species proves the above-mentioned problems.

Although deforestation is a problem in many countries, in the case of refugees it involves an additional socio-economic dimension as they use-and to some extent may depend upon-other people's commodities. In the early stages of a refugee crisis, significant impacts can be imposed on forests and biodiversity, by the harvesting of timber for cooking and shelter and the hunting of wildlife for food. Potential impacts can be minimized or exacerbated based on the location of refugee facilities. The degree of competition with local communities for forest products and forest services will naturally vary considerably from place to place; at its most extreme it may even result in open hostility (UNHCR, 2005).

Little literature exists on the relationship between social-economic status of refugees and environmental action in Ethiopia. Environmental concerns related to refugee influences are increasingly becoming an important agenda in Ethiopia. Particularly, regional governments

are becoming increasingly concerned about refugees' impacts on the natural resource base. The depleted vegetation cover and the scarcity of natural water sources are noticeable in surrounding of the camps. A study made by UNHCR/ Ethiopian Mapping Authority (EMA) in 2001/02 revealed a serious level of environmental degradation (ARRA and GRS, 2005). The scale of mitigation efforts thus far has apparently not measured up to the level of degradation in refugee settlement regions of Ethiopia. The environmental impact assessment study revealed a serious level of environmental degradation, which environmental intervention is being viewed at a very micro scale. A clear need of scale up and build the capacity of intervention programs on areas of community based natural resources management is critically important (UNHCR, 2006).

Over the years many Liberians and Sierra Leoneans have been forced to abandon their homes because of conflicts in West Africa. To ascertain the environmental impact of refugees in Guinea, UNEP in close collaboration with UNCHS and UNHCR executed rapid pre-assessment consisting of desk study and field mission in November-December 1999. In Guinea refugee were allowed to freely locate in small camps close to existing villages, which has resulted in a high level of integration with the local population. It was, therefore, difficult to isolate the extent of environmental impact of refugees from those caused by other factors. However, it was noticeable that there was an ongoing land degradation and deforestation in most areas affected by refugee settlements (Jacobsen, 1997).

2.4 Views on the Impact of Refugees on Environment

Unlike established local communities, refugees do not have a strong emotional tie to, and interest in, the local natural environment in the area in which they have settled. Local people also live in a close social context which leads to greater respect for existing environment related rules and regulations. Many such rules play an important role in preventing non-sustainable exploitation of natural resources (IGAD/UNDP, 2000).

The conventional reasoning is straightforward: by creating a sudden, sharp increase in population density, refugees and their herd animals impose a population shock on asylum communities which cannot withstand the strain on resources. Deforestation occurs as refugees seek out firewood and shelter materials, grazing land becomes denuded as refugees' herd animals strain the carrying capacity of the range, water sources cannot support greatly increased utilization and become polluted and depleted, and there is garbage and other waste accumulation around refugee camps (Black, 1994a; Jacobsen 1994). In addition, refugees are seen as 'exceptional resource degraders' as a consequence of their poverty, short time horizons, lack of local environmental knowledge and traumatized psychological status (Myers, 1993).

There are many gaps in empirical research such as complications related to the definition of variables and their measurements. Researchers have shown that in some cases refugees are blamed for environmental problems that were not of their making (Allan, 1987; McGregor, 1993), while in other cases their presence is not perceived as a problem by local people (Leach, 1992). Kok (1989) showed in Eastern Sudan, that an existing process of environmental degradation will be aggravated by a refugee influx; but this is different from

being caused by it. Also, the refugee context is an unstable one, characterized by war and civil disorder, and it is frequently the circumstances arising from this context which lead to environmental disturbances, rather than the refugees themselves. War can pre-empt access to the resources in certain areas and thus force people to over-use those in more accessible areas. Local people can take advantage of the disorder created by an influx to change their established practices of resource use and become more exploitative (Allan, 1987). These considerations suggest that the environmental degradation associated with refugees is not inevitable and that the degree and extent of degradation depend on a variety of factors.

Many of the factors that mitigate refugees' environmental impact also influence their successful integration into the host society. These factors include the length of time over which refugees have been displaced to an area; the size of the displaced population and ratio of displaced to local people; the relationship between refugees and local people; and the adequacy and appropriateness of international assistance provided to refugees, local people and host governments (Black, 1994a; Kibreab, 1991; McGregor, 1993).

According to UNHCR (2005) among the main factors which influence the type and scale of the impact are the number of refugees involved; duration of stay; housing arrangements; fragility of local ecosystems; carrying capacity of allocated site; areas of land allocated to refugees; general availability of forest resources; kind of cooking stoves and practices used; types of building materials; food people consume; and planning, coordination and control of forest related activities undertaken for and/or by the refugees.

2.5 Refugee and Host Population Relationship in Refugees Settlement Areas

In the contexts, like in most parts of Africa, where receiving countries already face socio-political and economic backwardness, consistent refugee inflows may pose additional development challenges and lead to the spreading of conflict in the host communities. Additionally, if the aid is delivered without an accurate understanding of the local context, the international community may contribute to the creation of dangerous imbalances between services available to the refugees and those available to the host communities (Montemurro, 2005).

Research has shown that the host-refugee relationship is particularly troubled when it is in the presence of a policy of refugee confinement to settlements/camps (Chambers, 1986). Establishing parallel services may undermine local institutions by attracting the best local staff to earn the higher salaries paid by humanitarian organizations, while targeting relief to camps, surrounded by people often as poor as or poorer than refugees, may generate hostility from local communities (Harrell-Bond, 1986). In general, the host-refugee relationship appears to be multifaceted with those hosts who already had access to resources and power being able to exploit the refugee situation and capitalize further while the most disadvantaged hosts struggle to maintain access to even the most basic resources (Chambers, 1986).

There has been little academic research on the impact of refugees on host populations although, over the last two decades, the debate has shifted towards a clearer understanding of the "twin predicaments" of economic underdevelopment and refugee movements,

leading to the assumption that "they are in a very real sense linked and that neither can be fully resolved without taking into account the other" (Gorman, 1993).

An influx of refugees is often felt in local markets. While some sections of local population benefit, the poor are affected adversely as higher demand pushes prices up. Deforestation, land degradation, and water resource depletion all carry with them an economic cost for the local population. Almost the reduced availability of fuel, housing materials, medicines, and wild game derived from forest resources. Severe environmental consequences could have a far-reaching impact (UNHCR and IUCN, 2005).

The change associated with large number of influxes has also positive bearings in encouraging and enabling additional development. Local host populations in this regard can benefit from boost in trading, improvements and medical services (UNHCR and IUCN, 2005).

Local host communities sometimes can be benefited because refugees can be good resources for economic growth and development. Refugee craftsmen and traders have provided regular access to a variety of goods in remote rural areas (Wilson, 1989). Agricultural or pastoral refugees can bring with them their skills, movable assets and their personal resourcefulness. Refugees can also provide a market and ready supply of cheap labor at different skill levels. Another important issue is security from the viewpoint of the host government. Refugee settlement decisions have always been intimately linked with national and international agencies.

2.6 Environment, Scarcity and Conflict

2.6.1 Concepts and Issues

Environmental scarcity is caused by the degradation and depletion of renewable resources, the increased demand for these resources, and/or their unequal distribution. Population growth and increased per capita resource consumption can cause depletion and degradation, which can in turn produce a decrease in total resource supply or, in other words, a decrease in the size of the total "resource pie" (Ohlsson, 1999).

But population growth and changes in consumption behavior can also cause greater scarcity by boosting the demand for a resource. So if a rapidly growing population depends on a fixed amount of cropland, the amount of cropland per person—the size of each person's slice of the resource pie—falls inexorably. In many countries, resource availability is being squeezed by both these supply and demand pressures (ibid).

Scarcity is also often caused by a severe imbalance in the distribution of wealth and power that results in some groups in a society getting disproportionately large slices of the resource pie, while others get slices that are too small to sustain their livelihoods. Such unequal distribution or structural scarcity is a key factor in virtually every case where scarcity contributes to conflict. The three sources of scarcity are degradation and depletion of renewable resources, the increased consumption of these resources, and/or their inequitable distribution often interact and reinforce one another (ibid).

Cross-boundary migration conflicts, sometimes referred to as caused by environmental refugees, reinforce potential conflicts in areas of economic decline, political instability, or

where traditional conflicts are already at hand. Migration of this kind is often triggered by a search for better conditions of survival (ibid).

2.6.2 Competition for Scarce Resources as a Cause of Conflict

A backdrop to life in a refugee camp is the gradually decreasing amount of incoming aid and resources from relief groups, which quickly move on to the next humanitarian crisis once there is some stabilization in the camp size and the security situation. Sometimes mounting tension between local population and the refugees exacerbates this situation. Competition between locals and refugees for insufficient resources (firewood, fodder, and water) can create conflicts and damage traditional and sustainable local system of resource management. For instance, in Balkans in the winter and spring months of 1999, Kukes, a small impoverished town in northern Albania with a population of 25,000 absorbed more than 100,000 Kosovo-Albanian refugees fleeing the war. Such a massive increase in population quickly overwhelmed local water, fuel, and healthcare resources. Local residents were deprived of firewood and fodder for their livestock, as tents covered many pastures. Scarcity of firewood for heating and cooking also forced women and children to spend long hours looking for firewood far from the camp. This exposed them to assaults and cold weather conditions. By the time of the refugees' return to Kosovo serious damage was caused to the traditional local system of resource management and the indigenous forest, which served a primary source of firewood, building material, and feed for livestock (UNEP, 2000).

With a number of benefits, notwithstanding merely survival, at stake, it is likely that conflicts might arise between the two groups. Several factors might have an impact on the varying degrees of likelihood of the eruption of tensions, from misperceptions about the real impact of refugees on the local environment and economy to demographic and ethnic balance change in the host society (Saleyhman & Gleditsch, 2004). In the end, however, conceptualizations about the impact of refugees on the host communities and the consequent host-refugee tensions tend to remain too broad. As pointed out by Whitaker (1999), "rather than asking whether or not the host country as a whole benefits, one should disaggregate the question: who benefits and who loses from refugee influxes and why?"

According Ohlsson (1999) the refugee presence in Eastern Chad negatively affected local access to environmental resources such as firewood and water. Many refugee camps are located in areas where environmental degradation and desertification were a problem even before the arrival of the refugees. In an area where trees are the primary source of fuel, deforestation constitutes a problem for both locals and refugees. Most of the conflicts opposing refugees and host communities reportedly have their source in competition over natural resources. Local women living in villages close to the camps have to walk double the usual distance to collect firewood. Confronted to such situation, the local population makes use of purported traditional rights over land and natural resources. Often the locals turn to open clashes and violence to prevent women from collecting firewood (Women's Commission, 2005).

In general, it has been widely documented that refugees are predisposed to become resource degraders, as deprived of their traditional leaders they end up using unsustainable resource use practices (Whitaker, 1999). In addition, refugees tend to make use of more resources than their local hosts. Surveys around the camp of Farchana in Chad found that refugees had cut a total of 9,800 trees plus 6,800 of a protected species between January and June 2004. Human exploitation of natural resources at the same time coupled with the cattle herds made the environment in eastern Chad. This was because most of the refugees fled with all their flocks, the resources available in the host country had to be shared between the refugees and their animals and the hosts. Deforestation and agricultural degradation in eastern Chad had social as well as environmental implications. Not only, in fact, those responsible for collecting firewood, generally women and children, have to spend more time and energy at the task by neglecting other usual activities (Women's Commission, 2005), but also degradation reinforces ethnic bondages. Damages to crops due to Arab herders existed in Chad and subsequent claims have always been resolved with the payment of an indemnity. However, the new 'crop damagers' mainly belonging to the ethnic group of the Zaghawa refuse to pay any indemnity because of their ethnic affiliation to the group in power in Chad (Montemurro, 2005).

Refugees in Chad from the humanitarian disaster in Darfur, Sudan, were increasingly involved in conflicts and open skirmishes with the local population over environmental resources such as grazing, wood and not least water. The local population initially helped the refugees, who belong to the same creed and ethnic group, and even may be relatives. With the international humanitarian intervention, however, inequalities have increased, since the refugees at least get handouts of food, while the local population is very

vulnerable after an unusually dry growing season. Add to this the fact the refugees now go out and fend for themselves, encroaching (sometimes against national and local laws) on scarce environmental resources, open conflicts have ensued (Ohlsson, 2004).

Though the negative impact of the presence of the refugees on host communities has been clearly attested, it is not possible to reduce the host-refugee relationship to a one dimension analysis. As demonstrated by some of the literature (Whitaker, 1999; Kuhlman, 1990), refugees may also induce positive changes within the host society. In general, in a given situation there are some individuals who benefit and some who lose. This cost-benefit analysis has also an important impact on the arising of intercommunity conflicts. Especially in situations where the resources necessary for the survival of both communities are endemically scarce, not only the real impact of the arrival of refugees but also the perception of the advantages/disadvantages experienced by host communities play an important role.

The broad pattern that has emerged is that where refugees are concentrated into camps subjecting the host communities feel a sense of numerical inferiority and experience the difference of treatment as per the delivery of relief aid, tensions are more likely to arise and ethnic bondages are more difficult to sustain (Amstislavski, 2001).

Generally, conflicts over land can be perceived as 'livelihood clashes' between refugees and nationals, since land is a critical resource for supporting livelihoods (Mugerwa, 1992; Verma, 2001:79). Hence it is important to understand the interplay between various factors that influence access to and utilization of land by both host communities and refugees.

Quite often, animals stray into refugees' agricultural plots leading to a conflict between refugees and local populations. Usually, conflicts arise when livelihoods are threatened and this threat can be internal (within the households or communities) or external-from outside the households or communities (Mugerwa, 1992; Verma, 2001). In all, conflicts over land between refugees and host populations have had negative impact on the way refugee access livelihood goals. Land, for the majority of refugees is central to their survival. In order to overcome the predicaments of land conflicts and inequitable access to resources, refugees have devised other livelihood strategies to ensure their survival and that of their children (Sebba K. R., 2006).

2.7 Integrated Natural Resource Management Approach

2.7.1 Environmental Protection in a Refugee Context

There is an increasing realization among all involved in refugee work that refugee situations often have negative impacts on the surrounding natural environment (UNHCR, 1996; UNHCR, 2002). The degradation of the natural environment affects the livelihood of the host population and the economy of the hosting nation at large by resulting in the need for higher investment to rehabilitate these resources (Blain, 2003).

Until the early 1990s, the refugee agency UNHCR focused all its efforts towards meeting the immediate needs of the refugees, putting aside considerations about the impacts that a large number of refugees would have on the natural environment of the hosting area (UNHCR, 2002). However, with the onset of the last decade of the century, the idea of incorporating environmental concerns into all sectors of refugee assistance schemes

emerged and was strengthened by the design and issue of an all embracing Environmental Guideline by the UNHCR, in 1996. The main objective of this guideline is to include environmental concerns and measures at all stages of refugee assistance with a main focus on undertaking preventive measures to avert serious environmental damage in refugee hosting areas.

Refugee related environmental problems require the involvement of a number of parties both at the local and international level. The main actors at the local level include the national government at the national and local level, the local host community and the refugees themselves. At the institutional level, the main parties are the UNHCR, international NGOS and donors. Since environmental issues touch upon different actors, the effectiveness of any intervention in the area is highly dependent on the coordination and cooperation among these actors (Blain, 2003).

2.7.2 Sustainable Environmental Management Practices in Refugee Hosting Areas

Although environmental problems confronting UNHCR, refugees and local populations vary a great deal due to specificity of an area's climate, the physical setting and socio-economic conditions, there are several key principles which are applied in UNHCR's environmental work. Four major principles summarized in the UNHCR Environmental Guidelines (1996) are: integrated approach, local participation, cost effectiveness and prevention before cure.

Raising awareness of environmental issues in refugee operations is an important part of most projects supported by Engineering and Environmental Services Section of UNHCR, both at local and government levels. So too is ensuring that local training is encouraged and certain tools and materials provided. To increase awareness and enable managers and others better deal with managing environmental concerns in such situations, UNHCR has, since 1998, hosted regional training programs for selected staff, implementing partners and government agencies. Mainstreaming these actions into programmes and transforming policies, such as those outlined in the Environmental Guidelines, into action is an increasing area of growth and collaboration with partners.

Due to the lack of better tools, relief groups rely almost entirely on field experience in addressing environmental issues. At this point the overwhelming priority of relief efforts is saving lives and there is little time to address longer-term issues such as future impact on environment and sustainability. Use of locally available renewable energy sources and environmentally sound design approaches in the construction and operation of camps seldom influence the criteria that inform the design of camp environments (Amstislavski, 2001).

Another additional element is considering of utilizing opportunities presented due to increased participation of refugees. Appropriate incentives of transferring skills; provision of wood, food, money in exchange for labor and skills inputs of refugees is important. Environmental budget requests need to be integral part of special funding appeals. This ensures efficiency and effectiveness in environmental protection. The required budget

allocation and efforts of securing funds should consider possible detail activities starting from emergency operations (UNHCR, 2002).

Establishing natural resource management system is a long-term activity that calls for the involvement of local communities and range of stakeholders. Among the stakeholders, an environmental implementing agency with experience of both relief and development is an ideal candidate. The challenge for stakeholders' involved and acting institution is to work within existing structures, creating new structures only when existing facilities are incapable of addressing environmental concerns (Blain, 2003).

There is a need for clear politic direction and coordination on environmental issues within the refugee context. Given that no clear regulations may exist governing the refugee populations' use of natural resources, special guideline should be developed in line with national environmental policies and the prevailing legal framework.

Participation of local people begins with taking the lead role in planning and implementing environmental protection and rehabilitation. Experiences have shown that sustainable environmental management practices are best achieved with the full and meaningful participation of the affected communities. Possible mitigation measure heavily relies on considerable input from the affected people (UNHCR, 2002).

Local institutions and village natural resource committee need to be gradually strengthened to insure better sustainability of activities. Strengthening efforts go beyond legalizing and delineating responsibilities. The adverse environmental impacts of hosting refugees often run far deeper than visible degradation. A significant threat that emerges is that the local

institutions face a difficulty or totally disrupt traditional natural resource management practices and institutions built over long durations. Gender related issues and concerns should be integrated at the project design and implementation phase (UNHCR and SAFIRE, 2005).

It is important to note that, refugees can't be expected to put environmental considerations a head of their own safety and welfare. This is where UNHCR and other organizations lend a hand in helping confine the impact of refugees to a low level as much as possible and assisting host countries' with rehabilitation and cleans up operations (UNEP, 2000).

3. CONCEPTUAL FRAMEWORK

A schematic representation of conceptual framework on sustainable and degrading systems which will guide this study is presented in Figure 1.

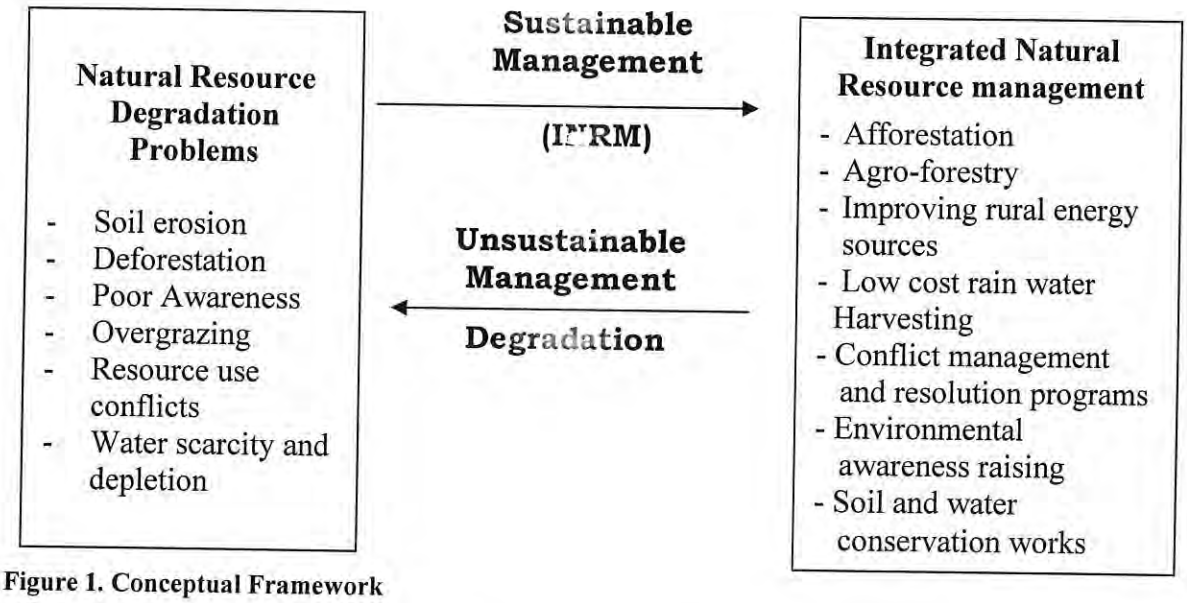


Figure 1. Conceptual Framework

Source: (Partially adapted from Kangalawe et al, 2005).

This conceptual framework shows inter-linkages between the natural resource management practices in a refugee settlement area as well as the cause effects of sustainable and unsustainable systems, as well as their effects on the natural resource base of the respective communities. While sustainable land management systems promote INRM, the reverse would take place with unsustainable systems.

The aim of addressing issues on sustainable land management is to find ways of using natural resources that achieve high and lasting productivity while maintaining and enhancing the natural resource base. It represents INRM to satisfy the changing human

needs while maintaining and/or enhancing the quality of the environment and conserving natural resources. INRM doesn't cover only biophysical aspects but also includes economically viable, socially justifiable, humane and adaptable practices. Most recently, increased emphasis has been given to the substantiality as well as the productivity of the systems.

People face a serious threat of environmental degradation making the sustainability of natural resources questionable. This is due to clearing of vegetation in order to expand grazing area as well as building poles and fuel-wood. As a result of environmental degradation and increasing land scarcity, conflict over natural resources between refugees and locals is arising as an issue. Interestingly, the negative environmental consequences of the refugee presence may have positive implications for host attitudes towards natural resources.

Concepts and Definitions

Some of the important concepts that need to be defined are the following:

Refugee: - (According to UN, 1951) refers to an individual with a well founded fear of being persecuted for reasons of:

- race, religion, nationality, membership of particular social or political group
- presently not dwelling in a country of his nationality/origin
- unwilling to return to his country of origin until the condition is reversed.

Land Degradation: - is defined as a process that lowers the current and/or future production capacity of the land. It also refers to the degradation of soil, water, fauna and Flora. Similarly, soil degradation refers to the loss in soil quality through erosion, leaching and other forms of physical, chemical and biological processes (Blaikie and Broubfied 1987 as cited by Kangalawe et al, 2005).

INRM: - is an approach that harmonizes the rules of socio-economic games and combines the roles of different types of institutions into stakeholder-driven processes for adaptive and sustainable management of natural resources (Kangalawe et al, 2005).

Natural Resources: - are the stock of living and non-living materials found in the physical environment, and which have identifiable potential use to human beings. However, this study will concentrate on forest, land (i.e. soil), water, and grazing land.

NRM: - refers to the effective and efficient conservation and utilization of natural resources in a sustainable manner.

Natural Resource Conflict: - Conflicts over natural resources at the community level have many causes and occurrence in different forms and levels of severity. However, in this study, conflict over forest, land, water and grazing land between refugees and host communities is seen.

Environmental Awareness Raising: - raising awareness of key issues and concerns among the local community and refugees. Without the acceptance, cooperation and support

of the refugee and the local population, it is impossible to modify behavior which impact negatively on the environment.

Afforestation: - To rehabilitate and maintain the ecological balance of refugee impact by producing adaptable tree seedling and planting them on the deforested areas.

Improving Energy Source: - Demonstrating and distributing fuel saving technologies which enable the refugee and local communities to save their scarce fire wood.

SWC Activities: - To increase land production capacity by constructing soil and water conservation structures such as terraces, Check dams, trenches and others.

Water Scarcity: - For water sources (aquifers in the camp) rivers around the camp increased competition for scarce water resource can increase during the refugee presence. Water sources can be depleted and rivers can dry up.

Overgrazing:- is a situation where the demand of grazing land and animal feed exceeds by far the available resources. In this case areas earlier used to graze livestock can be scarce and depleted, forcing herders to take their flocks longer distances for search of grazing.

Agro-forestry: - In managing natural resources, agro forestry is one of the agricultural practices. It involves the integration of trees and crops where by the products can be used for food, Fuel-wood, timber, Fodder, medicines, and at the same time improve soil fertility through recycling of nutrients or prevention of soil erosion.

Deforestation: - The refugee presence affects local access to environmental resources such as fire-wood and water. Refugee forest cutting practices threaten vital natural resources. The rate of deforestation accelerates greatly during their presence. In an area where trees are the primary source of fuel, deforestation can pose a problem to both locals and refugees. Due to many reasons, refugees tend to adopt unsustainable resource use practices. But it is important to note the degree to which refugees negatively affect host environments depends on a variety of factors.

Livelihood: - refers to the means of gaining a living, including livelihood capabilities, tangible and intangible assets. Employment can provide a livelihood but most livelihoods of the poor are based on multiple activities and sources of food, income and security. Livelihoods are influenced by environment, economic, political and cultural processes.

Stakeholders: - In this particular research refers to different government organs involved in refugee settlement area. Such as Local administration, ARRA and WARDO.

Implementing partners; - refers to different national and international organizations involved in refugee settlement area like UNHCR, ARRA, NRDP, ZOA, and IRC.

4. RESEARCH METHODOLOGY

4.1 General Description of the Study Area

4.1.1 Geographic Position and Location

The Tigray regional state is located in the northern part of Ethiopia and has common boundary with Eritrea in the north, the Sudan in the west, Amhara National Regional State in the south and Afar National Regional State in the east. It covers an approximate area of 50,078 sq. km. The population of Tigray is estimated to be 4,223,000 in July 2004. The average population density of the region is 84 persons per sq. km. (CSA, 2005).

The region is characterized by sparse and highly uneven distribution of seasonal rainfall and by frequent occurrence of drought. Though limited mechanized farming is being practiced in the western lowlands, subsistence agriculture is the main stay of the region. Climate, terrain and population pressure are the major constraints that have negatively affected the use of the land and the natural vegetation cover. The agricultural potential and natural resource base of the region have been continuously exploited for a long period of time with out appropriate conservation practices for sustainable use. Agricultural production challenges such as low soil fertility, erratic rainfall, low productivity, drought, poverty are the results of improper use of the land and natural resources. Generally the soils in Tigray are severely degraded by erosion and loss of soil fertility. However, now the region is also known for its concerted soil and water conservation efforts.

Tahtay Adyabo woreda (Sheraro town) where the refugee camp is located is found in the Tigray National Regional State (TNRS). It is one of the woredas of the Western Zone of Tigray, which is one of the five administrative zones in the TNRS. Sheraro town is around

1200kms away from Addis Ababa in the north, 50kms away from the Eritrean border in the North and 175kms away from Humera town (Sudan border) in the West. Sheraro town is located at an altitude of 1,040 m.a.s.l, 14°23′22.18″ N and 37°46′17.12″E.

The *Tahtay Adyabo* woreda has an estimated 16,300 number of farm households (WARDO, 2005). The study area comprises mainly Mai-kuhli kebele which has 1,093 households. Out of this women constitute 437 households. The major ethnic group in the woreda is Tigray (Tigrigna speaking). Agriculture is the major enterprise on which the livelihood of the rural population depends on. Besides some of the rural population collects its livelihood from non-agricultural activities like handicraft, trade and being hired as casual and daily laborer.

A survey result by Wubeneh (2003) indicated that unlike the highlands of Tigray where population density is relatively high, the farmers in this area have slightly larger farm sizes. Crop production is the main occupation of the farm house holds but substantial number of them can be characterized as mixed farmers, who practice integrated crop and livestock production. Off-farm activity is also an important supplementary source of income for the subsistence farmers in the area. The main crops include sorghum, finger millet, maize and sesame. Sorghum commands the highest production priority. According to CSA (2003), area covered by sorghum farms in the woreda was about 10,227.23 km^2 which represented 2^{nd} in the region. Sesame is the most widely grown oilseed and is mainly grown for market purpose and hence is the major cash crop for farmers in the area. The production of maize is restricted to backyards and it is mainly grown for its green harvest rather than for its grain.

The occurrence and availability of sufficient rainfall govern planting time under rain fed condition. Apparently two distinct planting times are recognized in the area. The first planting time is locally called 'Azmera' and it refers to planting accomplished before the end of the month of June. During this time, relatively long maturing and high yielding sorghum varieties and finger millet varieties are included. The second planting time locally called 'Tsidya' refers to planting carried out during the first week of July and onwards. In this case, low yielding but relatively short maturing sorghum and finger millet varieties are included. Moreover, this planting time is the normal planting time for teff, pulses and oil crops commonly grown in the area. Cereal mono-cropping is the most dominant system because of increased pressure for food from the normally large family size per household. The area is an important cereal growing area.

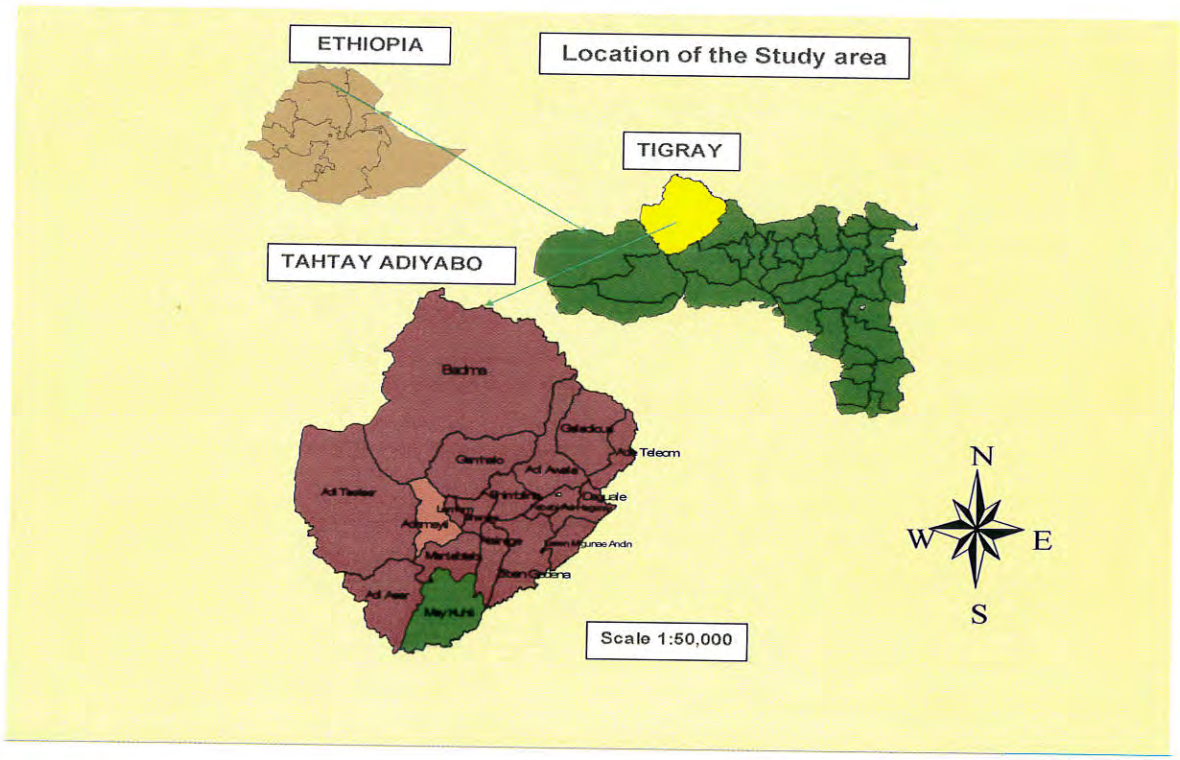


Figure 2. Tigray National Regional State (TNRS).



Figure 3. Gemahalo Mountains in Sheraro Area, Tigray (Feb, 2007).



Figure 4. The Previous *Wa'ala Nihbi* camp (Feb, 2007).



Figure 5. Sheraro Town partially (Feb, 2007).



Figure 6. Sheraro Town main Road (Feb, 2007).



Figure 7. Sheraro town livestock market (Feb, 2007).



Figure 8. An overview of Shimelba Refugee Camp (June, 2007).

The study area Shimelba refugee camp is located 30kms away from Sheraro town southwards and 80kms away from the Eritrean border in the north. The total area of the camp is approximately 200hectars. The refugees in the camp are allowed to use different natural resources 7kms from the center of the camp northwards, 5kms towards east, 10kms towards west and 4kms towards south. But actually they are traveling up to 17kms away from the camp because of scarcity. A grazing land of 400 square kilometers which is 17kms westwards away from the camp is also used by refugees who own about 4,500 livestock. (Shimelba refugee camp quarterly progress report, 2007).

4.1.2 Camp Background

4.1.2.1 Demographic Characteristics

The Eritrean refugees at Shimelba were relocated to the study area from a temporary site at *Wa'ala Nihbi* in May and June 2004, with the move completed on 12th June. The registered population of Shimelba at the time of the data collection was 13,756, made up of mainly ethnic Tigrigna and Kunama people with a small minority of Saho and other groups, as summarized in Table 1.

Table 1. Total population size in Shimelba Refugee camp

Ethnic group	**Number in August 2004**	**%**	**Number in February 2007**	**%**
Kunama	4,272	51.2%	4,405	32.1
Tigrigna	3,851	46.1%	8,993	65.4
Saho	123	1.5%	268	2.0
Others	99	1.2%	66	0.5
Total:	8,345	100	13,732	100

Source: Shimelba Refugee Camp report, 2007

The Tigrignas come mainly from Asmara and other urban centers of Eritrea and are typically better educated, more urbanized and living in smaller households, often with

some family members absent. The Kunamas are predominantly agro-pastoralists from the lowlands of south-western Eritrea and generally crossed into Ethiopia in family groups. Others represent minorities in the camp and even in Eritrea like Tigre, Afar, Billen and the like.

Presently the camp is receiving new arrivals at the rate of approximately 300 per month. Meanwhile around 2,000 Eritrean refugees left the camp to US and other European counties for resettlement and family re-union to third countries like USA, Europe during the period 2003-2007. The overall population trend is therefore consistently increasing.

Average family size in the camp is 1.5 persons according to the ration card statistics. The camp is notable for its highly skewed sex ratio, with 70% of the refugees being male. This reflects the large proportion of single men among the Tigrigna community, mainly individuals who crossed into Ethiopia to avoid conscription or desert the Eritrean army.

4.1.2.2 Environmental Situation of the Camp

The camp is situated at an altitude of 1,140 m.a.s.l in a semiarid zone, 14°10′28.76″ N and 37°43′23.45″ E. The local Ethiopian populations are gradually expanding from higher, more cultivable land towards this area.

The area experiences a single rainy season from June to September during which one crop of teff, maize or beans can be harvested. Local people typically keep goats, cattle or camels to ensure a diversified source of livelihood throughout the year. This mixed environmental situation provides a patchwork of cleared and un-cleared vegetation, meaning that in some directions the refugees were able to find dry firewood and building materials readily within 2-3 km of the camp in 2004, whereas in other directions they encountered local settlements

and depleted woodlands which yield little or no usable material. But currently the refugees are traveling up to 17kms towards west.

From the camp's establishment in May 2004, UNHCR and the camp authorities have imposed a ban on the cutting of live wood which was enforced by a team of 12 forest guards (seven locals and five refugees) and now it has reached to 14. Although there have been a few cases of refugees being detained overnight for charcoal burning or for ferrying live wood to the camp, the ban seems to have been largely effective in preventing the cutting of standing trees.

4.1.2.3 Infrastructures in the Camp

The camp is connected with a weathered road from Sheraro town. There is a satellite telephone communication with three direct lines, a television service and 8-hour electric service. There are two schools one for the locals and one for the refugees. With respect to health service, there is one health center. Concerning water facilities, 3 deep wells were dug as the main water resources for the camp. IRC has also built 6 HDW for the local and 7 HDW for refugees to supplement the water consumption demand of locals and refugees, respectively. Currently, refugees are getting 18 litters per person per day. This resource is also available to the host community. Water as natural resource is being extracted with no fair share of the resource among refugees and the locals.

4.1.2.4 Topography and Soil Type

The topography of the camp consists generally, a flat land and land with gentle slope characterized by very sparsely scattered vegetation. The dominant soil type of the area is vertisol with a dark-grayish brown color at the surface. The vertisol has some inherited

physical problems, which forms wide and deeper cracks during the dry season and has drainage problems during the wet season. Cambisol is also the other dominant soil type found in association with Regosol and Liptosol. It is light texture soil and has good infiltration capacity.

4.1.2.5 Climate

The major environmental characters of the camp are given in Table 2 According to Tahtay Adyabo WARDO the mean annual rainfall of the camp ranges between 581.2 and 1,102.5mm. The camp, generally, has a greater annual evaporation amount than the precipitation it receives. Lack of sufficient rainfall for both crop and animal production is the major agricultural bottleneck of the area.

Table 2. Rainfall amount and temperature of Shimelba Refugee Camp

Parameters	Minimum	Maximum
Rainfall (mm)	581.2	1102.5
Mean max temp (°C)	33	42
Mean min temp (°C)	17.5	22.2

Source: *Tahtay Adyabo* WARDO, 2007

4.2 Source and Method of Data Collection

Qualitative and quantitative data was collected from secondary and primary sources. Secondary data was collected from education and research institutions, Tigray bureau of agriculture and rural development, Woreda office of agriculture and rural development, Tigray bureau of disaster prevention and food security, Woreda office of disaster prevention and food security, Woreda administration office, ZOA refugee care, IRC, ARRA, UNHCR and other relevant secondary information sources. The data collection was conducted using unstructured checklist. The primary data was collected using two sets of procedures: formal survey procedure and informal survey procedure.

4.2.1 Formal Survey Procedure

Data concerning household characteristics, resource endowments including land and livestock, asset ownership, amount and sources of income, type of technologies used, production and diversification of crop and livestock, and sales of products, perception on natural resource, involvement in governmental and non-governmental development activities, type and amount of natural resource consumption pattern was collected using structured interview schedule by identifying, selecting and conducting relevant interview to the intended respondents i.e. refugees and non-refugees separately. Moreover, data with regard to refugees and non-refugees perception on natural resource management was collected by developing appropriate scale for selected positive and negative feature of natural resources and was rated by the respondents.

The interview schedule was translated in to vernacular language (Tigrigna and Kunama) to facilitate and ease communication among enumerators, sample households, and the researcher. In addition, pre-testing was undertaken and necessary modification was done before conducting the formal survey.

Data collection using the interview schedule was conducted by enumerators. The enumerators were recruited on the basis of their competence to collect data. Accordingly, at least 12 grade completes were invited, who have good command of the vernacular language, and first priority was given to candidates with experience of data collection. After selection of 10 eligible enumerators (7 Tigrigna and 3 Kunamas) they were given theoretical and practical training/orientation as how to conduct the data collection. Moreover, the training/orientation focused on the importance of the data for the study and

the responsibility vested on both the enumerators and the researcher as the output of the study is expected to serve the population directly and indirectly.

The practical training/orientation on the data collection was conducted in the camp. During the practical training, there was a close follow up and detail discussion with the enumerators to solve problems encountered on the questionnaire designing and pre-testing.

4.2.2 Informal Survey Procedure

To collect data about the general situation of natural resource degradation trend and pattern of the refugee camp area and to understand the roles and activities of concerned stakeholders and IPs, locals and refugees, different PRA tools and techniques were employed to facilitate the discussion, promote the participation of everyone involved and enhance understanding of important issues with respondents. These tools and techniques enabled to collect primary information from respondents in participatory fashion. The important survey tools and techniques that were used to the study are indicated as follows:

4.2.2.1 Direct Observation

This approach was used to directly observe objects, events, processes, relationships of refugees and non-refugees in the area and a record was kept mentally and/or in a note. This served mostly as a basis for late discussion with the key informants. In addition different pictures were taken in and around the camp. It was one of the most powerful methods to get acquainted with the situations of the study area. Through direct observation, information was obtained about the soils, topography, water sources, vegetation, infrastructure, land use, crops, livestock, nursery sites, mud brick preparation, income generating activities, etc.

4.2.2.2 Semi-Structured Interview

The interview was conducted within specific time limits (not more than two hours); a checklist was prepared with some of the predetermined questions. Based on this pre-test, a checklist was refined by including new and relevant questions and discarding inapplicable ones. Different categories of respondents were included in the discussion considering their representation of sex, ethnicity, age group, refugees and non-refugees and stakeholders and implementing partners etc. The timing of interview was scheduled based on the interests of the key respondents. Accordingly, interview system had two forms:

- Interview with groups of refugees and non-refugees to obtain information on community interactions with the environment.
- Interview with individual stakeholders and implementing partners to obtain representative information.

4.2.2.3 Focus Group Discussion

This was conducted with key informants of refugees, non-refugees, stakeholders, implementing partners and with a mix of all these groups, who were involved in environmental activities. Totally five focused group discussions were conducted which comprised a group of 8-10 members each.

4.2.2.4 Triangulation

Combinations of two or more tools were used to facilitate better understanding and cross check information generated by using one technique. All these tools were used in participatory fashion allowing the refugees and non-refugees as well as stakeholders and implementing partners and other informants to interact freely in the discussion.

4.3 Sampling Techniques and Procedures

In the first stage, the sampling frame was identified, this resulted total population of 11,062 households (1,093 local households and 9,969 refugee households). This sampling frame was selected based on the common natural resource use in and around the camp area which makes them homogeneous with a distance of 7kms from the center of the camp to the north, 10kms west, 5kms east and 4kms south. A family or a household is commonly defined as a group that usually works, lives and cooks together. Accordingly the refugee households were selected from the ration card statistics of registered households by UNHCR and ARRA and the local households from the local administration. From this sample frame simple random sampling was done using the random number table to get 150 households (respondents). Due to the time and resource limitation, it was not possible to exceed the sample household size. However, this sample size can represent the target group because it was selected based on randomness.

Table 3. Sample size of respondents

No.	Sample groups	Total sample size
1	Local	40
2	Kunama	45
3	Tigrigna	60
4	Saho	4
5	Tigre	1
Total		**150**

Source: Own survey

4.4 Analytical Procedures

The examination of refugees' and non-refugee's opinion and practice and their link with the natural resource management with respect to their resource consumption was compared through statistical comparisons. Following the completion of data collection, data was coded and entered in to SPSS version 12.00 soft ware analysis program for the analysis. Different analytical techniques were applied for data analysis. These include descriptive statistics, t-test and chi-square test. The t-test was run to see the existence of statistically significance difference in continuous variables for different socio-economic and demographic characteristics of refugees and non-refugees. The chi-square test was run to see if there is any systematic association between natural resource management practice and their resource consumption.

In addition to the Quantitative data analysis, the study employed also narration and triangulation for the different qualitative data which are collected through personal observation, focused group discussion and Semi-structured interview.

5. RESULTS AND DISCUSSION

5.1 Socio- Economic Characteristics

In order to understand the socio-economic characteristics of the refugees and non refugees, the descriptive analysis is summarized and discussed under household characteristics, landholding and its characteristics, natural resource use, livestock ownership and institutional services.

5.1.1 Household Characteristics

5.1.1.1. Type and Ethnicity

Of the total interviewed households, 110(73.3%) households were refugees while 40 (26.7%) households were non-refugees. The different ethnic groups in the study area are Tigrigna, Kunama, local Tigray, Saho and Tigre in the proportion of 39, 30, 26.7, 2.7 and 1.3 percent respectively (Table 4).

Table 4. Type of respondents by Ethnic group

Type of Respondents by ethnic group	n	%
Refugees	**110**	**73.3**
Refugee Tigrigna	60	39
Refugee Kunama	45	30
Refugee Saho	4	2.7
Refugee Tigre	1	1.3
Local(Non-refugee)	40	26.7
Local Tigray	**40**	**26.7**
Total	**150**	**100**

Source: Survey Data

5.1.1.2 Age, Sex and Family Size

The age of the sampled households ranges from 18 to 86 years. The age range 18-40 comprises 70.7% of the sampled households. These are potential work force for

development activities including natural resource management activities. The average age of the refugees was 35.9 years, while that of non-refugees was 39.9 years (Table 5). There is no significant mean difference in age between refugees and non-refugees.

Table 5. Distribution of sampled households by age

Age group	Refugees		Non- Refugees		Total	
	n	%	n	%	n	%
18-24	23	20.9	1	2.5	24	16
25-40	56	50.9	26	65	82	54.7
41-64	26	23.6	13	32.5	39	26
Above 64	5	4.5	0	0	5	3.3
Total	**110**	**100**	**40**	**100**	**150**	**100**

Source: Survey data

The average family size of the sample refugee households and non refugee households was 4.4 and 6.1, with significant mean difference between refugees and non-refugees (Table 6). This indicates that the local population has a higher fertility rate than the refugee population. In most cases the refugees leave some of their family members in their country.

Table 6. Average family size of sampled households

Type of Respondent	N	Mean	Std. Deviation	t-statistics
Local	40	6.1750	2.24051	**4.080*** **
Refugee	110	4.3909	2.41211	

N***=significant difference 1%

Source: Survey data

The sample was composed of both male and female headed households. Of the total sample household heads 67.3% were males and 32.7% were females. Of non-refugees household heads 35% were female while from refugees 31.8% were females.

5.1.1.3 Educational Status and Involvement in off farm activities

About 64.7% of the total interviewed households were literate (can read and write). Among the refugees 68.2% were literate and 55% of non refugees were literate (Table 7). This indicates that the relatively higher proportion of literate households opens an opportunity for efforts in NRM and awareness about environmental degradation because training and regulations can be easily accepted and important feedback can be given to the efforts.

Table 7. Distribution of sampled households by their educational level

Educational level	**Refugees**		**Non- Refugees**		**Total**	
	n	**%**	**n**	**%**	**n**	**%**
Illiterate	35	31.8	18	45	53	22.8
Read and write	5	4.5	6	15	11	25.7
Primary	31	28.2	16	40	47	39.7
Secondary	31	28.2	0	0	31	11.8
Tertiary	8	7.2	0	0	8	7.2
Total	**110**	**100**	**40**	**100**	**150**	**100**

Source: Survey data

Out of the total interviewed households 83.3% reported that none of their family members were involved in off-farm work. Relatively larger proportion of non-refugee households (20%) engaged their family members in off-farm activities than refugees (only 16.4%). (See table 8). The low level of off farm work indicates there is high dependency on natural resources for livelihood and efforts should be made by creating opportunity for off farm employment.

Table 8. Distribution of sampled households' family members involved in off-farm activity

Off –farm Income from family members	**Refugees**		**Non- Refugees**		**Total**
	n	**%**	**n**	**%**	**%**
Yes	18	16.4	8	20.0	17.3
No	92	83.6	32	80.0	82.7
Total	**110**	**100**	**40**	**100**	**100**

Source: Survey result

5.1.2 Occupation

As table 9 indicates the majorities of the respondents are either involved in trade or practice livestock raising (21.3%). The other activities are Mixed farming (20.7%), no activity (14.7%), employed in different organizations (10.7%), crop production (9.3%) and as daily laborer (2%).

Table 9. Distribution of sample households by their economic activity

Activity	Refugees		Non-refugees		Total	
	n	%	n	%	n	%
Crop production only	7	6.4	7	17.5	14	9.3
Livestock rearing	30	27.3	2	5.0	32	21.3
Mixed farming	1	0.9	30	75.0	31	20.7
Employed	16	14.5	0	0.0	16	10.7
Petty trade	31	28.2	1	2.5	32	21.3
Daily laborer	3	2.7	0	0.0	3	2.0
None	22	20	0	0.0	22	14.7
Total	110	100	40	100	150	100

Source: Survey data

5.1.2.1 Livestock Raising

Livestock production is one of the main economic activities in the study area. Respondents rear various types of livestock in order to produce animal products for food as well as to generate income. Types of livestock reared in the study area include cattle, goat, sheep, horse, mule, donkey and chicken. People who own livestock can resort to their livestock for source of cash in order to fulfill their needs.

According to the survey result on table 10, average livestock owned by the total sample households was 8.5 in Tropical livestock unit (TLU)[1]. Proportionally, refugees owned almost twice greater livestock than locals. The mean number of livestock owned by refugees was 10.5TLU, whereas non-refugees possessed (6.5TLU). Table 10 indicates that

[1] See Annex 5.

majority of the locals possess below average livestock units, whereas high proportion of refugees owned above average livestock unit. About 33.3% of the locals and 13.9% of refugees owned 5.01 to 7.84 livestock (TLU) On the other hand, about 30.6% of the locals and 38.9% of the refugees possessed greater than or equal 7.49 TLU. In this study it was found that there was no significance difference between refugees and locals in relation to the total number of tropical livestock units, at 10% level of significance (table 11). However, there is a significant difference between refugees and locals in some of the livestock units such as ox, bull, sheep, goat, donkey and camel at 10 % and 5 % (see table 10 and table 11), and this result implies that the pastoralist refugee Kunama will take the greater proportion in livestock population in the area. The higher ox and donkey TLU owned by locals' shows that most of them depend on mixed farming system while the higher TLU in cow and sheep by refugees shows they use the products as income generating and supplement their ration.

Table 10. Average livestock owned (TLU) by sampled households

Type of livestock	Refugees	Non Refugees	t-statistic
	Mean	Mean	
Ox	0.52	0.8	2.430**
Bull	0.38	0.7	.906**
Cow	4.5	1.75	-1.6491NS
Calf	1.31	0.87	-1.248NS
Heifer	1.45	1.13	.523NS
Sheep	0.22	0.01	-2.409**
Goat	0.37	0.65	1.755*
Donkey	0.31	0.48	2.080**
Camel	0.93	0.13	-1.957**
Chicken	0.03	0.04	1.161NS
Total TLU	**6.5061**	**10.5086**	**-1.599NS**

**=significant at 5%, *=significant at 10%, NS=*Not significant*

Table 11. Distribution of sampled households by their livestock (TLU)

Livestock in TLU	Refugees (n=64)		Non refugees (n=86)		Total (n=150)	
	n	%	n	%	n	%
<1.00	5	13.9	2	5.6	7	9.7
1.00-3.47	9	25.0	7	19.4	16	22.2
3.48-5.00	3	8.3	4	11.1	7	9.7
5.01-7.48	5	13.9	12	33.3	17	23.6
>7.49	14	38.9	11	30.6	25	34.7
Total	**36**	**100.0**	**36**	**100.0**	**72**	**100**

Source: Survey data

5.1.2.2 Trading

Other occupation in the study area, outside agricultural activities, is trading. This occupation constituting all types of trade forms from petty trade to shop keeping and restaurants. It is reported that 28.5% and 2.5% of refugees and local community respectively are engaged in this economic activity, where a huge variation among the two groups is observed. Access to other income source through remittance, employment, former experience in trading and ample time creates good opportunity for refugees to dominantly involve in this area of activity, and this is mostly observed in the urban based refugee Tigrigna. Major activities which can be included here are restaurants and bars, cafes, different kind of shops such as boutiques, mini-supermarkets, and music shops.

5.1.2.3 Crop Production

Crop production alone is also practiced by some of the local population in the study area, but are not very considerable as in the case of livestock keeping. As it is observed from table 9, the numbers of households who are taking up only crop production as an occupation represent 9.3 % in the study area. In general, agricultural activity (livestock raising, crop production and a mixed of both) constituted the major economic occupation of the local population and refugees that 17.5 %, 5%, and 75% for locals and 6.4%, 27.3%,

0.9% for the refugee of the households respectively. The major crops grown in the area include sorghum, sesame, finger millet, maize, green pepper, Noug and wheat in their order area of production.

The pattern of land use in the area is different among refugees and local settlers, where refugees are not allowed to have their own land rather they are allowed to use through renting from the locals. From the total respondents only 8.1% of refugees answered that they access land through renting. On the other hand, locals have their own land, from the total respondent 64.5% of them answered that they access their own land and 14.5% and 19.4% of them able to rent in and rent out, and almost all employed their land only for crop production. (See table 12 and 13). The survey result shows that the average land size per household the locals rented in and rented out and own land are 2.75, 1.58 and 2.672 respectively.

Table 12. Average size of land owned by sampled households

Type of land	Refugees		Non refugees		t-statistics
	Mean	SD	Mean	SD	
Own land	--	--	2.67	2.11	--
Rented in	1.85	1.7	2.75	3.31	0.742NS
Rented out	--	--	1.58	1.82	--

NS: *not significant*

Table 13. Distribution of sampled households by their land ownership

Type of land	Refugees		Non refugees	
	n	%	n	%
Own land	2	3.2	40	64.5
Rented in	5	8.1	9	14.5
Rented out	8	12.9	12	19.4
Total	**15**	**24.2**	**61**	**98.4**

Source: survey result

5.1.2.4 Employment

As it is indicated in table 9, almost all employed respondents (14.5%) in government and international organizations which are working in and around the camp are refugees, priority is given in this respect deliberately so that it will serve refugees as an alternative income source. Such employment held on mostly on contractual basis in activities such as; ration distribution, nursery site development, data collection for different studies, etc. Above all they are also hired as formal employee in occupations like teaching and assistant office clerks. In addition most of the refugees are better educated than the locals which create opportunity for their employment.

5.1.2.5 Crop-Livestock (Mixed) Farming

Although livestock raising and petty trade are the major economic activities in the study area, mixed farming (crop and livestock production) is also practiced by considerable proportion of the community in the area. This type of activity is very dominantly observed in the non refugee /local community where it comprises 30.5% from the total respondent (see table 9). Though, few refugees are able to access farm land through renting it is not common among this community to involve in such practice. Conducive natural agricultural conditions in those areas seem to have favored such activities.

5.2 Analysis for the Natural Resource Degradation and Consumption

5.2.1 Natural Resource Degradation and consumption

It has become clear that refugee-related environmental impacts can have serious negative implication for the health and well-being of the local community, as well as that of the refugees. Nowadays host countries and internal communities have become more sensitive to the potential economic loss they may suffer, due to environmental damage caused by concentration of refugees (Jacobsen, 1997).

Natural resource degradation in the study area is analyzed by resource type and amount. Even though measuring the extent of degradation needs some technical details in this case most of the analysis is based on qualitative method, which entirely depends on the focus group discussion, secondary data, formal survey, and with the considerable input of the researcher's observation.

Most of the study area is characterized by landscape with flat lands and hills in small proportion. Based on the focus group discussion degradation prioritization is as follows; deforestation, overgrazing and water depletion. However, these problems can not be seen in isolation, rather, one is a cause of as well as an effect to the other. They are causes and effects to more number of problems which include, deforestation, failure in crop production, livestock feed shortage, emergence of new conflict among refugees and local settlers and which can ultimately lead to total collapse of the natural resource base and social crisis in the area. The following section would analyze the different features of

natural resource degradation level from the point of view of resource use and consumption pattern.

5.2.1.1 Deforestation

Almost all respondents are highly biomass dependent for their sources of energy, house construction and animal feed. Their sources of fuel wood and fodder are from the natural forest. They depend on forests both in the collection of forests, bushes and grazing land for a variety of needs, including house construction (48.3 %) , maintaining houses (33%) and Medicinal value (11.2%) see table 14.

Table 14. Use of forest products for sampled households

Use of forest products	Refugees		Non- Refugees		Total
	n	%	n	%	%
House construction	95	35.6	34	12.7	48.3
House maintenance	66	24.7	22	8.2	33
Incense collection	1	0.4	4	1.5	1.9
Fruit collection	11	4.1	4	1.5	5.6
Medicinal value	28	10.5	2	0.7	11.2
Total	**201***	**75.3**	**66**	**24.7**	**100**

=*Multiple response result

Source: Survey result

Pressure of large numbers of refugees often leads to shortages and scarcity of fuel wood. Refugees and people from local communities are forced to walk longer distances to fetch fuel wood. The search for wood rapidly changes from the environmentally benign collection of dead wood to cutting of live trees. As it is also shown in table 15, from the total respondents, (86.6%), replied that there is a decreasing trend in forest use. This is due to excessive use of forest resources that can be a proof for the protracted deforestation in the area.

Table 15. Trend of forest use by respondents

What was the trend of forest resources use?	Refugees		Non- Refugees		Total
	n	%	n	%	%
Increasing	26	9.4	11	4	13.4
Decreasing	182	65.9	57	20.7	86.6
Total	**208**	**75.4**	**68**	**24.6**	**100**

Source: own computation

The level of degradation can be clearly seen when analyzing the amount of wood used for construction of the houses, the average distance change traveled to access the fuel wood at the camp establishment time as compared with the present time and the price change in the fuel wood sources.

According to the Key informants of ARRA ,when the camp was established in May 2004, there were around 7,955 refugees and on average three logs were allowed for constructing one house which results(2600houses * 3 logs) = 7, 800 logs were used for construction. In addition 200ha of forestland was cleared for constructing the camp.

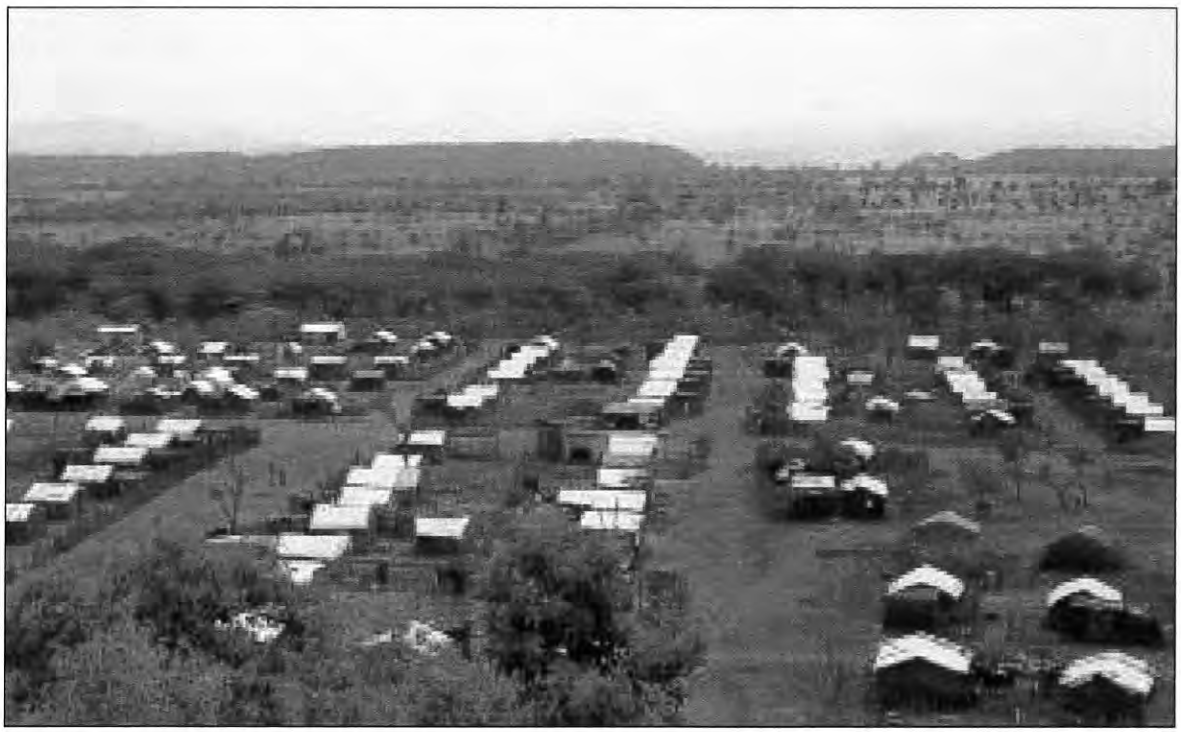


Figure 9. Shimelba Refugee Camp in 2004.



Figure 10. The current status of Shimelba Refugee Camp (June, 2007).



Figure 11. Partial view of the Kunama settlement in Shimelba Refugee Camp (February, 2007).

As the survey result showed average firewood consumption of refugee respondents and non refugees was 1.36kg/person/day and 0.91 kg/person/day respectively. According to the estimate of WBISPP, 2002, the annual increment of yield per hectare for northwestern Tigray was found to be 0.22 tons air dry woody biomass/hectare. Taking this sustainable level of harvesting (0.22tons/ha) and assuming that the per capita rates of consumption and the supply pattern remains the same, the total area needed for harvesting dead wood is calculated as follows:

- Total firewood consumption based on the current refugee population: 6,828.5 tons

  i.e. 1.36 kg/person/day * 365 days * 13, 756 population = 6,828.5 tons
- Sustainable yield for northwestern Tigray as proxy to Shimelba: 0.22 tons/ha
- Total area that should be accessed to refugees: 31,038 hectares or 310.38km^2

  i.e 6828.5 tons / 0.22 tons/ha = 31,038 hectars= 310.38 km^2

With the assumption of constant supply and consumption pattern and taking the refugee camp as a center, the distance that the refugees travel to collect dry fire wood can be calculated as using the formula below:

Area = $\prod r^2$

310.38km^2 = 3.14 r^2

r^2= 310.38/3.14

r= 9.94 km

Thus they will travel a radius (r) of about 9.94 km from the camp to collect dry wood to meet their energy requirements with a slight decrease in total woody biomass stocks or without much loss of the forest cover of the area. However, during the FGD it is revealed that the distance refugees are traveling has reached almost up to 15-17 km in the direction

of Tekeze River (to the west of the Camp). This has resulted in a serious conflict over the use of fuelwood resources with the surrounding local community, especially women refugees are the most susceptible group for the harassments as they are the primary fuel wood collectors in the household.



Figure 12. Some Kunama refugees fetching firewood around Shimelba Camp in 2004.

According to the focus group discussion held with partners, stakeholders and locals there has been a tremendous decline in the population of indigenous mother trees species like Acacia bussei, "sebea" and "akuma" (vernacular names).

As the Key informants explained, in 2004 the price of one bundle of firewood was around 5 birr but currently it is approximately 10 birr which increased almost by two fold. Even though price change does not implicitly imply scarcity, in this case it is obvious that scarcity is one of the factors for this change. Besides, among other activities which

aggravate the scarcity, there are around 160 restaurants and cafés in the camp which entirely depend on fuelwood for their business.



Figure 13. Typical House construction of Kunama refugees at Shimelba Camp in 2004.

The possible causes of deforestation in this case are the high influx of refugees in the camp which lead to a stage where consumption pattern is above supply/regeneration pattern. The natural resource management practices concerning afforestation are very low to replace the consumption. The alternative energy sources are not well studied and by analyzing the cost and benefit of the possible fuel sources possible alternatives should be thought.

5.2.1.2 Firewood Consumption

Sample households rely heavily on environmental products for different purposes and spend a significant amount of their time for collection. Although there is no significant difference in the amount and frequency of fire wood and charcoal collected between

refugees and non refugees as it is shown in table 17 , there is a substantial demand for fuel wood energy among both groups, which the firewood is the primary source of energy for cooking, and it is observed that 60.3 % of the households were using it and 35 % of households use charcoal for fuel and the remaining 4.6% use dry leaves as their primary fuel energy source (see table 16).

Table 16. Primary source of energy for sampled households

	Refugees		Non- Refugees		Total
	n	%	n	%	%
Firewood	103	43.5	40	16.9	60.3
Dried leaf	10	4.2	1	0.4	4.6
Charcoal	74	31.2	9	3.8	35
Total	**187**	**78.9**	**50**	**21.1**	**100**

Source: own computation

Table 17. Amount and frequency of fuelwood and charcoal for sampled households

Amount & frequency	Refugees			Non- Refugees			t-statistics
	n	Mean	SD	n	Mean	SD	
Fire wood	98	4.22	3.70	40	3.92	3.54	-.436NS
Charcoal	34	49.10	25.94	8	38.75	16.20	-1.075NS
Fq firewood	90	2.07	1.15	34	49.10	25.94	0.144NS
Fq charcoal	29	1.90	1.61	8	1.25	0.463	-1.112NS

NS *not significant*

Source: own computation

In most situations, a number of factors affect the pattern of fuel wood use (for example, the degree of fuel wood scarcity, the types of food refugees receive, traditions, availability of improved stoves, cultural acceptability of shared family cooking, etc). Rather than organizing the free distribution of fuel wood, environmental objectives can be achieved more efficiently if, for instance, the wood supplied to refugees is exchanged for their participation in environmental activities. This approach has been used, with some success, in the Dadaab camps in eastern Kenya under the GTZ-RESCUE project.

5.2.1.3 Overgrazing

Grazing areas with some regulation of use (restricted grazing areas) and unregulated areas are common in the study area. Almost all restricted grazing areas are used exclusively by the communities that manage them. The restricted areas are used only during the period from September to November/ December. A village may have one or two restricted grazing land. These restricted grazing lands are important sources of animal feed especially in shortage situation.

Most of the refugees reported that the natural pasture has not been allowed for their livestock. There is a grazing area in a place called Shinabaria for refugees who have livestock.

As it was mentioned earlier the major occupation of the Kunama refugees is livestock rearing. The role of livestock in supporting livelihood of the non refugee community as a whole is almost equivalent to that of crop production. However, there is a serious problem of feed shortage where out of total respondents involving in this occupation 67.6 % answered that they face livestock feed shortage in the area and based on respondents it happens mainly (46%) in dry season and (38.5%) in both dry and wet season (see table18 and 19).

Table 38. Perception about shortage of pasture land

Perception about shortage of pasture land	**Refugees**		**Non- Refugees**		**Total**	
	n	**%**	**n**	**%**	**n**	**%**
Yes	29	76.3	21	58.3	50	67.6
No	9	23.7	15	41.7	24	32.4
Total	**38**	**100**	**36**	**100**	**74**	**100**
				X^2 Statistics		0.099*

* *Significant at 10%*

Source: Own computation

Further more, as some elder informants have pointed out during the focused group discussion that the place was able to generously support the livestock long time ago. It has now been reached to the point that the productive and perennial grasses are approaching to completely disappear. For instance the allotted area for refugees' livestock which is estimated to be for 4,500 different farm animals is only 400km^2 and the locals also have 4,700 livestock. This area is beyond its carrying capacity, this has resulted in an excessive overgrazing which lead to bare soil. The only option taken by the refugees was moving their livestock to other areas for search of feed (refugees have moved their livestock on January, 2007 to three different directions in within the Woreda).

Table 19. Major season sampled households faced shortage of pasture

Season shortage of livestock pasture occurred	**n**	**%**
Rainy	8	15.4
Dry	24	46.2
Both	20	38.5
Total	**52**	**100.0**

Source: Survey Result

The main cause for the decline of the desired vegetation is perhaps the outcome of the combined effects of livestock population pressures of the locals and the refugees' livestock. The whole ecology of the study area is now degraded where bare lands and rocky hills are predominant mostly in the existing grazing lands. Scattered bushes/shrubs and trees are observed grown on most of the denuded grazing lands with periodic rejuvenation of leaves on the trees and annual grasses after getting rain showers. As a result animals are required to cover long distance a day to graze or browse on the very sparse vegetation cover and yet hardly meet even their maintenance requirement over the most period of a year. Locals

expressed that refugees take the leading blame for deterioration of the natural vegetation. Consequently, animals particularly goats are victimized.

As a major strategy to alleviate the feed shortage problem for livestock which from the 33% of the respondents are giving collected feed for their livestock, moved their livestock for search of feed (25.3%), sold some of them (24.2%) and (17.6%) gave tree branches and leaves (17.6%) (See table 20).

Table 20. Coping mechanism for the livestock feed shortage by sampled households

Coping mechanism for the livestock feed shortage problem	**n**	**(%)**
Moving the livestock to other areas	23	25.3
Selling some of them	22	24.2
Giving collected feed	30	33.0
Lopping of trees	16	17.6
Total response	**91**	**100.0**

Source: Survey result

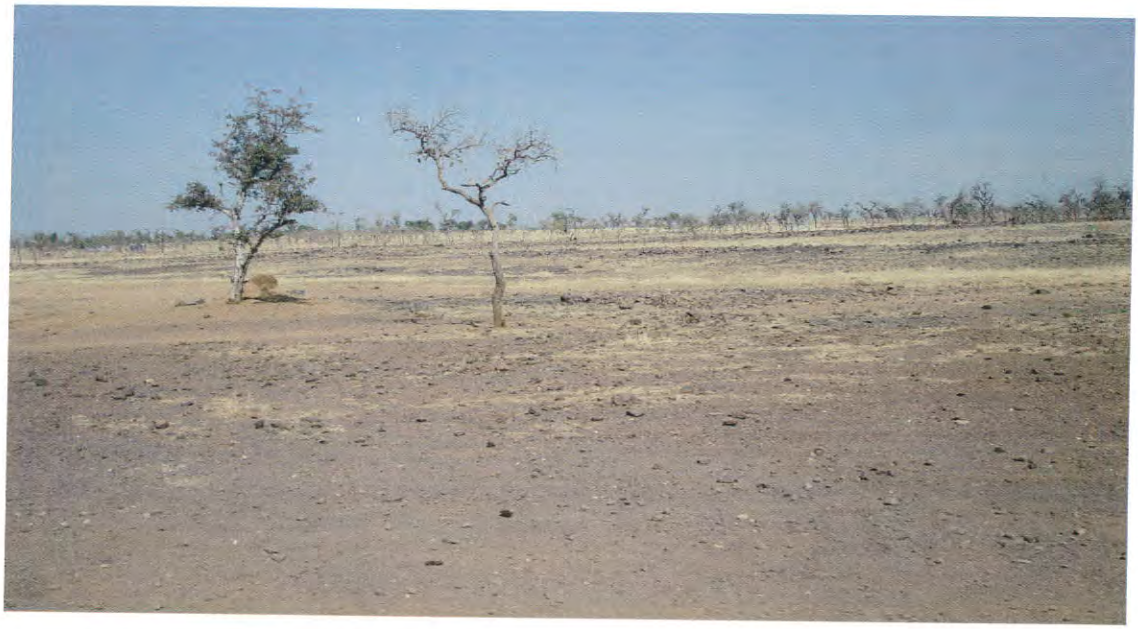


Figure 14. Over grazed area of Shinabaria (February, 2007).

5.2.1.4 Water Depletion and Scarcity

There were two rivers namely *Mai-aini* and *Mai-hadas* and three springs, which were flowing all year round. But currently these water sources have already dried up. Besides; underground water scarcity is primarily caused in the area due to erratic seasonal rainfall and subsequent runoff which minimize the underground water recharge. In addition, unwise and over-consumption of this water sources further aggravate the problem of water scarcity. Locals are very much concerned about the frequentness of bad seasonal rainfall pattern; in which most of the time causes total crop failure.

Table 21. Average water consumption per individual

water consumption in liter per day per individual	**Refugees**		**Non refugees**		***t*-statistics**
	Mean	**SD**	**Mean**	**SD**	
	18.32	6.51	20.11	9.57	2.192NS

NS=*Not Significant*

Mean water consumption per household for the refugees and locals are 18.32 and 20.11 liters per day per individual respectively. The *t*- test result revealed there is no significant mean difference between refugees and locals. The higher water consumption/household may be due to their easy access to water facilities built in the camp and their large family size increased consumption. Thus, the compounded effect of the ever increasing population will further worsen the situation.

In bad season, moisture deficient is not only causing total crop failure but also aggravates the animal feed problem as well as a decrease in river flows and groundwater recharge. Hence, along the route of the rivers small scale irrigation was possible and some farmers were practicing.



Figure 15. Water resource depletion (river Mai -aini on Feb, 2007).

According to the focused group discussion it was revealed that unwise and over consumption of water resources due to the population pressure of both human and livestock in the area further intensify the problem.

The existing Natural resource management interventions by the concerned bodies fall far behind the extent of damage in the area. For this reason it demands an Integrated Natural Resource Management.

Table 22. Major source of water for sampled households

Source of water	**Refugee**		**Non refugee**		**Total**
	N	**%**	**N**	**%**	
Protected spring	1	0.6	0	0.0	0.6
River	1	0.6	1	0.6	1.2
well	2	1.2	18	10.4	11.6
Tap water	103	59.5	19	11.0	70.5
Hand pump well	24	13.9	4	2.3	16.2
Total	**131**	**75.7**	**42**	**24.3**	**100.0**

Source: Survey Result

5.2.1.5 Low Soil Fertility

Irreversible loss of topsoil is the most worrying aspect of environmental degradation. In some parts of the study area almost all the topsoil is washed off exposing the parental material on the top.

Moreover, the soil is cultivated for long period through the traditional mode of cultivation. The unwise crop cultivation and livestock husbandry accompanied by the rugged physiography has left most part of the land mass devoid of soil and natural vegetation. This increased the area to be out of production.

From the total crop producer respondents' 69% answered that they observed a decrease in crop production in the area the last three years and only 19.4 % of the respondents answered that they observed increment in crop production see table 23.

Table 23. Perception of sampled households in the trend of crop production

Trend of crop production	n	%
increasing	14	19.4
decreasing	50	69.4
no change	6	8.3
I do not know	2	2.8
Total	**72**	**100.0**

Source: Survey Result

Although not scientifically confirmed, farmers reported the low fertility status of the soil as a major cause for the decline, where soil fertility decline (38.1%), erratic rainfall (25%), lack of access to inputs (20.2%) and pest (10.7%) are the prominent reasons for the decline in the productivity (see table 24).

Table 24. Mentioned reasons for the decline in crop production by sampled households

Reason for the decline in crop production	**n**	**(%)**
Soil fertility decline	32	38.1
Lack of access to inputs	11	20.2
Pest problem	9	16.7
Erratic rainfall	21	25.0
Total	**72**	**100**

Source: Survey result

The low soil fertility could have resulted from fertility degrading factors like erosion, which may be resulted from the deforestation in the area and the unwise land management practices, etc. As part of the Northern Ethiopia, where settlement supposedly started earlier, corresponding long history of crop cultivation could be confirmed. However, there is no well-developed tradition of soil and water Management practices other than crop rotation and shifting cultivation in the area.

Table 25. Food sufficiency for the sampled households

Do you face food shortage?	**n**	**%**
Yes	25	35.7
No	45	64.3
Total	**70**	**100.0**

Source: survey data

In addition 35.7% of the respondents answered that they faced food shortages during last year production season see table 25, and 66.7% respondents reported they sold their livestock as the major mechanism for compensating the food shortage see table 26.

Table 26. Compensation mechanism used by sampled households for food sufficiency

Compensation Mechanism	**n**	**%**
Aid	2	4.4
Help from relatives	1	2.2
Remittance	3	6.7
Selling of livestock	30	66.7
Petty trade	2	4.4
Daily laborer	7	15.6
Total	**45**	**100.0**

Source: Survey data

5.3 The Nature of Conflict and its Consequences in the Study Area

5.3.1 Forms of the Natural Resource Conflict

This paper recognizes the importance of the actors in conflict situations; but greater attention is given to the objects of conflicts: the natural resources of the study area. The study identified how conflict on the forest resource and grazing land has developed, and outlined the interests and roles of the various actors involved. The objective was by analyzing the nature of the resources, the pressures upon them, and the range of possible resource management interventions, competition and conflicts can be minimized and resolved.

Table 27. Occurrence of conflict by sampled households

Do you face any type of conflict for the last three years?	**Response**	**Refugee**		**Non -refugee**		**Row total**	**X^2-statistics**
		n	**%**	**n**	**%**	**%**	4.055**
	Yes	67	45.3	16	10.8	56.0	
	No	43	29.1	22	14.9	44.0	
Total		**110**	**74.4**	**38**	**25.7**	**100**	

=*significant at 5%* **Source: Own computation

As can be observed both from the formal and informal survey, severe conflict happened between refugees and non-refugees due to competition in the wood and grazing sources. Out of the total respondents 56% reported they faced conflict while 44% reported they did not face any conflict (See the above table 27).

In the study area there is a link between natural resource scarcity and conflict. Shortages of natural resources lead to competition which in turn resulted in conflict. This resource scarcity and insecurity deterred appropriate management of natural resources. Conversely,

changes in the management of natural resources can definitely increase the supply which both locals and refugees seek and so reduce competition.

Putting in mind that the natural resources are the initial point from which the conflicts are studied, the characteristics, goals and dynamics of the various groups and organizations involved are also investigated in order to understand the competition for and conflicts over, these natural resources.

It was difficult to measure the conflict in terms of its prevalence and intensity given the scarcity of complete data on conflicts that arose between refugees and locals. Conflict in the case area is strongly felt and prevalent phenomena. It is obvious that there is a visible tension of conflict between refugees and host community for scarce resources (in this case for fuel wood and grazing land) unless an alternative is optioned.

Table 28.Summary of conflicts by sampled households

Year of conflict occurrences	**Conflicts involving violent killings**	**Conflicts involving cattle raids**	**Total number of conflict occurrence other than violent killings**	**Total number of human casualties**
2004	0	30	29	29
2005	3	150	84	87
2006	6	300	152	158
Total	**9**	**480**	**265**	**274**

Source: Mai-kuhli kebele police department, 2007

As indicated in Table 28, the increasing trend in occurrence of conflict shows conflict is increasing over time as a result of competition for scarce resources and increasing number of refugees. Integrated NRM activity is needed urgently to alleviate the scarcity which can reduce the occurrence of the conflict.

To this end, the situation regarding the forms of conflict as gathered in the area from survey data, observation, focus group discussions as well as interviews of the respondents with different issues is presented as follows. In the study area there were three major potential forms of natural resource conflicts identified in terms of the natural resource use basis.

5.3.1.1 Conflict over Grazing Land

Kunama refugees graze their livestock in and around the camp areas which manifested as a cause of conflict. In most of the cases these actions do not necessarily imply any intention of provocation. Hence, it may be the case that the refugees could be driven by the demand for more pasture land. Thus, areas earlier used to grazing livestock were depleted; forcing herders to take their flock longer distances in search of favorable pasture land, which probably used by the local community for farming or pasture can cause a conflict.

5.3.1.2 Conflict over Fuel Energy Source

As mentioned, a large influx of refugee population concentrated in the camp inevitably alters the social dynamics in the area. After an initial solidarity, the locals have slowly started rejecting the refugees accusing them of ingratitude for their excessive reliance and exploitation of the natural resource and such cumulative events has become a potential cause for dispute and conflict among the refugees and the local communities.

This has been manifested by the heavy activity of fire wood collection by refugees for household consumption and through selling for generating income. The fire wood collection resulted in violence, especially, if the activity coincided with confrontations of resistance from locals by snatching the fuelwood from the refugees. This can be

demonstrated by the number of conflicts for fuel wood as it was revealed by the survey data collected on sample households; 37.3 % of the respondents from the refugee and local communities replied that they faced fuelwood conflict in the area. Table 29 summarizes wood resource as a source of conflict.

Table 29. Reason of conflict over wood by sampled households

Reason of conflict over wood	Yes		No		Total	
	n	%	n	%	n	%
demand for construction	51	34.0	99	66.0	150	100.0
demand for fuel energy source	56	37.3	94	62.7	150	100.0
demand for sale	17	11.3	133	88.7	150	100.0

Source: Survey result

As it was mentioned previously, currently the demand for fuel energy has forced refugees to travel to longer distance (up to 17kms) to the places even not permitted for them to pass.

5.3.1.3 New Trend of Conflict on Soil

The new trend of conflict in the study area has recently manifested (for the last one year) in the form of soil source conflict for mud brick construction. Analysis of this new trend is crucial because the increasing influx of refugee entirely depends on mud brick for constructing house. This new trend in a conflict prone area has the potential to lead into severe conflicts, especially in the absence of effective and sustainable conflict management capacity of the local administration and current political tension between the two countries.



Figure 16. New trend of conflict on soil sources for mud brick (February, 2007).

5.3.2 Causes of Conflict in the Study Area

The existing and potential natural resource conflicts have a range of causes which needs to be fully understood before recommending possible solutions. However, in addressing such conflicts there was often a tendency to focus upon the immediate causal circumstances and look for technical or administrative solutions. In general, this is inadequate as it has addressed only the symptoms and not the deep-rooted causes. These include social, economic and political influences upon all the management of natural resource and the demands which are placed upon them.

Consequently, a major stage in resolving natural resource conflicts has to be the identification and analysis of the root causes of the conflict, which will require considering the total circumstances which impinge upon the various users of natural resources.

Hence an analytical explanation is given as to why in the first place there is conflict and what makes it recurrent. The underlying causes of natural resource scarcity are obvious, and conflict management can not have the final impact of resolving the conflict.

Generally natural resource scarcities are caused and intensified by the increase of human population and resource degradation affecting resource use value over time. Often conflicts are associated with the decline of the "resource pie" and the increase in number of population competing to share the "resource pie" (Ohlsson, 1999). Given the scarcity of complete data on conflicts arisen between refugees and locals and the details on socio-ethnic profile, it is not possible to ascertain a more direct link between ethnic backgrounds as primary cause for conflict.

5.3.2.1. Rapid Population Growth

The total number of refugee population is tremendously increasing in the area. For instance information obtained from ARRA administration indicates the current rate of refugee population arrival is 300 per month. Comparing this figure with the scarce natural resource of the area, further aggravation of the already scarce natural resource base of the area is a fact. Fuelwood demand for the newly arriving refugees and the existing and continuous demand of the current population totally depend on this scarce natural resource base.

Table 30. Trend of population growth in Tahtay-Adyabo woreda

Population increase at "Mai-kuhli Tabia" level	**2004**	**2007**
Locals	3,775	5,465
Refugees	8,345	13,732

Source: ARRA, 2007.

It was noted from the survey result that increased population number was mentioned as the primary cause for the shortage of fuel wood faced in the area with 46.6 % proportion, followed by scarcity of forest resources and absence of alternative energy source with 27.5% and 25.8% respectively (see table 31).

Table 31. Reasons mentioned for firewood shortage by sampled households

Reason for firewood shortage	**n**	**(%)**
Population pressure	83	46.6
Scarcity of forest	49	27.5
Absence of alternative source	46	25.9
Total response	**178**	**100.0**

Source: Survey data

The other possible cause for the increase in local population number is low awareness of family planning. The average mean family size of the local community is 6.17 which is greater than the national average 5.2. The increasing number of the local community has boldly put its own pressure on the expansion of different agricultural activities which includes farming and livestock rearing in the limited potential farm land, so this has created a fertile ground for conflict with pastoral Kunama refugees. An interview with development workers in the area of family planning and maternal and child health care revealed that family planning service is not a widely disseminated .There is no well-understood notion among the refugees and the local communities in this regard.

5.3.2.2. Natural Resource and Ecological Degradation

The gradual destruction of tree and bush coverage in the area is one of the observed problems. Causes associated with these are the demands for more fuel wood and increased reliance on animal biomass consumption which resulted in a gradual decline of the supply of natural fertilizer to soil. Rises in temperature and soil erosion are also phenomena increasingly being observed as a result. The area has increasingly become devoid of natural vegetation. Encroachment of weed herbs and pests has also increased from time to time. Refugees involved in livestock rearing look for more access to pasture and water sources by expanding to areas near the farming villages which has exerted more pressure.

The sample survey also revealed that a considerable proportion of the respondents attributed the problem of scarcity to a combination of both natural resource competition and population pressure (55.3%). However respondents identified resource competition (20%), political reason (14%) and population pressure (10.7%) (See table32).

Table 32. Perception about the causes of conflict by sampled households

What are the causes of conflict?	n	%
Population pressure	16	10.7
Resource competition	30	20
Both population & competition	83	55.3
Political reason	21	14
Total	**150**	**100**

Source: Survey Result

5.3.2.3 Inadequacy of Ration for Refugees

The amount of ration distributed to the refugees is 15kgs of Wheat per person per month and refugees sell some of their ration for grinding and other purposes. And in practice, this is not enough for them. Especially the Kunamas are, as an alternative, using the available

forest resource as a source of subsistence and livelihood for income generating and compensating the gap in the ration. This has created a competition over the limited forest resources that have resulted to conflict among refugees and locals.

5.3.2.4. Competition and Alienation

Competition as a result of scarcity in both sides has been aggravated. Refugees persistently have attempted to exploit every opportunity of expanding the grazing areas near the marginal lands and allotted area. Unlike scattered grazing, concentrated grazing has by itself resulted on rapid range degradation and has lead to competition and confrontations over access to grazing land.

It was also found in the focus group discussion for the question which tests both community attitudes of the desire to compete for more resources from both the refugees and locals have confirmed strong desires to compete towards the scarce resources.

Alienation is a consequential feeling of competition. The competing parties through the process and the actual measures taken in the competition will develop a collective felling that they are losing out to their counterparts. The locals replied affirmatively for the question "do you feel that your community is disadvantaged by the overtake of resources?" which shows the prevalence of strong sentiment of resource alienation.

The locals have reported the refugees have increased the distance of fuelwood collection over the areas, which they consider as rightfully theirs. They also feel that the Kunama refugees are increasingly encroaching to their grazing areas for grazing and fuel wood collection and in the process they degrade the rangeland as well as destroy the bush cover

leading to gradual deprivation. In the contrary to this the refugees feel that they are increasingly being denied of access to fuelwood and grazing land sources by locals in the surrounding area. Refugees explain it by saying "the locals hate us."

5.3.3 Conflict Resolution Mechanisms

Conflict resolution is usually approached through the study of the people/parties involved. These may be ethnic or socio-economic groups, or the state and its organs.

As part of the effort of the administration to assess the situation of conflict in the area, ARRA, through its protection department tries to organize a joint committee from both communities to solve problems at grass root level. But resolving conflicts in the area is way behind to be called efficient and comprehensive enough given the diverse requirements of verifying, sorting and diversification of data requirements.

One major gap of the management of conflict was that the rule as to how forest land and grazing land was to be acquired, titled, utilized and alienated to others is not clearly put. Detailed regulations are not also outlined as to what forms of use is allowed.

Such regulations are important to this discussion because it explains the nature of historical expansion and settlement of refugees to surrounding marginal areas. The solutions to natural resource conflicts are not to be found in any single action at any one level of society. Rather, interventions are needed at a range of levels which address the various ways in which the problems have been caused. While a range of actions are needed, there must be an overall process which will direct attention to these conflicts, analyze their causes and identify solutions. One process which has been stimulating such thinking is the

Integrated Natural Resource Management approach which, seeks to integrate the scarce natural resources to the community different needs.

When and where such conflicts occur, they are often resolved by means of various strategies and through the intermediaries of institutions; and arrangements are made to arrive at mutual /personal understanding the parties in conflict, with the participation of neighbors, village elders, clan leaders, respective camp administrative and the council.

Hence, towards conflict resolution in the area there are different activities which are mostly targeted in resolving conflicts through negotiating the two parties, where this mostly held by the Camp administration conflict resolution committee which consists of 5 members (ARRA protection, refugee representative, representative from the locals, local administration and police). However, in situation where such local institution can not provide a solution, some people were reported to have taken even to further courts level.

A key lesson from conflict analysis is that institutional conflicts and lack of coordination between stakeholders with natural resource interests have led to poor use of resources and conflicts. While recent government initiatives may help to address this problem, the solution will lie with effective coordination by the ARRA in the area.

Secure access to natural resources is thus a prerequisite for investment by households and communities in Natural Resource management. This will not only help ensure the sustainability of production, but in turn help reduce conflicts over resources.

Alienation and competition also are further aggravated by the failure of authorities to take effective measures resolving disputes over access to resources and by the perceptions of being disadvantaged when authorities took some measures of regulating access to resources.

Appropriate conflict resolution mechanisms and interventions need to develop more intensive and sustainable resource use at the household and community level in order to accommodate population growth with the minimum of competition for resources and consequent potential for conflict (Wood, 1990). The challenge is to identify combinations of fire wood and grazing land use which match the area resources and meet their needs. These should be sought through Integrated Natural Resource Management which builds upon locals community existing knowledge of natural resources and their use, as well as identifying where externally generated innovations may be helpful (Chambers, 1989; Hudson et al, 1993).

5.4 Alternative Approach to Improve Natural Resource Management Practices

5.4.1 The Current Practices in Natural Resource Management

Discussion on this part was drawn mainly from the qualitative design research of this study, which involved different groups of refugees, non-refugees, stakeholders and partners working at various levels in line with the basic principles of Refugee operations and environmental management approaches.

Typical approaches of implementing NRM practices in the study area are through Food for Work (FFW) for locals and cash for work in case of refugees. Most of the works are carryout by mass mobilization that included women. Food for work program was undertaken among the locals whereas some voluntary participation was undertaken in the case of refugees. In this regards UNHCR, ARRA, NRDP, IRC and ZOA Refugee Care are involved in the natural resource protection and conservations program in and around Shimelba refugee camp.

The interventions include, mud brick construction, stone/soil bunds, eye brow basins terracing, building check-dams, hillside plantations, water development, awareness creation, forest guarding, nursery development, beehive distribution, afforestation, and biomass saving stoves distribution (Table 33).

Table 33. Current NRM activities in the study area

No	Current NRM Activities	Responsible body for implementation	Participants		Responsible body for Coordination
			Refugee	Locals	
1	Nursery Operations	NRDP	√√	√	ARRA
2	Afforestation Activities	NRDP	√	√√	ARRA
3	Soil & water conservation	NRDP	√	√√	ARRA
4	Distribution of fuel saving stoves	ZOA	√√	--	ARRA
5	Environmental awareness raising	NRDP, ARRA	√√	√	ARRA
6	Promotion of mud brick technology	ZOA	√√	--	ARRA
7	Vegetable garden and agro forestry	ZOA	√√	--	ARRA
8	School environmental clubs activities	ZOA	√√	√√	ARRA
9	Environmental working groups	ZOA	√√	√√	ARRA
10	Resource center	ZOA	√√	--	ARRA
11	Recruiting animators and training	ZOA	√√	--	ARRA
12	Roots and shoots clubs	ZOA	√√	--	ARRA
13	Bee keeping	ZOA	√√	--	ARRA
14	Water development	IRC	√√	√	ARRA
15	Research, forums, workshops organization	UNHCR	√√	√√	ARRA
16	Forest guards	NRDP	√	√√	ARRA

√ shows low level of participation
√√ shows higher level of participation
Source: ARRA annual report, 2006



Figure 17. Mud brick house construction in Shimelba refugee camp (Feb, 2007).



Figure 18. Nursery site preparation around Shimelba refugee camp (February, 2007).



Figure 19. Nursery site in Shimelba refugee camp (June, 2007).



Figure 20. Afforestation activity (June, 2007).

The extent of the damage on Natural Resources has reached to a critical level and efforts in Natural Resource Management are far below the expected. For instance according to the survey result 40 % of the respondents indicated that they were involved in soil and water conservation activities, but the rest 60 % of the respondents answered that they have never been involved in any of the soil and water conservation activities.(Table 34).



Figure 21. Shimelba camp plantation site (June, 2007).



Figure 22. Eye brow basins around Shimelba camp (June, 2007).

Table 34. Participation in Natural Resource Management activities by sampled households

NRM activities	Response	Refugee		Non Refugee		Row Total (%)	$\chi 2$-Statistics
		n	%	n	%		
Participation in SWC activities	Yes	23	20.9	37	92.5	40.0	62.642***
	No	87	79.1	3	7.5	60.0	
Participation in the planning of SWC	Yes	14	12.7	19	47.5	22.0	20.669***
	No	96	87.3	21	52.5	78.0	
Maintenance of SWC	Yes	14	12.7	33	86.8	31.8	71.586***
	No	96	87.3	5	13.2	68.2	
Training in SWC	Yes	9	8.2	21	52.5	20.0	36.009***
	No	101	91.8	19	47.5	80.0	
Participation in tree planting	Yes	76	69.1	37	92.5	75.3	8.650***
	No	34	30.9	3	7.5	24.7	
Taken care of the planted trees	Yes	71	78.0	32	86.5	80.5	1.199NS
	No	20	22.0	5	13.5	19.5	
Areas of tree planted	own farm land	2	2.6	5	13.5	6.2	42.435***
	homestead yard	68	89.5	11	29.7	69.9	
	closed area	1	1.3	5	13.5	5.3	
	communal land	5	6.6	16	43.2	18.6	
Frequency of training	every year	4	40.0	12	66.7	57.1	4.480NS
	twice a year	4	40.0	6	33.3	35.7	
	once in a year	2	20.0	0	.0	7.1	
Type of training received for the natural resource management	Nursery Management	2	22.2	6	35.3	30.8	0.476NS
	SWC	5	55.6	8	47.1	50.0	
	Afforestation & terracing	2	22.2	3	17.6	19.2	

Source: Survey result

***=significant at 1%,* =NS=Not significant

Among the respondents that involved in the conservation activities it is indicated that such initiatives particularly in the soil and water conservation, 33% reported they were initiated by themselves and hence 67.1% were in group mobilized (see table 35).

Table 35. Method of participation in SWC activities by sampled households

Method of participation	Refugee		Non Refugee		Total
	n	%	n	%	%
by own initiation	13	14.3	17	18.7	33
by group mobilization	9	9.9	25	27.5	37.4
by food for work	2	2.2	11	12.1	14.3
by cash for work	4	4.4	10	11.0	15.4
Total	**28**	**30.8**	**63**	**69.2**	**100**

Source: Survey result

About 22% of the respondents answered that they were invited and involved in the planning of the soil and water conservation activities. On the other hand 78 % of the respondents answered that they were not involved (Table 34).



Figure 23. SWC activities around Shimelba refugee camp (February, 2007).

In addition, according to the survey result 31.8 % of them maintained the structures after construction, where as 68.2 % reported they did not maintain the works. Even if, there are some efforts undertaken in providing training in soil and water conservation activity in the area, only 20 % of the respondents answered that they took trainings on soil and water conservation techniques (Table 34).

Towards this end, there are some moves which include nursery site establishment, seedling raising and disbursing, according to the office report of NRDP, about 672,050 healthy seedlings of different species which include different fruit trees (Papaya) have been raised

and about 30,887 different seedlings have been planted in and around Shimelba refugee camp and the rest was distributed. In addition about 114 ha of land have been covered with different species inducing dry land indigenous trees like Acacia Bussei with survival rate of 82.4% of the planted trees (ZOA Quarterly report, 2007).



Figure 24. Agro forestry site in Shimelba refugee camp, (Feb, 2007).

It is known that tree planting have a paramount importance as an indigenous vegetative conservation practice and it has been practiced for many years. According to the survey result, 75.3 % practiced tree panting and the rest had never been involved in such activity.

As indicated in Table 36, Own initiation, group mobilization and food for work were reported as the method of their participation in tree planting with 59.5 %, 24.4% and 5.3% respectively. Where about 69.9%, 18.6 %, 6.2 % and 5.3% of the respondents that they planted the trees were planted in homestead yard, communal degraded land, own farmland

and closed areas respectively. Hence, about 80.5 % of the respondents reported that they cared for the planted trees and 19.5 % didn't take care of the planted trees (see table 34).

Table 36. Method of participation for tree planting by sampled households

Method of participation for tree planting	Refugee		Non Refugee		Total
	n	(%)	n	(%)	(%)
Own initiation	58	44.3	20	15.3	59.5
Group mobilization	15	11.5	17	13.0	24.4
Food for work	0	.0	7	5.3	5.3
Cash for work	7	5.3	7	5.3	10.7
Total	**80**	**61.1**	**51**	**38.9**	**100**

Source: Survey result

As it is mentioned above there are also some efforts in the area of natural resource management training which 50 % of the respondents answered that they were involved in training of soil and water conservation and 30.8 % responded they were involved in nursery management and 19.2 % reported both see (table 34).



Figure 25. Beehive garden in Shimelba camp (June, 2007).

5.4.2 Constraint analysis from INRM perspective

5.4.2.1 Major Constraints in Planning, Implementation, Monitoring and Evaluation

Environmental interventions should be seen as a component of broader efforts to minimize negative (and maximize positive) impacts on hosting communities. These interventions can contribute to local development. Since Shimelba is low rainfall area, water harvesting measures should have been built. At little additional cost, rainwater could have been stored and later used by refugees for tree planting and in kitchen gardens. These should have been included in the construction budgets.

The site development activities should have taken into account the potential impacts of excessive clearance of ground vegetation. Inclusion of environmental specialists in the emergency phase should have resulted in improved environmental planning. If these actions were taken during the emergency phase, it would have pre-empty the current environmental problems and have put in place measures to avoid or reduce them. The current problems, costs and conflicts related to environmental degradation were likely to be significantly reduced, if this approach was used appropriately.

For instance, it was important to undertake appropriate environmental screening in Shimelba refugee camp at the time of establishment. The site was not selected based on taking a variety of factors. The environmental impacts may at first appeared relatively insignificant; but it tended to feature more highly as the operation has continued and damage to the study area has become more severe, with associated implications for refugee health and/or the livelihoods of local communities. Therefore, the site should have been appraised from an environmental perspective before it was confirmed. This could have

been done easily by including natural resource mapping in site planning. This could have offered a relatively simple representation of the natural resource issues in the area. It did not require specialist training and could have helped to screen possible settlement sites.

In addition, involving relevant government environment departments in site selection would have resulted in decisions which would have been more acceptable and environmentally sound. These bodies could have brought valuable new perspectives. A simple, pre-defined physical planning specification was an effective way to minimize the environmental problems. This means camp siting and design could have dramatically reduce the severity of environmental damage.

As much vegetation as possible should have been maintained at the stage of site establishment. Camp areas should never be cleared, a minimum of woody vegetation should be removed during site establishment, leaving as much ground cover as possible to minimize erosion, control dust or mud, provide wood products for refugees and offer shade or serve as a windbreak.

Many environmental activities can begin immediately during the emergency phase, with a comprehensive environmental action plan to follow later. Certain activities could have been introduced at the camp establishment stage without prejudicing subsequent strategies. These typically include public awareness raising of rules and regulations, establishment of environmental co-ordination forums, and lobbying for inclusion of environmental considerations in all aspects of camp establishment which were skipped in Shimelba case.

There were many possibilities to influence decisions on food rations and utensils, especially to ensure that all cooking pots in the camp are with lids. When the camp was established, refugees must have been informed of regulations regarding natural resource use. Rules concerning natural resource use should have been made clear from the outset. These may relate to tree cutting, charcoal making or management of wood harvesting areas. One strategy was to record each tree above a certain diameter on every refugee plot, and assign responsibility for its protection to the respective families. This approach required the timely presence of an environmental agency, working in collaboration with the camp management agency, and subsequent introduction of incentives and disincentives. To summarize, careful camp siting and design could have dramatically reduced the severity of environmental degradation in the area.

The absence of Environmental contingency plan, resulted a condition where addressing environmental concerns after a lot of damage. A planning framework should have been devised which treats environmental factors as an integral part of overall contingency plans for refugee emergency operations. The delay in incorporating environmental considerations has resulted ineffective and costly attempts to tackle negative environmental effects. If environmental management capacity was established with some standard during an emergency, the environmental issues discussed in this paper would be less easily overlooked.

Information on a small number of key environmental features was normally sufficient for contingency planning by using locally available information. Maps, statistics, survey

results and inventory data should have been consulted. If relevant government environment departments were involved in site selection they could bring valuable new perspectives.

On the other hand clear definition and analysis of the environmental problems in the study area was essential for the design of a successful mitigation strategy. The nature of environmental problems should have been clearly defined and understood at the camp establishment stage. Multi-disciplinary approaches were more likely to lead to accurate problem definition and analysis. But in this case a narrowly defined approaches. The collection of baseline environmental data in the emergency phase greatly would have facilitated subsequent impact assessment. Knowledge of the baseline environmental situation is essential for developing environmental action plans and monitoring refugee impacts. If the baseline environmental situation prior to a refugee influx is known, a realistic assessment could have been made of the refugees impacts on natural resources, or the impact of mitigation measures, up to the time of repatriation or resettlement.

The monitoring and evaluation systems should go beyond financial accounting. Measures must be put in place which helps to determine the appropriateness and effectiveness of environmental interventions beyond quantitative outputs. In this case there were no specific indicators for the expected impact of each activity mentioned. Simple and few environmental indicators should have been collected in the field as part of ongoing implementation and monitoring. Field level indicators are most appropriate for monitoring and evaluating environmental activities. Local communities and refugees should have been implicated with the selection and monitoring of environmental indicators.

5.4.2.2 Local Participation

Sustainable environmental management practices are best achieved with the full and meaningful participation of the affected communities. It is obvious that given assistance and direction, local communities can be effective managers of natural resources. But this could have been best assured if environmental strategies were presented as being a development programme. Local people should have taken the lead role in planning and implementing environmental rehabilitation strategies within their own communities.

Mitigation of damage and rehabilitation of the study area requires considerable input from the impacted communities. It is therefore critical to conduct participatory problem identification and needs assessment of the target area before launching any environment-related programme. Obviously enabling participation and empowerment requires commitment and patience from donors and implementing partners. Nevertheless, without it, the sustainability of any environmental rehabilitation initiatives is likely to be compromised as it has happened now.

The active local-level involvement of donors and external advisors, together with assured support from government institutions create conditions for local communities to gain sufficient confidence and expertise to implement natural resource management activities. If the local people were suitably empowered, they could have the ability to control refugee behavior. However, the ability of the local was underestimated. But the ability of local people to influence the way refugees treat the host environment should not be downplayed. Local people can exert a surprising degree of control over access to resources. If suitable, local natural resource management practices can be identified and collaborative efforts

made to have refugees comply with these under agreements with the local population. It is likely that the host government will be supportive of such initiatives. However, if environmental rehabilitation is to be sustainable in the long-term, such participation is imperative from an early stage.

Incentives can take many forms, as long as they are seen as desirable by refugees. Non-monetary economic incentives can include a range of environmentally-friendly commodities which bring financial benefits to the recipients. These might include fuel-saving stoves, firewood and various essential household items that would otherwise have to be purchased. Issues of sustainability and ownership are important, and it is preferable to confine such incentive-based work within clearly specified limits and to the camp and their immediate area.

While cash incentives can change behavior, they are not sustainable. Effective and sustainable environmental management and rehabilitation activities in the longer-term require a detailed understanding of the incentives and motivations for refugees or local communities to become involved in such activities. Such incentives revolve primarily around long-term rights of access to natural resources and any benefits accrued from them, in addition to the perceived magnitude of these benefits. Environmental activities should seek therefore to maximize the benefits to the individual without compromising environmental sustainability.

5.4.2.3 Institutional Constraints

It is clear that institutional capacity-building is a common prerequisite for effective participation of local government and/or institutions in environmental management.

Government department, NRDP, responsible for natural resource management, currently is very ill-prepared and under-resourced to handle the demands of a refugee influx. In my opinion a basic needs assessment to determine the required skills and training can ensure meaningful capacity-building initiatives which is lacking in the case of Shimelba.

The strength of local institutions (e.g. village natural resource committees) was very week. It has to be strengthened so as to better ensure the long term sustainability of activities. Capacity-building exercises should be given like training in financial management, project planning, technical aspects of plantation management and the use of local level by-laws for protection. However, capacity-building should have been undertaken as early as possible in the care and maintenance phase so that total management responsibility can be assumed by the local institution. However, it is not too late for future efforts.

The level of government participation in environmental initiatives is far below the expected. The link between UNHCR and its partners and relevant government technical departments was very weak. If this link was strong enough, the approach would have become more participatory and transparent.

No time has been taken to identify, village by village, the most legitimate and viable local level institution in the area. Several different institutions may be typically responsible for resource management at the village level. In my opinion politically elected bodies, traditional leaders, councils, formal and informal groups such as savings societies and youth groups, or even individual households have to be identified.

According to the focus group discussion, there is a problem of coordination when preparing action plans. The natural resource management approach in the camp is not cross checked with the government approach.

In order to ensure efficiency and effectiveness in environmental protection, and as part of the process of mainstreaming environmental concerns in refugee operations, environmental funding allocations should be included in emergency funding appeals. Funding should be flexible so that re-allocation to different sub-activities according to needs is possible at a later stage. Emergency environmental funds should cover costs related to co-ordination, consultation, baseline data collection, information sharing, and the establishment of environmental forums, problem analysis, environmental planning and the process of influencing policy. Plus it should cover actual implementation of emergency activities in the field, such as enforcement of cutting restrictions, public awareness raising and sourcing of construction materials.

5.4.2.4 Policy Issues

The greatest impacts on the environment in refugee situations may be caused by policy decisions. Government policies often determine the extent and success of refugee participation in environmental management activities. Laws related to refugees use of land or specific natural resources should be clearly communicated to refugee and local communities concerned. Important gains can be made by lobbying and advocating for policy change through local and national government. Where appropriate, consideration should be given to the presence of refugees in programmes developed under national Environmental Action Plans.

Even though government policy is often the key to success of refugee participation in natural resource management, it has been totally neglected. While the goal of local and refugee participation in environmental management strategies is a sound principle, its viability rests on the government willingness to allow refugees to have access to local natural resources. Such policies must have been stated and elucidated from the earliest opportunity clearly.

In the Environmental Policy of Ethiopia, opportunities for refugee participation, decision-making and access to (with assumed control over) natural resources has not become clear. Since this policy is vague, however, the likelihood of achieving effective refugee participation has greatly diminished.

This ambiguous government policy has encouraged or contributed to environmental degradation. While a total ban is declared it has not protected the local environment. It is unrealistic to imagine workable bans without concerted local support. Under partial enforcement which is obvious in this case, local resource utilization will generally continue. Because refugees are denied official access to local land but are not physically excluded from using this resource, negligent and unsustainable exploitation is occurring.

Government must therefore develop a clear policy statement on refugee access and usage rights, and then follow this through the necessary enforcement measures that may be required.

To summarize, like this case national environmental policies may unlikely to refer to refugee-affected areas, but for short term solution preparing basic guidelines as a supplement to create a supportive policy framework is very crucial.

6. CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The refugee population has considerable proportion of young people where the working age group of 15-45 constitutes 82% majority of the total respondents. These are potential work force for development activities including Natural resource management activities if aided with incentive, participatory approach, and coordinated effort by stakeholders and implementing partners. The occupational background of the refugee population is mainly pastoral and trading activity particularly small business which is influenced by their background. On the other hand, current major occupations of the locals depend on crop-livestock production.

The high population pressure has seriously affected and damaged the scarce natural resources and the agricultural productivity of the study area. This is due to the relatively high refugee population allowed to settle in one camp; which has accounted for the massive impact on the environment. The study area as a whole is semi arid which is characterized by low and erratic rainfall which affects the productivity of crop production. The sale of forest products (firewood and charcoal) has become one of the means of income generation to a large number of both the communities (groups) resulting in huge forest resources depletion and environmental degradation. The provision of forest resources for the large number of refugee and local population has been a very demanding task and there is a serious problem of fuel wood scarcity in the study area. The allotted grazing land for the refugees is beyond its carrying capacity compared to the livestock population. This and the competition for scarce fuel wood has resulted a serious conflict with the local population. Ever increasing household energy demand in the area is found to be the major cause for the

ongoing deforestation. So it calls for further research and development interventions for the provision of other alternative energy sources.

The formal administrative organs, stakeholders and implementing partners are well aware of the degradation in the study area. However, measures taken to date towards environmental rehabilitation were found to be negligible compared to the environmental impacts. Failure to consider environmental issues from the outset of a refugee operation has resulted in a condition to widespread effects and costly to restore.

The NRM activities suffer from insufficient number of trained staff, shortage of financial and logistical support for the field work. In addition, the NRM interventions are characterized to a large extent as having been undertaken in isolation (no proper link-up with other NRM activities) and as having little involvement and support by the refugees and local population. There are no indications that the NRM activities have been participatory in different phases (planning, implementation, monitoring & evaluation). As a result majority of the households (both locals and refugees) have preferred not to engage in NRM activities. Therefore, the involvement of the principal stakeholders including refugees and local population is not significant.

Government policies often determine the extent and success of refugee participation in environmental management activities. Even though government policy is often the key to success of refugee participation in natural resource management, it has been totally neglected. Therefore, important gains can be made by lobbying and advocating for filling the gaps in the existing policy through regional and federal governments levels through further research investigations.

6.2 Recommendations

The following short, medium and long term Research, Development and Policy recommendations are believed to be considered important:-

- Since the current camp is beyond its carrying capacity, another refugee settlement with relatively less population should be considered based on detailed research for future refugee handling.
- Improving ration allowance for refugees and creating off farm employment for locals can significantly reduce the pressure in the natural resources.
- As tree planting alone will not solve the fuel wood problem energy saving mechanisms through the introduction, training and dissemination of improved stove programme (already under operation) should be strengthened. It is also recommended that stoves should be distributed as incentives for participating in NRM activities and not free of charge.
- SWC measures should be among the priority lists of the NRM activities. Area closure for most degraded hilly terrains and enrichment plantation on plain lands should be employed by integrated approach.
- The common practice of rehabilitation pastures like area closure, control and eradication of unwanted vegetation species, maintaining, planting of indigenous, improved forage and fodder species and rotational grazing need to be considered. Capacity building and strengthened institutions in the area of feed resource improvement should be given sufficient attention and consideration.
- Participatory planning which embraces all stakeholders and IPs and especially the beneficiaries should be given due considerations for a useful implementation of NRM

interventions. Such activities should be designed and guided by an integrated participatory approach and by focusing on environmental education. The role of the EWG and local institutions need to be strengthened to handle increasing Natural Resource conflict issues between locals and refugees.

- A joint venture involving government and NGO in NRM activities is highly recommended as this will avoid unnecessary duplication and poor resource utilization. ARRA as a federal government organ should make effort to solve budget problem, coordinate and monitor IPs and stakeholders involved in the NRM activities.
- Finally, Government must therefore develop a clear policy statement on refugee access and usage rights, and then follow this through with whatever enforcement measures (guidelines) may be required. This can be in the form of implementing Rapid environmental impact assessment before establishment of camps (preparing contingency plan at federal and regional levels).

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ANNEXES

Annex 1. Questionnaire prepared for the Formal survey

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

INSTITUTE OF DEVELOPMENT RESEARCH (IDR)

FEBRUARY 2007

QUESTIONNAIRE FOR FORMAL SURVEY

Title: *The need for* Integrated Natural Resource Management In Refugee Settlement Areas: The Case of Eritrean Refugees in and around Shimelba Camp, TNRS, Ethiopia.

Respondent code ----------

For refugees	***For Locals***
Location: Camp ----------	**Distance from the camp ------**
Zone ----------	**Kebele ----------**
Block ----------	**Mender----------**
House number ----------	

Date (of filling this form) ----------

Starting time ---------- ending time ----------

Type of respondent: 1) Local 2) Refugee Kunama 3) Refugee Tigrigna

4) Others specify----------

Name of the enumerator ----------

Signature of the enumerator ----------

Instruction: *- Please tell the respondents that the objective of this study is for academic purpose. It has no relation with any food ration and political stand. Assure them that the information collected remains confidential and will not be used for other goals. Besides, tell them that their names are not included in the report rather the information they will give.*

Part 1. General Information

1.1 Age of the respondent _____

1.2 Sex 1) male 2) female

1.3 Marital status 1) Married 2) Divorced 3) Widowed 4) Unmarried

1.4 Ethnicity 1) Kunama 2) Tigrigna 3) local Tigray 4) others specify_____

1.5 Religion 1) Orthodox 2) Catholic 3) Muslim 4) Protestant 5) others specify

1.6 Educational level of the respondent: 1) Illiterate 2) read and write 3) Primary (1-8)
4) Secondary (9-12) 5) Tertiary (University or College)

1.7 Basic information of the respondent's household:

No.	*Relation ship to the head (code A)*	*Sex*	*Age*	*Marital Status (Code B)*	*Level of education (Code C)*	*Main Occupation (Code D)*	*Previous occupation (Code D) For Refugees*

Code Box

Code A: Relation ship to the head of household
1. Spouse 2. Son 3. Daughter 4. Parents (father /mother) 5. Relative to the head 6. Relative to spouse 7. Non relatives 8. others, specify
Code B: Marital Status 1) Married 2) Divorced 3) Widowed 4) unmarried
Code C: Level of education 1) Illiterate 2) read and write 3) Primary (1-8) 4) Secondary (9-12) 5) Tertiary (University or College)
Code D: Main Occupation (If more than one answer put according to importance)

1. Farmer	4. Petty trade	7. Unemployed	10.Pastoralist
2. Public sector employee	5. Student	8. Disabled	11. I was a child
3. Private sector employee	6. Unpaid family worker	9.Military	12.others, specify

Part 2. Income and Expenditure of the Household

2.1 What is your productive/economic activity for your livelihood? (put a tick mark **(Rank according to their importance if more than one answers)**

Agriculture: Crop ---------- Livestock ---------- Mixed ----------

Non-Agriculture: Employed ---------- Petty trade ---------- Other specify ----------

2.2 List down your expenditures in the table below:

Items of expenditure	Expense in birr per day, month or year
Clothing	
Community contribution	
Fertilizer	
Food items	
Kerosene	
Land use fee	

Religious festivals	
Schooling children	
Seeds	
Transport	
Wedding/funeral	
health	
Telephone/Internet	
Electricity	
Others, specify	

2.3 What are your income sources? **(Remark: Put the income amount per the specified time).**

Income Source	Response		Average amount in birr per day, per month or per year
	Yes	No	
Agricultural activity			
Crop selling(per year)			
Livestock selling(per year)			
Non-agricultural activity			
Daily laborer(per day)			
Fuel wood selling (per month)			
Charcoal selling (per month)			
Food for work(per month)			
Government employee(per month)			
NGO employee(per month)			
Employment in international- organizations(per month)			
Remittance(per year)			

Ration selling(per month)			
Petty trade activities(per month)			
incense selling(per year)			
Renting land			
Selling grass			
Others, mention			

2.4 Are any of your family members involved in income generating activity?

1) yes 2) no (if no, skip to Question number 2.6)

2.5. If the answer for Question number 2.4 is yes, list down the activities in the table below:

Relation to the head (Code A)	Sex		Type of activity(Tick)		Amount earned in birr
	M	F	On farm	Off farm	

Code Box for 2.5

Code A: Relation to head of household 1. Spouse 2. Son 3. Daughter 4. Parents (father /mother) 5. Relative to the head 6. Relative to spouse 7. Non relatives 8. others, specify

2.6 **(For refugees only)** Is the monthly ration enough for your family?

1) yes 2) no

2.7 If the answer for Question number 2.6 is no, how did you compensate?

1) petty trade 2) selling wood/charcoal 3) selling livestock 4) remittance

5) farming 6) others, specify _____

Part 3: Land Ownership

3.1 Use the following table to answer this question:

Type of land Tenure arrangement	Land type Put tick mark		What is the size of the land in local units?	Purpose /Land use (Code A)
	yes	no		
Own land				
Rent in				
Rent out				
Code Box for 3.1				
Code A 1. crop land 2. grazing land 3. gardening 4. others, specify_____				

Part 4. Crop production

4.1. What type of crops did you produce in 2006/2007 cropping season? **(Remark: tick horizontal**

Crop production by type	Amount harvested(in quintals per hectare)or other local measurement	Remark (put the conversion factors)
Sorghum(Meshella)		
Millet(Dagusha)		
Maize		
Noug		
Sesame		
Wheat		
Teff		
Others specify		

4.2 What kind of crop production trend have you observed for the last three years? 1) Increasing 2) Decreasing 3) No change 4) I don't know

4.3 If the answer for Question number 4.2 is decreasing, what is/are the reason? **(Rank)**

1. soil fertility decline 2. low access to inputs 3.market problem 4.pest

5. low rainfall 6.other specify_____

4.4 Was the last year production sufficient for household consumption?

1) Yes (skip to Question number 4.6) 2) no

4.5 If the answer for Question number 4.4 is no, how did you compensate the deficiency? **(Rank)**

1) Aid 2) help from relatives 3) Remittance 4) credit 5) selling livestock 6) Petty trade

7) daily laborer 8) other specify_____

4.6 What are the major constraints you face in crop production? **(Rank)**

1) Productivity 2) market 3) labour 4) access to inputs 5) others, specify___

4.7 What do you think is the solution for these constraints you faced?

Part 5. Livestock Ownership

5.1 What type of livestock do you have?

Animal type	**Total population**	**Major purpose you are keeping the livestock (code A)**	**Household consumption (Jan 2006-2007)**	
			Number	**Price (expected)**
Ox				
Cow				
Heifer				
Young bulls				
Calf				
Goat				
Sheep				
Donkey				
Mule				
Horse				
Poultry				
Bee hive				
Camel				
Others, specify				

1. **Code Box for 5.1**

2. **Code A:** 1. selling 2.home consumption 3.for slaughtering special occasions 4.gift for wedding purpose 5.ploughing 6. transportation 7.breeding and production 8. others, specify

Part 6. Livestock Feed Sources

6.1 If the household owns any livestock, fill the following table about livestock feed resources.

Animal type	Dry season feed source			Wet season feed source			Responsible for herding (Code B)
	Feed source (Code A)	Distance from village in hours	Maximum time spent to reach the source	Feed source (Code A)	Distance from village in hours	Maximum time spent to reach the source	
Ox							
Cow							
Calf							
Sheep							
Goat							
Donkey							
Mule							
Horse							
Camel							
Poultry							

3. Code Box for 6.1

Code A 1) hay 2) natural pasture 3) after math 4) crop residue 5) agro industrial by-products 6) maize 7) sorghum 8) wheat bran 9) others, specify _____

Code B 1) hired 2) communal 3) family labor 4.other specify_____

6.2 What do you use for grazing area for your livestock?

1) Your own plot 2) communal 3) delineated area allowed for refugees 4) others, specify

6.3 Is there any regulation in using grazing area?

1) Yes 2) No

6.4 Do you face shortage of grazing pasture for your livestock?

1) Yes 2) No (Skip to Question number 6.8)

6.5 If the answer for Question 6.4 is yes, during which season?

1) Rainy 2) dry 3) both rainy and dry season

6.6 What was your solution to alleviate this problem last year? **(Rank)**

1) Moving your livestock to other area 2) selling all of them 3) Selling some of them

4) Giving collected feed 5)Lopping of trees (cutting of branches) 6) other, specify

6.7 Do your livestock use different water sources in dry and rainy seasons?

1) yes (skip to Question number 6.10) 2) No

6.8 If the answer for Question number 6.7 is no, what are the main sources for the whole year?

1) river 2) springs 3) pond 4) wells 5) tap water 6) other specify---

6.9 How far is the water source from the village in one-way walking? ---hrs.

6.10 If the answer for Question number 6.7 is yes what are the main sources of water for your livestock in wet season? **(Rank if more than one answer)**

1) river 2) springs 3) pond 4) wells 5) tap water 6) other specify-----

6.11 How far is the water source from the village in one-way walking? ---hrs.

6.12 What are the main sources of water for your livestock in dry season?

1) river 2) springs 3) pond 4) wells 5) tap water 6) other specify-----

6.13 How far is the water source from the village in one-way walking? ----hrs

6.14 How many times do you water your livestock per day?

1) Once in a day 2) twice in a day 3) one in two days 4) difficult to specify

5) once per month for camels 6) once per week 7) others specify_____

Part 7. Fuel wood Consumption

7.1 What type of fuel do you use for cooking purposes? **(Rank them, if more than one answer)**

1) firewood 2) dried leaves 3) cow dung 4) charcoal

5)gas(Ethanol or kerosene 6) solar energy 7) others, specify_____

7.2 In the following table, please mention the distance traveled, sources, responsible person, time taken to collect, amount of bundle needed for a week, frequency of collecting to get this bundle:

Type of fuel source	Area that has been collected (Code A)	Distance in one way walking in hours	Purpose of the fuel source collected (Code B)	Amount collected in bundle or sack per week.	Frequency of collection per week on average	Collectors (Code C)
Firewood						
Cow dung						
Crop residues						
Charcoal						

Others specify						

4. Code Box for 7.2

Code A 1) From home stead 2) from common grazing land 3) from crop land 4)from private land other than homestead 5) buying 5)others, specify----
Code B 1) cooking 2) selling 3) both
Code C 1) Male children 2) female children 3) young males 4) men 5) Young females 6) women 7) others, specify----------

7.3 Did you face shortage of fuel wood for home consumption last year?

1) yes 2) no(skip to Question number 7.7)

7.4 If the answer for Question number 7.3 is yes, which season?

1) dry season 2) rainy season 3) both seasons

7.5 What were the reasons for this shortage? **(Rank)**

1) population pressure 2) scarcity of forest 3) no alternative source 4)others specify

7.6 What are your coping mechanisms for this problem?

1) using fuel efficient biomass saving stoves 2) decreasing the frequency of cooking used
3) processing items beforehand 4) restoring to collective cooking 5) buying cow dung
6) others, specify

7.7 How do you collect the firewood for home consumption? **(Rank)**

1) Through cutting live trees from communal forest & dried them
2) Collecting already dried trees from communal forests
3) Collecting already dried trees from croplands
4) Through cutting live trees from crop lands and dried them
5) Buying 6) others, specify

7.8 Have you ever sold any type of fuel source?

1) Yes 2) no (skip to Question number 7.12)

7.9 If yes, what type of fuel did you sell? **(Rank if more than one answer)**___

1) Firewood 2) leaves 3) cow dung 4) Charcoal 5) others, specify----

7.10 If you sold firewood, from where was it collected? **(Rank)**

1) from communal forest 2) from private land 3) from crop land
4) trees from home stead 5) others, specify ----------

7.11 Where do you sell the fuel source? **(Rank if more than one answer)**____

1) market place 2) camp 3) nearby village 4) others, specify ----------

7.12 Have you ever bought any type of fuel source?

1) Yes 2) no (skip to Question number 8.1)

7.13 If the answer for Question number 7.12 is yes, what type of fuel did you bought? (Rank)

1) Firewood 2) leaves 3) cow dung 4) Charcoal 5) other specify_____

7.14 Where do you buy the fuel source? (Rank if more than one answer)___

1) market place 2) camp 3) nearby village 4) others, specify ----------

Part 8. Other Forest Uses

8.1 Do you use forest products?

1) yes 2) no (skip to Question number 8.5)

8.2 If the answer for Question number 8.1 is yes, list the purpose of forest use in the following table.

Other forest use	**Yes**	**No**	**Frequency** (in numbers per year , month, and week)	**Trend**	
				Increasing	**Decreasing**
House Construction					
House maintenance					
Incense collection					
Fruit for sell/ consumption					
Medicinal value					

8.3How do you access these resources? Fill in the following table **(Put tick mark)**

Forest sources purpose	Cutting/Collecting	buying	Government provision(cooperative)	Other mention
House Construction				
House maintenance				
Incense collection				
Fruit for sell/ consumption				
Medicinal value				
Others specify				

8.4 What is the reason for using forest products? **(Rank)**

1) lack of wood 2) Strict obligation 3) High demand 4) drought 5) for income6) others, specify

8.5 What alternative did you take for construction purposes? **(Rank)**

1) Use of mud brick 2) Use of stone 3) Tree plantation 4) Designing strategies 5) Agro-forestry practice 6) other specify

Part 9. Water consumption

9.1 What is the main source of your household drinking water? **(Rank)**

1) protected spring 2) river 3) unprotected spring 4) pond 5) well

6) tap water 7) hand pump wells 8)others, specify ----------

9.2 Does this source provide drinking water throughout the year?

1) Yes 2) no

9.3 How many jacks of water does your family consume per day? _____

9.4 How much roundtrips a person need to travel to collect this amount of water? 1) Once a day 2) twice a day 3) three times a day

4) more than three times a day 5) others specify_____

9.5 How long does one trip take /including distance travel and waiting for fetching/ from this source? ----------

9.6 Who collects it? **(Rank if more than one answer)**_____

1) Male children 2) female children 3) young males 4) men

5) Young females 6) women 7) others, specify----------

9.7 How do you rate the cleanness of the water**? (Put tick mark)**

Water source	Cleanness	
	Clean	Not clean
Protected spring		
River		
Unprotected spring		
Pond		
Well		
Hand pump wells		
Tap water		

9.8 Did you/ your family members face sickness due to unclean water?

1) Yes 2) No

9.9 If the answer for Question 9.8 is yes, did you know the disease type?

Please mention it and how many times within the last three years? _____

9.10 If yes did he/ she get treatments? a) Yes b) No

9.11 Did you face medication problem? a) Yes b) No

Part 10. Natural resource Conflict and resolution methods

10.1 Have you faced any type of conflict for the last three years?

1. yes 2.no (if no, skip to question number 11.1)

10.2 If the answer for Question number 10.1 is yes, please fill the following table

No	Resource type	Yes	No	Range level Code A	Possible reasons of conflict Code B	Frequency In number	Parties involved Code C	Resolution mechanism Code D
1	Water							
	Household consumption							
	For livestock							
2	Wood							
	Construction							
	Fuel energy source (own consumption)							
	Sale							
3	Land use							
	For Grazing							
	For Crop production							
	Forest land communal							
4	Stealing/cheating							

5	Other(specify)							
	Code Box for 10.2							

Code A 1. low 2. medium 3. high Code B 1.high population pressure .2. Resource competition 3.Political reason 4. other specify
Code C 1.Kunama refugee 2. Tigrina refugee 3.local 4.Refugee committee 5. others specify__
Code D 1.administrative 2. Elders 3. Not resolved still now 4. Committee

Part 11. Access to training and extension

11.1 Have you ever participated in soil and water conservation methods?

1) yes 2) no

11.2 How are you participating in the soil and water conservation methods?

(Rank if more than one answer)_____

1) own initiation 2) group mobilisation 3) food for work 4) cash for work

5) other specify_____

11.3 Have you ever participated in planning of soil and water conservation?

1) yes 2) no

11.4 Where did you work these soil and water conservation ?

1) own farmland 2) homestead yard 3) closed (forest area) 5)communal degraded areas 6) others, specify ----------

11.5 Have you ever maintained these works ?

1) yes 2) no

11.6 If the answer for Question number 11.5 is no, what are your reasons?

1) too far 2) lack of labour 3) lack of interest 4) lack of inputs 5) others, specify ----------

11.7 Have you ever taken any training on soil and water conservation?

1) yes 2) no

11.8 Have you ever participated in tree planting?

1) yes 2) no

11.9 How did you participate? **(Rank if more than one answer)**_____

1) own initiation 2) group mobilisation 3) food for work 4) cash for work

5) others, specify _____

11.10 If the answer for Question number 11.8 is yes, what are your reasons for planting ? **(Rank if more than one answer)**_____

1) shading 2) fodder production 3) obtain income

4) understanding long-term benefit 5) for food purpose 6) others specify__

11.11 Where did you plant these trees?

1) own farmland 2) homestead yard 3) closed (forest area) 4) communal degraded areas 5) others, specify _____

11.12 Have you ever taken care of the planted trees? (Refer to the Question 11.11 and answer for each area.

1) yes 2) no

11.13 If the answer for Question number 11.12 is no, what are your reasons?

1) too far 2) lack of provision 3) lack of interest 4) lack of inputs 5) others, specify ----------

11.14 What kind of natural resource management training have you ever received? Fill in the following table:

Training received	When	By whom Code A	Frequency Code B	For how long (in number of days)

5. **Code Box for 11.14**

Code A: 1.ZOA 2. IRC 3. ARRA 4.UNHCR 5.NRDP 6.other specify_____ **Code B:** 1.Every year2.Twice a year 3. Others, specify_____

11.15 What is the method of extension/training contact? **(Rank if more than one answer**

1) lecture only 2) practical demonstration

3) Discussion 4) others specify ----------

Part 12 General Suggestion

12.1 How do you think is the surrounding environment degraded? ----------

12.2 What do you suggest to solve the problem? ----------

12.3 Do you have any other suggestion that you want to add ? ----------

Thank you!!!

Annex 2. Checklist Questions for Stakeholders and Partners

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
INSTITUTE OF DEVELOPMENT RESEARCH
FEBRUARY 2007

1. What was the status of Shimelba camp and its surrounding environment (different natural resources like forest, water, soil, grazing land) before the arrival of refugees (that is before 3 years: August 2004)?
   - Forest sources (species type, area coverage, price of forest products)
   - Soil (fertility, erosion and productivity)
   - Water sources (ground and river-quality, quantity)
   - Grazing Land(amount, availability)
2. What is the status of Shimelba camp and it's surrounding different natural resources (forest, water, soil etc) now (Feb.2007) .That is after hosting refugees for 3 years?
   - Forest sources (species change, area coverage, price of forest products)
   - Soil (fertility, erosion and productivity)
   - Water sources (ground and river) (quality, quantity)
   - Grazing Land(amount, availability)
3. What is the level of degradation in and around Shimelba camp? (Please categorize in resource type and amount)
   - Forest degradation (species change, area coverage,)
   - Soil (fertility, erosion and productivity)
   - Water depletion (ground and river-quality, quantity)
   - Grazing Land(amount, availability)
4. In your opinion, who is contributing more to degradation? And why?
   - refugees
   - non refugees
   - within the refugees (Ethnicity, income group, sex, means of livelihood (pastoralist or urban based)
   - Other
5. What are the major reasons of degradation?
   - Social factors-education, etc.
   - Economic factors-income etc…
   - Demographic factors(population-density and affluence)
   - Political factors
   - Cultural factors
   - Development activities -construction of house, road, etc
   - Other factors
6. What has been done so far to alleviate the degradation problem in your organisation and what approach has been used?
   6.1 In environmental protections? and
   6.2 In rehabilitation programmes?
7. What are the major constraints in implementing the above activities (Environmental protection and rehabilitation programs)? (Please explain the constraints in detail).
   - budget related problems
   - human resource related problems
   - awareness related problems

- policy and guideline problems

8. What are the forms and causes of conflict in the locality (refugees and non refugees, within refugees and within locals) in relation to the different natural resources (water, forest, soil, grazing land)?
9. How frequent do these conflicts occur?
10. What kind of conflict resolution practices is/are in the locality and what is your role in conflict resolution and others role in the resolution process?
11. What are your experiences in SWOT? (That is in implementing your programme):-in terms of effectiveness, efficiency, acceptability and sustainability
    - Strength
    - Weakness
    - Opportunity
    - Threat
12. What is the role of different partners and stakeholders in taking care of the environment and conflict resolution?
13. How do you explain the coordination among stakeholders and partners?
14. What do you recommend for future interventions that is not done so far to safeguard the environment?
15. What is the Refugee policy of Ethiopia?
16. Does the Refugee policy of Ethiopia consider the Environmental Issues?
17. Is there appropriate consideration related to Refugees developed under national Environmental Action Plans? (at Federal and Regional Levels)
18. Does the Environmental Policy of Ethiopia consider refugee participation, decision-making and access to (with assumed control over).
19. Any other suggestion that you want to add?

Thank you!!!

Annex 3. Checklist questions for Refugees and locals in the focus group discussion

Part 1. Concerning the status and trend of the natural resource base

1.1 Water resource status and trend

1. What **type of water sources** do you use, before three years and now?
2. List if there is any change?
3. What are the reasons for these changes?
4. What is the **amount of water** source now as compared with the amount three years back?
5. Is it increasing or decreasing?
6. What are the reasons for this?
7. What problem do you face due to this change?
8. How are you trying to solve this problem?
9. What do you recommend for the future about the solution for the problem?
10. For what **purpose** do you use these water sources, before and now?
11. What is the change in usage (if there is any)?
12. If there is a change what are the reasons?
13. What problem do you face due to this change?
14. How are you trying to solve this problem?
15. What do you recommend for the future about the solution for the problem?
16. Any **disease prevalence** due to water borne diseases?
17. How do you explain the **availability** of water sources on monthly basis?
18. Explain briefly for possible reasons of scarcity and abundance

Part 2. Forest sources status and trend

19. What **type of tree/ shrub species are available** now and three years back?
20. Is there any change in **species type**?
21. What is the reason for this species change?
22. What problems do you face due to this species change?
23. For what purpose do you use these species, before and now?
24. Is there any change in usage?
25. What is the reason for this usage change?
26. What was the **amount of forest covered area** three years back when compared with now?
27. If decreasing, what are the possible reasons?
28. What problems do you face due to forest cover change?
29. How are you trying to solve this problem?
30. What do you recommend for the future about the solution for the problem?
31. Is there any change in **price of forest products** for the last three years?
32. By how much?
33. Due to this price change do you face any problem? Explain

Part 3. Soil resource

34. What is the **fertility status** of the soil in general, before and after?
35. Is there any change?
36. What are the reasons for this change?
37. What problems do you face due to this change?
38. How are you trying to solve this problem?
39. What do you recommend for the future about the solution for the problem?
40. What is the **productivity** of the soil?
41. What problems do you face due to this change?
42. How are you trying to solve this problem?
43. What do you recommend for future?
44. Characterize the soil according to the following features
    - By time, season,
    - Soil depth
    - Soil thickness, Stoniness
45. Do you perceive any **signs of erosion** in the area? When?
46. What are the reasons?

Part 4. Grazing land

47. What is the current **productivity** of the grazing land?
48. Compare it with three years back? Is there any change?
49. What problems do you face due to this change?
50. How are you trying to solve this problem?
51. What do you recommend for the future about the solution for the problem?
52. What is the distance traveled to graze these animals?
53. Is there any change when compared with three years back?
54. What are the reasons for this change?
55. What problems do you face due to this change?
56. How are you trying to solve this problem?
57. What do you recommend for future?
58. How do you explain the availability and amount of adequate feed from the grazing land, seasonally, monthly?

Summary about the status of natural resources

59. What problems in general do you face concerning these resources?
60. What are your solutions to solve them?
61. What do you recommend for future?

Part 5. Natural resource conflict

62. What **type of conflict** do you observe in this camp?
63. In terms of different natural resources
64. In terms of **parties** in the conflict i.e. Refugee to refugee, refugee to local
65. What are the **reasons of conflict** for each of the resources?
66. What is the **frequency** for each resource conflict and for each party?
67. What are the **resolution mechanisms** for this conflict?

68. What kind of **recommendation** do you have for the future about the solution for the Problem?

Part 6. Natural Resource Management

69. What natural resource management practices do you know?
70. By whom are these done?
71. How are you participating in the natural resource management practices undertaken?
    - In Planning?
    - In Design?
    - In Implementation?
    - In Monitoring and evaluation
72. What are the gaps in these measures?
73. What are the constraints in these measures?
74. Do you see any improvement or impact due to these NRM measures?
75. What benefits do you get from these measures?
76. What about the timing?
77. Explain the sustainability of the measures
78. Explain the acceptability of the measures
79. Explain the effectiveness of the measures
80. If there is any recommendation you want to add or suggest?

Thank you!!

Annex 4. Conversion Factors for computation of Tropical Livestock Unit

Type of livestock	TLU conversion Factor
Ox	1.00
Bull	0.75
Cow	1.00
Calf	0.34
Heifer	0.75
Sheep	0.13
Goat	0.13
Donkey	0.70
Camel	1.25
Chicken	0.013

Source: Stork et al. (1991).

Annex 5. Focus Group Discussion Pictures



Picture 1. FGD with Locals



Picture 2. FGD with Refugees



Picture 3. FGD with Implementing Partners



Picture 4. FGD with Stakeholders



Picture 5. Enumerators for data collection

Declaration

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

Declared by:

Haileselassie G. Mariam

Candidate

Confirmed by:

Mengesha Feseha

Advisor