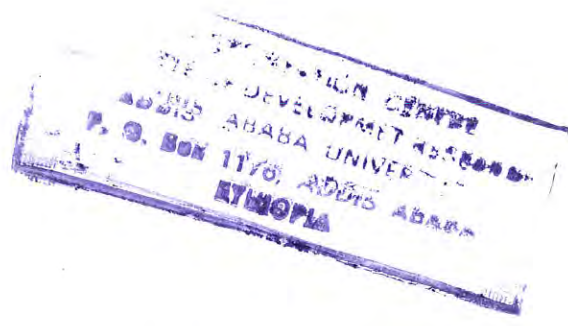


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**ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
COLLEGE OF DEVELOPMENT STUDIES**

**SUSTAINABILITY OF SOIL AND WATER CONSERVATION
PRACTICES IN KONSO SPECIAL WOREDA, SOUTHRN
NATIONS NATIONALITIES AND PEOPLE'S REGION**



**BY
GEDENO MOLLO**

**JULY, 2009
ADDIS ABABA**

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**SUSTAINABILITY OF SOIL AND WATER CONSERVATION
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NATIONS NATIONALITIES AND PEOPLE'S REGION**

**A Thesis Submitted to the School of Graduate Studies of
Addis Ababa University In partial Fulfillment of the
Requirements for the Degree of Masters of Arts in
Development Studies
(Specialization in Rural Livelihood and Development)**

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**ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES**

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Title

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ABBREVIATIONS AND ACRONYMS

EHR:	Ethiopian Highland Reclamation Study
EPA:	Environmental Protection Authority
FAO:	Food and Agricultural Organization
FGD:	Focus Group Discussion
KII	Key Informant Interview
KSW	Konso Special Woreda
MEDAC	Ministry of Economic Development And Cooperation
MOA	Ministry Of Agriculture
PHC	Population and Housing Census
SNNPR	Southern Nations Nationalities and People's Region
SWC	Soil and Water Conservation
WARDO	Woreda Agriculture and Rural Development Office

Abstract

The Konso people of SNNPR have experienced various SWC practices for several centuries. The practices had enabled the people to obtain yields from hilly and rugged environment with poor soils and unreliable rainfall. These days, the sustainability of such practices seems to suffer from a number of problems. The main objective of this study was to examine factors that undermine the sustainability of SWC practices in Konso Special Woreda, SNNPR. In order to achieve the objective of the study both primary and secondary data were generated by employing quantitative and qualitative methods. The quantitative method involved household survey while qualitative methods used included focus group discussion, key informant interview and direct personal observation. Both probability and non-probability sampling techniques were used to select the participants of the study. The selection of households included in the sample involved probability sampling (simple random sampling) while the selection of kebeles, the participants of focus group discussion and the key informant interview involved non-probability sampling (purposive sampling). The process of analysis of the study was carried out using qualitative description and quantitative statistics. The quantitative data was analyzed using frequency, percentage and mean where appropriate. A Chi-square test was applied to see opinion differences. Qualitative data was discussed to substantiate the study. The findings of the study indicated that the status of SWC practices in the study area was characterized by frequent damage of the structures for farmers stress on SWC structures that demand less effort. The overall trend of the practices was found to be deteriorating. Socio-culturally, the weakening of the role played by the traditional institutions, decrease in the willingness of the household members to involve in the practices, decrease in assistance gained from outside, decrease in the participation of youth in the practices and deterioration of social norms important for the practices contributed for undermining the sustainability of the practices. Economic factors that undermine the sustainability of the practices include: decrease in farm productivity, involvement in off farm activities during labor shortage and increase in labor wages. Concerning institutional support related factors, lack of access to extension services, poor attention from Woreda Agriculture and Rural Development Office, and lack of access to reliable credit sources were identified. Based on the findings of the study the following measures can be taken. In order to rejuvenate the essential role played by traditional institutions, strong cordial environment of work has to be created by the government administrative bodies at local level, measures like resettlement program, continuous trainings and awareness creation on family planning, and creating wider opportunities for involvement in off-farm activities can help solve population pressure problems. Specific measures to be taken to improve the participation of the youth in the practices could include: organizing the youth into self supporting groups so that they can have more opportunity to discuss on their own lives and share experience with adults, encouraging the youth to learn the necessary skills and participate in the SWC practices, and promoting the voluntary effort of NGOs on indigenous knowledge system and local practices.

CHAPTER ONE

BACKGROUND AND PROBLEM

1.1. Background

Land degradation is one of the major causes of poverty in rural areas of developing countries. In many areas farming populations have experienced a decline in real income due to demographic, economic, social and environmental changes. Land degradation is the result of several factors both physical and socio-economic in nature. The immediate consequence of land degradation is reduced crop yield followed by economic decline and social stress. The integrated process of land degradation and increased poverty has been referred by (Greenland et al., 1994 cited in Esser et al., 2002) as the “downhill spiral of un sustainability” leading to the “poverty trap”.

Soil erosion is one facet of degradation that affects the physical and chemical properties of soil. The physical parameters are primarily organic matter content, structure, texture, infiltration, rooting depth and water holding capacity. Changes in the chemical property are largely the function of changes in the physical composition (Hudson, 1986).

Available evidences leave no doubt that soil degradation caused by erosion, desertification, deforestation and poor agricultural practice is undermining the very resource on which African farmers and their families depend for their very survival. It is estimated that more than a quarter of African continent is at present in the process of becoming useless for cultivation due to degradation (Morgan, 1996). Experts estimated that for Sub Saharan Africa (SSA) 65% of soils on agricultural lands have degraded since the mid of 20th century (Morgan, 1996). The severity of land degradation can be demonstrated by estimating productivity losses. For instance yield reduction for SSA is estimated to be between 20% and 40% due to past erosion (Scherr, 1999 cited in Kumela, 2007).

Soil erosion is a serious ecological threat observed in Ethiopia, degrading the precious soil resources which are the basis of agricultural production and food for the people. Soil erosion occurs mainly during rainy season in the form of water erosion. Rills, gullies and brown rivers full of sediments show that a lot of soil is carried away and lost for agricultural production. Most soil erosion occurs on cultivated lands and in the form of sheet and rill erosion. However, it also occurs on grassland and gullies and even in forests if they are not properly managed (Greenland et al., 1994 cited in Esser et al., 2002).

In Ethiopia the vast majority of the population derives its livelihood from agricultural sector. The fact that 55% of the GDP, 80% employment and 60% of the foreign revenue of the country depends on agriculture often shows the economic importance of the sector (MEDAC, 1999). This is to mean that under conditions of subsistence agriculture, in both the densely populated highlands and sparsely populated lowland areas of the country, survival is solely linked to the exploitation of land.

On the other hand, the land and water resource base of the country are highly threatened by over cropping, overgrazing and over reliance on fuel wood. These have resulted in significant soil losses and deforestation. It is getting aggravated by unprecedented growth of human and livestock population. The cultivation is becoming more intense and fallowing rare. The basic land resources soil, wood and grass are exploited beyond their capacity to regenerate themselves. This has resulted in the decline of productivity. Consequently, the low level of agricultural production in general and the current food insecurity in particular, witnesses the degree to which the land production has been lowered (Wood, 1990; Daniel, 1998).

Wood (1990) further described the severity of soil erosion in Ethiopia. Accordingly, the severity of soil erosion in the country can be attributed to intense rainfall and the rugged and dissected nature of the topography with

nearly 70% of highlands having slopes exceeding 30%. This in turn favors soil erosion once the vegetation cover is reduced.

To grapple with the problem of soil erosion, massive reforestation and soil conservation schemes were launched in Ethiopia. Many generous international donors assisted the program. However, the success rate has been minimal. Around US\$ 20 million was allocated annually during 1980s and 1990s (Azene, 1997). Farmers' labor involvement cost for 30 million person-days in a year. However, due to lack of involvement of farmers in the planning and implementation of the schemes, soil conservation measures were poorly executed and maintained. Only 25 % of the rehabilitation targets have been accomplished and most of the physical soil conservation measures and community forest plantations are destroyed (EHRS, 1986; Alemayehu, 1996 cited in Azene, 1997).

In addition to the above Azene (1997) cited a number of problem sources for the failure of conservation measures in Ethiopia.

- ✓ Hillside emphasis: In this case farmers cannot afford to invest much time and energy in conservation activities aimed at improving natural resource management outside their immediate and direct interest.
- ✓ Lack of appropriate rural land management and the tenure nature: Under such a condition conservation is not planned and executed for increasing production within the immediate future.
- ✓ Disincentive role of food for work: Farmers developed dependence on the grain and oil for almost all kinds of development initiatives.
- ✓ Lack of farmer endorsed rehabilitation technologies: What is learnt and recognized by facilitators about indigenous SWC measures is very minimal. Conflict between indigenous knowledge that farmers have and learned experiences that have been communicated to them widened instead of strengthening the other.

The Konso people are well known for their stone terraces that are believed to have existed for over four hundred years. In spite of external intervention the system has maintained its characteristics with its own place of dynamics. Because of their appreciable contribution to the conservation of natural resources, the Konso people received award from the United Nations. In addition to this Ethiopian scientists (mainly anthropologists and sociologists) are preparing to present Konso as a candidate World Cultural Heritage Centre (Yonas, 1998).

In Konso area stone terraces provide a typical SWC structure. The land management is highly integrated and implemented within the watershed development. Hill treatment is initiated from the bottom of the valley to the peak. The Konso people have involved in the construction of stone terraces and other SWC practices from their internal motive and own personal experience without any external influence. Konso agriculture as well as its environmental conservation practice has received wider popularity both in Ethiopia and to some extent internationally.

Studies as well as the personal experience of the researcher indicate that nowadays the SWC practices in Konso area are under threat. It is with the motive to get deep insight into this problem that this study was carried out.

1.2. Statement of the Problem

In rural Ethiopia it is recognized that soil, water and vegetation are the major natural resource base of both the farming community and economy of the country, without which the achievement of food security is unlikely. Environmental conservation based agricultural development is considered as a center piece of food security strategy of the country.

Indigenous SWC measures are well known in some parts of Ethiopia. The major conservation structures commonly practiced in Ethiopia include soil bund, stone bund, fanya juu and grass strips. They are constructed in contour or graded structures depending on the rainfall of the areas. For high runoff areas graded structures are used. These structures are not only reducing soil erosion but also conserve water in situ. Constructing level terraces is a well established tradition practice among Konso people in the Southern Nations Nationalities and Peoples Region (SNNPR). Other traditional SWC methods in cultivated lands include open and tide-ridges practiced in Hararghe, Wollo and Tigray. Micro-basins are also used for growing tree plants in these areas. In Gojjam areas people have developed systems of ditches to drain surplus runoff. In Northern Shewa runoff from farmlands are stored downstream in large pits for later use, for irrigating plants using water cans (MoA, 1986).

Soil degradation is a major constraint to agricultural production and food security in the Southern Ethiopian highlands. As their yield and income decline, poor farmers have fewer resources to invest in fertilizers or soil conservation measures, while pressure from the growing population forces them to cultivate marginal lands, discontinue fallow and stop using crop residues to maintain soil fertility. Soil fertility in the outer fields is declining most rapidly. There is thus considerable spatial and temporal variation in the extent to which arable lands are affected by soil degradation (Tilahun et al., 2001).

Many well developed traditional land management systems are already in danger of breaking down because many traditional methods have not taken account of the speed of modern interventions. Likewise, planners and implementers do not consider the real needs and aspiration of local people. In this respect negative developments are often related to interference in the traditional management system from outside with an attempt to adapt the system to change (Betru, 1996).

The Konso people found in the SNNPR are well mentioned for their hard work, complex social organization and sophisticated agricultural system. But economic development indicators show that Konso special woreda is one of the poorest woredas in Ethiopia with about 77% of its population living below absolute poverty (MEDAC, 1999). Agriculture, which includes both crop production and livestock rearing, is the dominant occupation of the people. Despite greater importance of the sector in the life of the people, its performance is very low. Erratic and uneven distribution of rainfall, depletion of soil nutrients, shortage of livestock feed, diminishing farm sizes, frequent drought and the like characterize the overall economic environment of Konso area.

Today the practice of SWC in Konso area seems to suffer from a wide range of problems which might be attributed to: (1) socio-cultural (2) economic and (3) institutional and other related factors.

In Konso area one can see wide discrepancy with respect to SWC practices between today and some years back. In the past, it was customary to see here and there local labor arrangements like *Ukanta* and *Parka* maintaining old terraces and/or constructing new ones, removing sand and silt from farm field or maintaining water diversion schemes. There was strong cooperative labor of the community to remove silts and mud from water wells and ponds.

Ukanta as a voluntary local labor arrangement was used to carry out labor intensive activities like constructing flood protection walls /*toomota*/ that can defend irrigable farm/*yeela*/ against runoff and removing sand from irrigated farms. Today one cannot encounter *Ukanta* easily. In areas near towns, people prefer to collect stone gravels for sale than using for constructing terraces in their farm plots (**See figure: 1**). Rather than conserving the soil and water resources in their vicinity to improve the fertility and productivity of their farms, most people prefer to go to remote areas and cultivate or search for

labor works. This situation puts under threat the environmental protection of the area in general and the SWC practice in particular.

In indicating the existence of challenge to the soil and water conservation practice in Konso area Tesfaye (2003) expressed the situation as follows: “...the at one time uniformly maintained and celebrated terraces of Konso land are showing immense scars of damage.”(pp.114).

In general, the soil and water conservation practice of Konso area which was once considered as a model for other areas is today under serious threat. So, at this point one is expected to raise the question why this is the case? Or what attributed to that? Therefore, this study is aimed at investigating the major factors that undermines the sustainability of the SWC practices in Konso special woreda.

Figure 1: Stone Terraces Dislodged from Fields and Prepared for sale near Karat Town



Source: Field Observation, October, 2008

1.3. Objective of the Study

The general objective of the study is to investigate the major factors that undermine the sustainability of SWC practices in Konso special woreda.

The study attempted to address the following specific objectives.

- ✓ To examine the status and trend of SWC practices in the study areas.
- ✓ To assess the socio-cultural and economic constraints for the sustainability of the SWC practices.
- ✓ To assess the institutional/policy support system constraints for the sustainability of the practices
- ✓ To draw lessons and policy implications

1.4. Research Questions

Based on the above specific objectives, the research attempts to answer the following main questions.

1. What does the status and trend of SWC practices in the study area look like?
2. What are the socio-cultural and economic factors that undermine the sustainability of SWC practice in the study area?
3. What are the institutional support related factors that undermine the sustainability of the SWC practice in the study area?
4. What measures should be taken to improve the SWC practices in the area ?

1.5. Significance of the Study

Through accomplishing the aforementioned objectives, the findings of the research will help policy makers, program and project intervention to address the real problem so that the soil and water resources of the country could be utilized in a sustainable manner for development. It could also be used as a spring board for further studies. In addition, it will enrich the literature in the area of the study which is under consideration.

1.6. Scope and Limitation of the Study

This study mainly focused on investigating the major factors that undermine the sustainability of SWC practices in Konso Special Woreda. In Konso Special Woreda, there are 48 rural kebeles. So, the study stressed on two kebeles which are purposively selected. Perhaps, a number of factors may undermine the sustainability of SWC practices. This study is limited to the: (1) socio-cultural (2) economic and (3) policy/institutional support related factors.

Any research undertaking faces certain limitations. Similarly, this research is not free from such limitations mainly caused by budget and time constraints. The study has stressed on two kebeles as its major source of primary data hence it might be difficult to generalize the results to the entire Woreda.

1.7. Definition of Terms

Conservation: is sustainable use and protection of natural resources including plants, mineral deposits, soils, clean water and fossil fuels such as coal, petroleum and natural gas (Osion et al, 2002). In this study conservation implies the sustainable use and protection of soil and water resources.

Conservation practices: in the context of this study refers to the practices that people in the study area have acquired from their ancestors that is to mean any traditional method of conserving soil and water resources and/ knowledge that they have acquired through modern environmental education that could be from any form of media, agricultural expert etc.

Challenges/ Constraints to SWC practices: refers to any social, institutional, economic, environmental etc attributes that may deter farmer from continuing involvement in soil and water conservation practices.

Policy/institutional support related factors: refers to any factors related to the WARDO, the NGOs and the government structure at the local level that might influence the SWC practices in the study area.

CHAPTER TWO

REVIEW OF THE RELATED LITERATURE

2.1 The Concept and Methods of Conservation

Conservation is defined as the rational use of the earth's resources to achieve the highest quality of living for humankind (FAO, 1998). This implies that maintaining viable species populations, to sustain ecological processes and be responsive to short term and long term environmental changes. The concept varies with the type of the resource whether it is renewable or non-renewable. Therefore, for renewable resources, conservation does not mean reducing the exploitation of the resources below the resources rate of replacement. On the other hand, for non-renewable resources, conservation is an activity of maintaining an adequate supply of these resources well into the future. The purposes of the natural resource conservation is, therefore multidimensional out of which humanity secure biological, economic, ecological benefits and ensure his survival (Osion et al, 2002).

Soil and water are vital resources for the production of food, fiber and other necessities of life. Food and fiber are renewable resources while the soil that produces these resources is essentially non-renewable. Water can recycle but its supply is limited, and it is frequently the limiting factor for crop production. Eroded soils and the chemicals it carries are matters of concern because a degraded environment harms everyone's health and enjoyment. Erosion also adds to the cost of producing food and other soil products thereby increasing the cost of living. Taking ruin land out of production places a great load on the remaining land and drives up production costs. Installing expensive erosion control practices also adds to production costs (Troeh et al, 1999).

The purpose of conservation is not merely to preserve the soil but also to maintain its productive capacity while using it. Soil covered with concrete is

preserved but its ability to produce crops is lost in the process. Intensive cropping uses the soil but often cause erosion in sloping land. Land needs to be managed for long-term usefulness as well as for current needs; that is, its use should be sustained. Scarred landscapes tell us a sad story of waste and ruin where long-term principles have been sacrificed for short-term gain.

There are varieties of physical or biological interventions that can be used to protect the soil from erosion and to channel water runoff or conserve soil moisture. These are resource conserving technologies, many of which have no 'external input' substitutes, but they are often linked to the introduction of other types of low external input technologies. Major mechanical methods include the construction of terraces, bunds or channels. Soil preparation techniques can also be modified to prevent erosion and conserve moisture, as in contour plowing. Vegetative material can be arranged along the contour and various crops can be planted to stabilize hills, as in the practice of contour hedgerows. There are also techniques for reducing or eliminating tillage, these often include the use of mulches or cover crops that helps to suppress weeds and conserve moisture (Trrip, 2006).

However, due to the differences in the severity of erosion hazards and slopes, not all these techniques are applicable uniformly in all areas. For instance, the biological (agronomic) methods appear relatively economic and easier for small farming communities. The structural methods on one hand are generally regarded as less efficient and more expensive than the agronomic and soil management techniques. But they are more widely recommended and applied by conservation programs in the various parts of the world (Belay, 1992c cited in Fantaw, 1996).

2.2. Approaches to Natural Resource Conservation

Here under, two basic approaches to natural resource conservation were treated; the modernization and the post modernization approaches.

2.2.1. The Modernization Approach

The basic assumption that underlay the modernization approach is that farmers are the cause of natural resource degradation, soil degradation and overgrazing. Thus, it recommends the exclusion of people from environmental resources and the adoption of externally developed conservation techniques (Pretty and Shah, 1997).

Consequently, most conservation efforts of many countries in the past ended up with little success due to the fact that policies of governments have been influenced by modernization of the traditional conservation approaches and were focusing on biological values of resources and ignored the people who depend on such resources (Berkes, 2004). In response to this, alternative approaches to resource management have been developed starting from mid 1980s (Cranny and Farrington, 1999).

2.2.2. The Post Modernization Approach

Post modernization as a new approach to resource management rejects the “meta-narratives or large scale plans, technologies or theoretical interpretations that purport to have universal application” which were made so far in modernization framework (Pretty and Shah, 1997).

The new post modernist approach is generally dictated by the principle of holistic and integrate approach for sustainable resource management which is part of the great transition towards what theorists call ‘ new conservation ‘ (Berkes,2004).

The holistic approach to resource conservation recognizes that management and use of a certain resource inevitably affects the management and use of another resource and emphasizes on consultation and shared decision before taking an action (Karki, 2001). As Berkes (2004) clearly indicated, the holistic approach is an interdisciplinary approach to conservation that incorporates multiple scales of ecological, social, political and economic concerns.

2.3. Approaches to SWC in Africa

Approaches to SWC practices in Africa can be divided into two. These are: the conventional approach and the participatory approach.

2.3.1. The Conventional Approach to SWC

Alarm about the potentially damaging consequence of soil erosion has prompted a long history of external intervention in soil and water conservation measures in Africa as elsewhere (Reij et al. 1996).

The European and American colonial experts had introduced a set of interventions to tackle the challenge of soil erosion in Africa in 1940s and 1950s. The interventions focused on the mechanical conservation of soil: soil bunds, ridging, contour plowing and the like. In some parts of Africa, where the colonial state was strong and there was a need to ensure that demands for land by African farmers did not undermine the expansion of large scale commercial farming, major programs of soil conservation were initiated (Reij, 1983 cited in Reij et al., 1996).

By the late 1940s, a wider set of environmental concerns had come to influence colonial developmental thinking: soil fertility decline, overgrazing and deforestation had been added to the list of ills inflicted on the land by African farming and livestock husbandry. This more comprehensive view of the environmental problem suggested a wider approach to land management, which went beyond individual soil and water conservation techniques. By the

1950s are era of land use planning emerged based on a set of land husbandry principles.

In many areas, the local people rejected the land husbandry package. Farmers felt that the imposition of a particular model of land use undermined their existing agricultural management practice. Not surprisingly, in such situations colonial soil conservation and land husbandry measures were resisted and in many countries they became the focus for nationalist movement in rural areas, leading to the widespread destruction of conservation structures, as a form of political protest (Reij et al 1996).

However, in some places the suite of techniques and management practices offered by the land husbandry approach was widely adopted by farmers eager to invest in agricultural transformation. A good example was the Machakos district of Kenya, where farmers' access to information through informal networks, enable them to tryout a range of conservation measures. This voluntary investment in conservation works resulted in falling soil erosion rates, increased environmental rehabilitation and boost in agricultural production (Tiffen et al., 1994 cited in Reij et al 1996).

During the 1960s and 1970s, development attention focused on the need to modernize and transform supposedly backward agriculture to raise yields and productivity. SWC technologies could play their part, and some grand schemes were dreamt up. It seemed that anything was possible. Large project areas across Africa became experimental laboratory for ambitious engineers with a vision. The results of these adventures were later collapse and abandonment of the projects.

A top-down approach characterized the conventional approach to land management. Technologies from areas with distinct biophysical conditions were imposed on local people. In some these technologies fail, in other cases they met with a lot of resistance to the extent that more effort was put in

convincing the local people to adopt them (Mwale, 1997 cited in Michael 2001). The approach was not participatory. It did not encourage land users to participate in project design, implementation, operation, maintenance and monitoring. The conventional approach did not also regard farmers as important actors in sustainable land management. They were rather seen as part of problem. Their practical activities were usually seen as contributing factors to the degradation of resources (Michael, 2001).

By late 1980s, a growing realization was emerged that soil conservation was not the whole answer instead of soil conservation a wider concept of land husbandry was expounded. Such approach argued for bringing together a wide range of technologies to deal with broader developmental problems faced by smallholder farmers.

2.3.2. Participatory Approach to SWC

The lesson from the 1960s onwards taught project planners and policy makers alike that imposed projects just do not work, certainly in the long term. Advocates of a more participatory approach to development argue forcefully for 'putting people first'. Wider trends of democratization, decentralization, and the retreat of state have meant participation become both politically appropriate and practically necessary.

This constellation of factors has caused the emergence of new style of resource management intervention that is based on holistic, village based resource management. The new approach is based on the technical understanding of the land and knowledge developed by the local people through the years of continued and continuous land use. It is an approach based on the environment and the local people and their relationships. Fundamental to the new approach is the prerequisite for active participation and collaboration between the local land users and the 'interventionists'. This is achieved

through the increased recognition of the importance of the indigenous knowledge of the farmers (Mwal, 1997 cited in Michael, 2001).

Today donors and national governments have adopted, at least at rhetoric level, the language of participation and land husbandry. This is reflected at every level from village project plans through national environmental strategies and plans to global conventions.

The shift to local level planning, appreciation of indigenous techniques and acceptance that there are limits to technological solutions to complex land management problems are undoubtedly a step in the right direction (Reij et al., 1996). It is increasingly recognized that the land users themselves do have valuable environmental knowledge contained in their indigenous knowledge. This knowledge of the local people is recognized as a basis for sustainable land management. The local people develop land management measures that are suitable to the biophysical properties and fit the socio-economic conditions (Michael, 2001).

As indicated in Michael (2001), indigenous land management systems are characterized by the following strengths.

- ▶ Multiple functionality and multiple uses: They are the reflections of the basic strategies developed by the land users in response to the great variability of biophysical and socioeconomic conditions.
- ▶ Flexibility: Since they are flexible they can be easily adapted to the changing biophysical conditions.
- ▶ Efficiency in labor utilization: Though it is not true in all cases low labor requirements as well as efficiency characterize most of the indigenous land management practices.
- ▶ Compatibility to the farming system: Indigenous land management practices are characterized by compatibility to and high integration with the current farming systems.

► Low external input dependence: they do not demand import of materials as they are depending on locally available resources.

However, as experience emerges from this new generation of projects some important questions are emerging. First, the gap between the rhetoric and reality of participation indicate that many projects are simply a new vehicle for imposition of technological solutions. Secondly, the well polished populist rhetoric of community participation may mask hidden conflicts, diverse interests and unnoticed costs (Reij et al., 1996).

2.4 Policies towards Soil Conservation in Ethiopia

Policies towards land, the most important resource for the rural poor and of the national government at different time played an important role in land management in Ethiopia (Wagayehu, 2003). During the feudal regime, prior to 1974, land tenure system made tenants to be subject to insecure land tenure and expropriation of large portion of their product and labor by land lords. This created disincentive for adoption of soil conservation (Wagayehu, 2003). Furthermore, the agricultural sector in general and the peasant agriculture in particular did not get the policy attention it deserved due to the focus of the country's development plan on industrial development agenda (Campbell, 1991).

During that time, the primary target of the then government was to bring about economic development through the overexploitation of the natural resources with no limit. But as time goes little awareness of the consequence of deforestation and soil erosion on human well-being were created and the concept of sustainability started to become an agenda. As the concept of conservation grows, the government incorporated participatory, coordinated, decentralized and mainstream approach in its development plan. The approach focused on deforestation and soil erosion as the major environmental problems in the country. Because of the existing land tenure system and limited

integration of the peasants into the national economy, all the conservation activities of the time remained unsuccessful (Campbell, 1991).

The military regime that took over in 1974 proclaimed land reform. The reform abolished feudal land tenure system and eliminated large holdings, landlessness and absentee land lordism. Although this was expected to improve and provide incentives for investing in soil and water conservation, it could not succeed triggering adoption of conservation practices (Zewde, 1999). This was because these reforms were later liquidated by misguided policies and ardent socialist orientations.

For instance, until 1980s agricultural inputs and output marketing remained under state monopoly while prices were fixed below free market level (Wagayehu, 2003). Policy support for credit, input distribution, output marketing and extension was mainly targeted towards cooperatives and state farms that jointly account only for 10% of the agricultural produce. Therefore, the economic system that was pursued focused on collectivization, nationalization of natural resources including agricultural land coercive promotion of producer cooperatives, the establishment of state farms, imposition of production marketing quota, state intervention in marketing and pricing and forced villagization. This rather created disincentive and resulted in opposite outcome by decreasing security of land tenure and the profitability of agricultural investment (Wagayehu, 2003). Despite the fact that the reform policy enabled many landless peasants to gain access to land, the state ownership and insecurity of usufruct rights hindered utilization of the full potential of the reform.

After the overthrow of the military regime in 1991, the current government has made changes in economic policy. Some regarded the change introduced by the government as going in opposite direction compared to that of the military regime (Hanson, 1995 cited in Atakltie, 2003). The government further strengthened the changes that have been taking place following the

announcement of mixed economy in March 1990. The mixed economy included de-collectivization, dismantling of producers' cooperatives and liberalization of grain trade. Unlike previous governments agricultural sector in general and smallholder in particular received policy attention in the current government from economic development strategy the country has been pursuing .Since mid of 1990s, the government has embarked on development strategy known as ADLI. The strategy revolves around agriculture mainly on the improvement of smallholder productivity and expansion of large scale commercial farms. Along with this different policies and strategies that favor proper use and management of agricultural land through use of different conservation and rehabilitation mechanisms and rational use of country's land resource have been embarked so far.

The national conservation strategy of the country is designed and approved in 1997 as a strategic frame work for the management of the environment and having broad objectives of improving the quality of life of all Ethiopians through sustainable utilization of the country's resources. The country become owner of an environmental policy that identifies issues like integration of gender, social and cultural issues and public awareness and promoting understanding essential linkage between environment and development as an important agent for promoting conservation of resources. It is known recognized that for the sustainable conservation of natural resources, land security is an urgent priority. Therefore, customary rights of access are protected, provided they are constitutionally acceptable and socially equitable. It is also recognized that traditional community institutions should be empowered to manage natural resources, as long as these institutions are preferred by the communities and are not in conflict with the state and federal constitutions (EPA, 2003).

The strategies and policies are expected to restore incentives for improved land resource management. Nevertheless, consistent with the military regime, land and other natural resources remained under state ownership but farmers are

granted only the right to usufruct and the option of periodic land redistribution remained open. This ADLI and other policies the country is currently pursuing could not overcome cyclical famine and starvation engendered by land degradation and drought (Wagayehu, 2003). Because of this land tenure arrangement has been topic of heated debate among scholars and politicians on whether the arrangement provides incentive or disincentive on increasing land productivity and land improvement.

2.5. Constraints to the Sustainability of Conservation

Practices

Conservation is difficult to oppose, yet easy to overlook or ignore. Too many people give lip service to conservation but leave the application to someone else. Troeh et al., (1999) has identified the economic, institutional and socio-cultural related issues as the pertinent constraints in undertaking conservation practices.

2.5.1. Economic Constraints

Conservation practices vary greatly in costs, returns and effectiveness. The easiest practices to promote are those like a good fertilizer program that will both conserve soil and return a profit within as short time.

Considering the land resources as a national resource, the development uses and exploitation of resources should be viewed in the context of something like 50 to 100 years. It is not necessary to look for infinite use because at some time in the future it will be possible to manufacture synthetic food in the same way that synthetic clothing is manufactured today. However, our managers of national land resource are also our political leaders and their time scale seldom extends beyond the date of the next election. So, on the whole they are not interested in long term conservation. The farmers' economic cycle is even shorter. He is probably working on cash flows over 12 months. So, it is

unreasonable to expect him pay now for preserving the land for posterity. This luxury he cannot afford (Hudson, 1986).

Apart from the on-site benefits of erosion control, there may be other reasons why erosion control is required .The downstream damage caused by sedimentation may be more important than the loss of the soil. The money to meet the cost of conservation works must come from somewhere and the question is how to distribute the costs fairly. In the wealthy developed countries like USA, it is reasonable to adopt the approach adopted by LIBBY(1980 cited in Hudson, 1986) that while there should continue to be an element of government support there should be a shift towards more responsibility to land owners or land users . In countries where farmers are generally poor their ability to contribute towards the cost is low or non-existent (Hudson, 1986).

Consideration of externalities shows that many conservation practices are economically desirable for society as a whole even though their cost exceed the on-farm benefits (Stonehouse and Protz, 1993 cited in Troeh et al, 1999). The farmer should not be the only one involved in decision or the only one involved in paying for such practices. The kind of situation may be resolved by governmental involvement in the form of laws and cost sharing for conservation practices.

Farmers will adopt soil conservation practices if they have the necessary labor, capital and technological inputs to do so and if they perceive an immediate economic benefit (Morgan, 1996).Individuals with few current incomes and inability to obtain capital for conservation investments may not be willing or able to forgo income to maximize expected net returns over a long time period (Lee, 1980, Ervin and Ervin, 1982). Similarly, individuals in uncertain economic situations will be inclined to use short planning horizons because they are unable to predict future costs and prices (Lee, 1980, Erin and Ervin, 1982).

As poor farmers generally possess less land, they are more often engaged in off-farm activities such as petty trade. This can decrease their interest to invest on soil conservation practices (Ludi, 2004). According to Hagos et al (1999), small farm holdings and land fragmentation may undermine farmers' interest in undertaking some kind of land improvement. For example, farmers may find the cost of hauling manure or other organic materials to distant and small plots not worth the considerable effort required. In addition, investment that can be easily damaged by free ranging livestock or subject to theft (such as trees) are less likely to be made for from the household where it is difficult to protect them.

Off farm activities also increase the demand for crops through downstream production linkages. As an alternative source of income such activities can reduce pressure on the land, enabling households to meet food needs through market access rather than subsistence (Semegalawe, 1998). Contrary to this, Holden, Bekele and Bender found that access to off-farm income reduces farm household's incentives in conservation and that this leads to more soil erosion and more rapid land degradation (Holden et al., 2003)

2.5.2 Policy/ Institutional Support Related Constraints

Most politicians and most political parties pay lip service to the ideal of good husbandry and the conservation of natural resources, but in practice soil conservation practice does not win votes. Government policies are not translated into action unless there is the political will to make them work. So, the situation in many countries to day is that plans are made for the conservation of natural resources but they have little practical effect.

Whatever the historical background, many developing countries have a sizeable portion of land which was previously reserved. As the authoritarian management has declined, population pressure and land hunger have increased. So has the chance of evading punishment for illegal encroachment

on reserved land. The restriction or reservation of land was often to preserve the income or power of the ruling elites; there are also many examples where the land was deliberately withheld from settlement because it was ecologically unsuitable.

Land allocation can be seen as another policy constraint to sustainability of conservation practices. A corollary to tolerating encroachment is the deliberate allocation of land to non-land owners. There are some cases where reallocation of land led to improve productivity but here are more cases where the total production is lower after the reallocation. The report of Brundtland commission pointed that in Asian poverty belt reallocation is not likely to resolve the problem of the rural poor.

Further institutional issue that can constrain the sustainability of SWC practices is related to legislation. The records of legislation suggest that legislation cannot provide solution to land use problems for two reasons. First, it is normally wrong to force on the populace theories and practices whose validity has not been proved. Second, some countries have quite sweeping power to control land use and enforce soil conservation practices. But in every case it has been possible to pass legislation because there is a wide spread acceptance that the misuse of land is an offence against society and socially unacceptable. Soil conservation programs can only be effective and sustainable when they are 'moved from below, i.e by full involvement of the rural population' (DUDAL, 1981 cite in Hudson 1986).

2.5.3 Socio-cultural Constraints

Among factors which lead to an overstressing of land resource, we must put high on the list the cultural ethic that everyone has an authentic right to own land. In the past, there was enough land for everyone to have some, and an increase in population just mean bringing more land into use.

It is easy for developed countries to say that the ethic no longer tenable as an increasing population seeks a share of static land resource. But it was easy to stop being farmers because there are other jobs to do. But it is very difficult when there is no other employment for those who cannot be farmers. Brundtland commission concludes that only expansion of industry can ease problem of those who have no opportunity on the land.

Many people in developing countries can barely eke out a living from their land by hard work such a hard tillage. They know that traditional management has kept them and their predecessors alive, and that they have nothing g to spare for gambling on a new method. It is difficult for them to change their techniques even for immediate benefits such as higher yields and less soil loss. It is still more difficult for them to adopt a practice that requires an investment, especially if the benefits are delayed or distributed over several years. The establishment of conservation practices under such conditions requires a reliable guarantee that those people will not starve to death if the new practice fails (Napier and Sommers, 1993 cited in Troeh et al, 1999).

Short-term tenancy prevents the adoption of many desirable practices. Theoretically, the land owners should be willing to invest in sound long term practices, but many owners are too far removed from the land to realize what practices are needed. Short-term tenancy makes it easy for both tenants and owners to overlook problems, even when those problems reach a critical stage.

Social significance of cattle can also be seen as constraint to the sustainability of conservation practice. The part played by livestock in adding pressure on the land resource base varies a great deal from one country to another. In area where cattle are symbol of status, evidence of wealth and have religious significance focus is given to quantity than quality. Associated with this are low standards of livestock management and low levels of production. The total effect of these combined factors is unnecessary stress on the ecological system.

2.6. Empirical Studies in Relation to SWC Practices in Ethiopia

A number of studies were carried out in various parts of Ethiopia in relation to soil and water conservation practices and other related issues. Some of the worth mentioned studies include : Hailemariam (2004), Selamyihun (2004), Million (2003), Tesfaye (2003), Tefera (2001), Berhanu (2000), Belaye (1998), Azene (1997), Bekalu (1994), Mulugeta (1992), Getachew (1990), Yohannes (1990).

Hailemariam (2004) in his study carried out in central highlands of Ethiopia stressed on effect of farmers risk and time preference on the adoption of soil conservation decision. The same study also tried to examine other socio-economic factors that may potentially influence soil conservation decision. The study used household surveys as the main means to gather the data necessary for the study. Whether the household is male-headed or female headed education, farm size, and extension service were found potentially relevant to the adoption of soil conservation practices.

Berhanu (2000) in his study carried out in Hararghe highlands focused on the economic assessment of soil conservation practices by farm households. The study used survey and expert judgment as basic means to gather data from respondents. The study indicated that local conservation practices vary in their intensity and qualities. According to the same study intensive conservation practices could improve the level of production and income of farm households while extensive conservation practices are sufficient under the condition of scarcity of conservation inputs and less severe soil erosion and land degradation.

In spite of importance of the studies, no much attention has been given to the indigenous SWC practices in different part of the country. According to Yeraswork et al, (1985:5) quoted in Mulugeta (1992), Ethiopian farmers have

traditionally practiced a number of SWC techniques to contour erosion problems. The Konso people of southern Ethiopia have developed a complex sophisticated form of agriculture which have allowed them to subsist in mountainous areas with fragile soils. Their farming was based on elaborate system of terracing, a variety of SWC practices, and the integration of livestock and forestry with the rest of their agriculture (FAO, 1986).

Belay (1998) studied on the potentials and limitations of an indigenous structural soil conservation technology of south Wollo. The study was based on investigation of the characteristics, use, limitations and strength of the indigenous conservation practices. The data for the study was generated by survey questionnaire, group discussion, field observations and aerial photographic interpretation. Based on the findings of the study, the indigenous technology has a number of advantages over the newly introduced conservation measures in their compatibility or fitness to the existing condition and easiness of implement. Lastly, the study indicated the need to develop new approach that integrates the indigenous practices with adopted ones for sustainable development.

The study of Esser et al., (2002), has stressed on background and perspectives of soil conservation (both introduced and traditional) measures in Tigray region. It indicated that, as a response to severity of soil erosion in the region investment in the SWC is necessary. Regarding the existing techniques of conservation, the study indicated that although traditional practices are efficient in controlling soil loss in some cases, they should be modified and developed further.

The study of Tesfaye (2003) is comparative one carried out in Wollo, Wolaita and Konso by taking the former two areas as areas of adopted SWC and the later as area of indigenous SWC practices. The study tried to look into indigenous social institution that promotes SWC practices in the later mentioned area. The same study also tried to look into factors influencing

farmers' adoption SWC practices in Wolaita and Wollo. The study did not look into the existing challenge and trend of the soil and water conservation practice in the study areas.

At last, it is to be noted that, all of the above studies have a lot to contribute in many respects but most of them stressed on introduced soil conservation techniques. In addition to this most of these studies were carried out in the central and northern part of the country.

2.7 Description of the Study Area

Under this section issues related to the geographical, economic, social and cultural aspects of the study area were presented.

2.7.1 Location, Area and Population of Konso Special Woreda

Konso special woreda is one of the eight special woredas found in the SNNPR. Konso special woreda has boundaries with Burji and Amaro special woredas in the East, Derashe special woreda in the Northwest, South Omo Zone in the Southwest, and Borena Zone of Oromiya Regional State (Teltele Woreda) in the South. The woreda is situated at a latitudinal and longitudinal range of 5°N- 5° 36'N and 37°10'E- 37°37' E (see annexes B and C).

In terms of administration, Konso special *woreda* is subdivided into 48 rural and 2 urban *kebeles*. Its main town, Karat, is located 595 km from Addis Ababa and 362 km from Awassa (the capital of the region). According to 2007 PHC, the total population of Konso Special woreda is 234,987 while the total land area of the woreda is 2276.25 km square. Out of this total population 113,353 (48.24 %) are males while 121,634 (51.76%) are females. On this basis, the average land holding per person is 0.97 hectare while the average population density stands at 103.23 per km square. The density is likely to get higher with the population increasing at annual average growth rate of 3 %. The vast majority of this population (225,577 or 96 %) lives in rural areas and

is engaged in crop production and animal rearing while the remaining 9410 (4%) is living in towns mainly Karat and Segen (FDRE, PCC, 2008).

KSW is an interesting place where different ethnic groups live. Among them, Konso and Gewada are the two major ones. The Konso ethnic group constitutes 87 per cent of the total population and that of Gewada is 9.2 per cent. The other ethnic groups such as Oromo, Amhara and others constitute only 3.8 per cent (CSA, 1994:37). Historically, Konso people believe that they were descended from the Borana - Oromo in the distant past and from Ala and Gewada. The relationship between Konso and Borana people is most obviously displayed in the linguistic evidence. The Konso speak language of eastern Cushitic group and besides having many cultural similarities with Borana that include their generation grading systems. Language of Konso (*Afa-xhonso*) has about 46 per cent is similar with '*Afaan-Oromo*' (Hallpike, 1972).

In terms of religion, Konso people follow both traditional faith and different religions. In the *Woreda*, there are about 66.3 percent followers of traditional faith, 25 per cent Protestants, 4.1 per cent Orthodox Christians, 0.6 per cent Catholic Christians, 0.2 per cent Muslims and 3.9 per cent followers of different faiths. There are also 0.1 per cent people, whose religion is not stated (CSA, 1994:50).

Konso with its long and rich history is among the poorest woredas in the country, improvised by recurrent drought, social, economic and political marginalization and misuse of natural resources. According to FARM-Africa (2000) Konso special woreda is characterized by high potential for fast population growth, low land productivity and per hectare production and extreme water supply problems.

2.7.2 Topography and Climate

The current topography of Konso special woreda is believed to have evolved as result of an extended uplift of the entire massif during the tertiary period; the

surface of volcanic layers was further differentiated by deep incisions resulting from water erosion. Lower in escarpment, gorges are found along the upper courses of big rivers which flow in deep canyons. Further, downstream, however, the "big rivers" such as Segen and Woyto widen out to broad and shallow valley.

Konso special woreda is characterized by highly undulating, rolling and hilly topography intersected by valleys bottoms and gullies which constitute about 60% of the woreda's land area; 30% of the remaining is flat plains and 10% mountainous land. Altitude of the woreda ranges from 550m a.s.l in the Woyto plains to 2500m a.s.l in the Central and Northern part of the woreda (FARM-Africa, 1999).

Unlike the standard definition of altitude and climate, the Ethiopians adopt an agro climatic zonation unit, which is characteristically endemic. Altitude and the corresponding climate are classed into five categories, viz Wurch, Dega, Woina dega, Kolla and Bereha. Worch and Bereha will not be discussed here for they are marginal climatic classes.

The high land areas with an altitudinal range of 2300-3400 m above sea level are called Dega. In the Ethiopian context, it spans the plateau areas and it is moisture rich although the rainfall could be erratic. The vegetation cover association includes a community of valuable timber forests, Montana evergreen forests and high-level bamboo forests.

The lowlands locally known as 'kolla' have an altitudinal range of 500-1500m above sea level. With the topography of largely flat, the kolla has a dry climate and the vegetation types, which occur in this part, are deciduous woodland, bamboo thicket, mixture of tall grasses, shrubs as well as trees in savanna form. In between the Dega and Kolla climates is found the Woina dega climate within an altitudinal range of about 1500-2300 m above sea level. Its

vegetation associations span savanna-at its lower altitude- Montana evergreen thicket and Montana savanna.

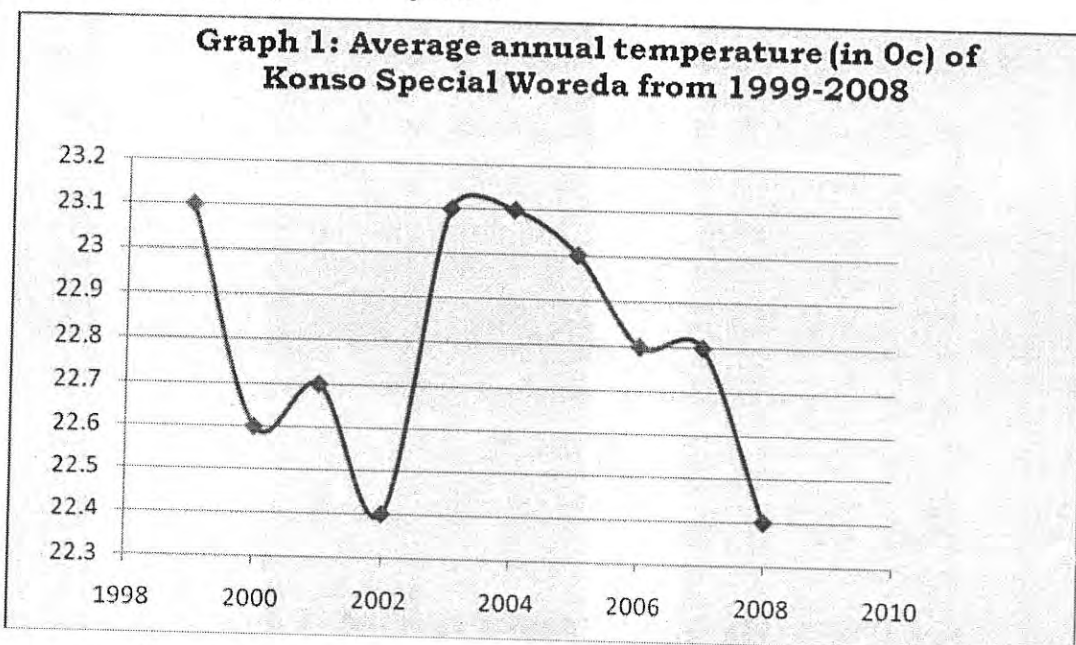
In light of this classification, the Konso special woreda, which roughly lies in an altitudinal range of 500- 2100 m above sea level, is within the Woina dega and Kolla agro ecological zones. In the words of the Woreda agricultural office 70% of the area of the woreda has Kolla agro-climate while the remaining 30 % is characterized by Woina dega agro-climatic condition.

The annual average rainfall of the *woreda* is about 750 mm. The rainfall is characterized by erratic and uneven distribution over the two rain seasons, namely, Belg and *Meher*. The long term average rainfall during the *Belg* season (March to May/June), ranges from 550mm to 850 mm, while during the *Meher* or *Hagaya* season (September to November), the rainfall ranges from 500 mm to 700 mm. The highest monthly rainfall occurs in April. The annual rainfall recorded for the past decades fall within the range of 500-800 mm (FARM-Africa, 1999).

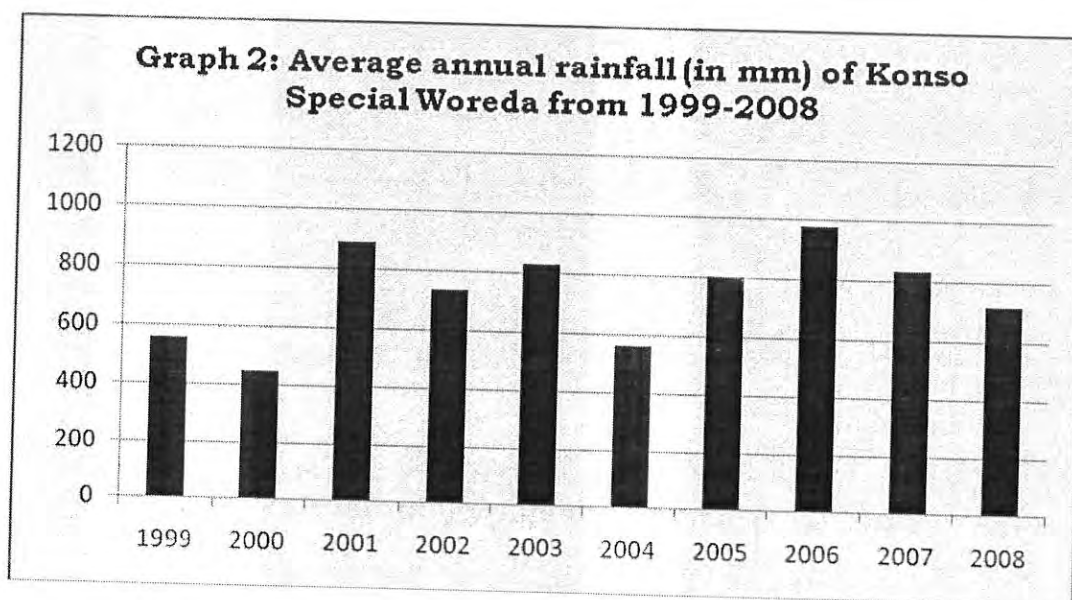
Extreme fluctuations in rainfall, both in its annual totals and the distribution within the rainy seasons, are the primary constraints for agriculture particularly under rain fed conditions. That means within the woreda, in each of the cropping seasons the rain usually either begins lately or quits very early before the crops get mature. On the contrary, unusual and intense heavy rains cause serious damage leaving no chance for farmers to salvage the losses. The cumulative effects of the foregoing occurrences put the woreda to be under a permanently risky area exposing the human and animal population to suffer from drought effects.

The annual amount of rainfall recorded for the past decade (1999-2008) fall within the range of 451 mm to 980.9 mm. This level of annual rainfall indicates the occurrence of moisture stress on crop production and on the overall vegetation in the woreda. The mean annual average rainfall during the same

period was 736.75 mm. During the same period the mean annual temperature of the area was recorded as 22.8°C and the maximum and minimum average as 25.22°C and 21.35°C respectively (National Meteorology Agency, 2009). The following table indicates the total rainfall and average temperature in Konso special woreda in the past ten years.



Source: National Meteorology Agency, South Zone, Awassa, Feb. 2009



Source: National Meteorology Agency, South Zone, Awassa, Feb. 2009

2.7.3 Soil and Natural Vegetation

It goes without saying that the type of a given soil is a function of the interplay of a variety of factors. Among other things topography, climate and land use are the major factors that determine the structure and composition of soils.

According to the information from WARDO, the major soils in the woreda include black soils (15 %), red/ clay soils (35 %) and sandy soils (40%) with the remaining 10 % made up of other types. In those parts of the woreda where altitude is below 1,900 m a.s.l, the soils are rather shallow. The sandy textured soils are low in organic matter content and are generally of low depth with limited soil water retention. The soils and land covers are highly and widely degraded in spite of the widespread use of intensive soil conservation practices (bench terraces). Previously, it is understood that Konso was endowed with vast vegetation cover. But for the obvious reason of over cultivation and overgrazing coupled with climatic disturbances, the vegetation cover has increasingly depleted. Because of reduction in vegetation cover there is intensifying soil erosion caused by wind, particularly in the hilly areas. Except for few pockets in *woina dega* and savanna bushes in the low land areas, the *woreda* does not have any marked vegetation to be taken as source of energy and construction. Currently it is less than one percent of the area that is under forest cover. The ever-increasing population and intensive agriculture further endanger this low forest cover (Norwegian Church Aid, 2006).

2.7.4 Water Resource

Water is generally scarce in Konso which has been resulted from disappearance of forest. The majority of the rural population of Konso obtains water for daily use from rivers, unprotected springs and other traditional sources. Water from these sources is unsuitable for human consumption and most other domestic uses. According to FARM-Africa (2000) the total proportion of people using these highly contaminated and unsafe sources is more than 78% of the total.

Except Woito, other perennial rivers have been changed into semi-perennial and the typical examples to this are the Segen and Delbena rivers. Water volume as well as discharge in seasonal rivers and streams has declined to a disastrous level. Yet these semi-perennial and seasonal rivers of high discharge are potential sources for spate and/or conventional irrigation in the lowland areas where land is available for this purpose. In these areas, farmers who are forced by the consequences of drought have managed to divert the Segen River to irrigate their farms with their own initiatives and traditional skills. Besides this, there is small number of hand and generator operated springs and deep wells that could cover 31 % of the portable water source of the special woreda (ERA, 2008).

2.7.5 Agriculture

Agricultural production in KSW is based on a mixed crop-livestock system employing traditional oxen-plow and hoe-culture practices. The production and productivity of crops is extremely low and cannot supply the food needs of the woreda population throughout the year, leading to food insecurity. It is estimated that more than half of the population of the woreda is food insecure and the food gap created by the difference between all production from food crops and the population's minimum food requirements has been calculated to be close to 40 %. The crops grown include cereals like sorghum, maize, teff, wheat and barley; pulses like haricot bean and pigeon pea. Commercial crops like coffee and chat are grown in parts of the woreda.

A number of drawbacks beset crop production in KSW. According to the WARDO, the outstanding hurdles encumbering improvement of crop production in the area include moisture stress due to inadequate and erratic rainfall, poor soil fertility, crop diseases and pests, lack of appropriate farm technologies and inputs and shortage of farmland.

In order to avert the crop failure, farmers of Konso practice intricate, diverse and intensive intercropping and relay cropping techniques. In Konso, over 15 food crops are planted at one time on the same plot of farmland. Some of the techniques used by the farmers in KSW include;

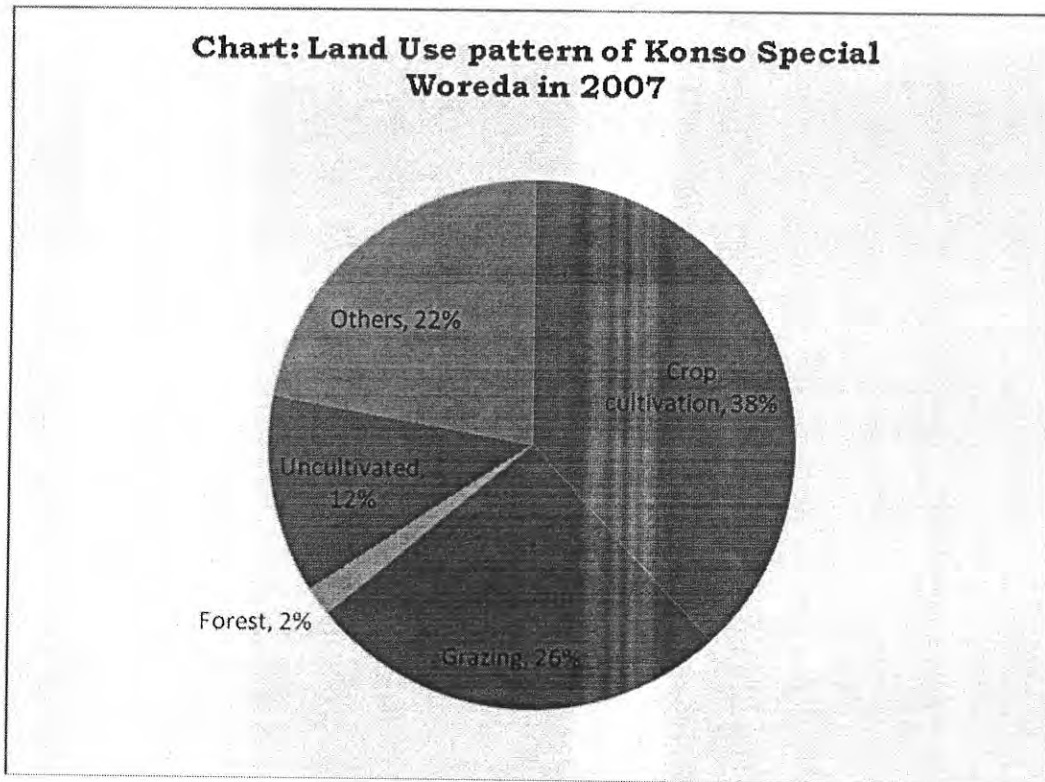
- ✓ Dry stone bench terraces to minimize soil erosion and maximize potential for water infiltration
- ✓ Redirect run off into fields with the use of ridges and terraces
- ✓ Divert rivers through traditional canals into crop fields
- ✓ Practice mixed cropping to minimize the risk of total crop failure
- ✓ Spread livestock manure on the fields to improve soil fertility
- ✓ Use agro forestry system

Livestock are integral part of the agricultural production system. The livestock population is estimated 137,685 TLU with cattle making about 70% of the total. The production system is smallholder, rain fed pasture and crop residue based, integrated with the maize-sorghum cropping system. Despite the small number of animals available in the highlands, the livestock population in the lowlands makes KSW one of the resource endowed areas within the SNNPR.

The animals reared include goats, sheep, cows and oxen. Donkeys and chicken are also reared in small scale. Traditional bee keeping is also a common practice among Konso people (see the table below). Because of the sever population pressure and the encroachment of the crop farming on the grazing areas, shortage of feed is a sever constraint on livestock production in an open grazing/ browsing form. High incidence of trypanosomes and contagious livestock diseases and poor genetic potential of the local breeds also contribute to the low performance of the sector (ERA, 2008).

In order to cope with the problems of livestock production, particularly problem of livestock feed, Konso farmers mainly use the grass lands of neighborhood communities which takes place through permanent and/or temporary migration with their livestock to the grass land areas of Teltele of Oromiya,

Chart: Land Use pattern of Konso Special Woreda in 2007



Source: Konso WARDO, January, 2009

As the case elsewhere in the country, the predominant form of land holding system in KSW are the usufruct right farmers have on their plots for which they pay tax to the woreda. According to the Norwegian Church Aid (2006) close to ninety-six percent of households in KSW has access to farmland. In other words, the prevalence of landlessness is about four percent.

Table 2.7.2: Konso Crop Calendar

Months (English	Months (Konso)	Work
January -February	Oiba	Dry, preparation of land
February- March	Saganokama	Rain begins, sowing
March-April	Murano	Wet, Sowing, Weeding
April - May	Pellala	Wet, Weeding
May - June	Harre	Little rain, bird scaring
June -July	Tella	Dry, bird scaring
July -August	Oxhloasha	Dry, Harvesting
August- September	Sessayisha	Dry, Harvesting
September- October	Partubta	Little rain, Preparing farmland, cutting stalks of old millet, sowing maize
October- November	Kisha	Little rain weeding
November-December	Olindhala	Little rain, harvesting begins
December-January	Poringata	'Meher' harvesting

Source: Hallpike (1972)

2.7.6 Non-farm/ Off-farm Activities

Fragmentation of land holding due to rapid population growth, and frequent crop failure has become a growing concern in Konso area. In addition to the recurrent drought, farmlands have increasingly become small and marginal. This has diverted large number of population to engage themselves in non-farm activities. Worth mentioning, non-farm activities practiced by the Konso people include spinning, weaving, blacksmithing, brewing local drink and petty trading.

Spinning and weaving account for about 19% of the income received by the rural households who predominantly engage in it. Very few people take blacksmithing as their major economic activity. Brewing local drink is becoming an important activity and source of income and employment for rural women in Konso area. Production of the drink notably '*chaka*' which is totally

reserved for women is non-farm activity accrue considerable income for women in Konso.

In addition to the above non-farm activities, migration is becoming another means of balancing the income and employment of the people in the area. It was not much known few decades ago in the area but nowadays becoming more important. Although actual number of the population who migrate out of the woreda is difficult to estimate, rough estimation is about 17% of the population. Out of this permanent migrant (to Teltele Woreda, Arbaminch, Jinka etc) is around 15.5 % while the rest are temporary migrants in search of seasonal and daily employment as well as potential farm lands (Woreda Office of Agriculture and rural development) .

2.7.7 Social Services

Though social services include a wide range of activities here focus has been given to education and health services.

Health

Health is one among key indicators for a socioeconomic development. At present in Konso woreda there are 9 clinics (functional health post) and one health centre to serve the entire population. These institutions are poorly equipped with medical and other basic facilities. The health service coverage in general is very low. The number of different level of health institutions is below national standard. Predominant health problems in Konso are communicable disease such as malaria, diarrhea, tuberculosis, malnutrition, gastritis, HIV/AIDS etc.

Education

Konso is amongst the remote and backward woredas of Ethiopia where social services such as education are poor. This is expressed in terms of low access, extremely low enrollment rate, wider gender gap, inadequate and poorly equipped school facilities etc.

To mention some of the educational indicators of school participation (2002-2007) as indicated by the woreda administration.

1. Gross enrollment rate at primary school (1-8 grades) for the country, SNNPR and Konso woreda are 61.6 %, 67.5% and 31.9% respectively
2. Pupil-teacher ratio for the region and Konso woreda are 66:1 and 41:1 respectively
3. Text book- student ratio for grades 5 to 8 and 9 to 10 is one to more than four and one to more than three respectively .
4. Standard for pupil-section ratio for primary school is 50 pupils per section while the figure for SNNPR and Konso special woreda is 79 and 55 respectively.

2.7.8 Cultural Profile and Gender Relations

Here few points regarding the cultural profile and gender relations of Konso people are raised.

Cultural Profile

The people of Konso are from Cushitic origin with close affinity in culture and language to their immediate neighbors especially with the Derashe and Borena communities. The Konso ethnic group also dominates the population of the woreda while other ethnic groups such as Gewada (9.2 %), Amhara, Oromo and Burji (3.8 %) make up a small society in the rural and urban settings. There are 9 clans within Konso ethnic group (Tokmaleta, Eshalayta, Sawdhata, Mahaleta, Tiksayta, Arkamayta, Kertita, Pasanta and E'elaita) but all have the same language irrespective of their subdivisions by sub-clan and locality. Intermarriage within the clan is avoided as blood relationship within the same clan is stronger.

Although the settlement pattern varies from place to place, Konso people have the tradition of living together in villages where the huts are built very close to each other. Special meeting places locally termed as '*Moora*' are built in the

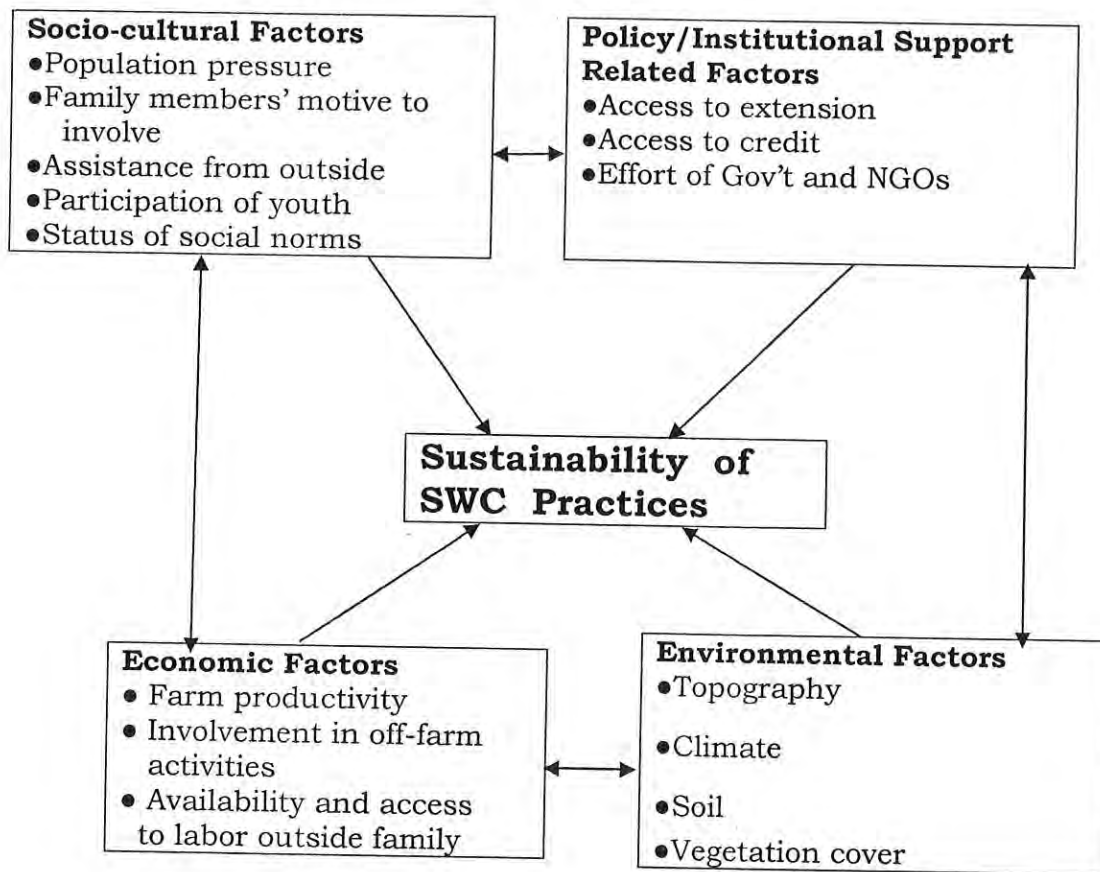
central location of each village serving as watch posts for security guards and sleeping place for youth. Moreover, a social and administrative counseling service by each village takes place in this particular place. The 'Moora' also serves as a recreational place for, where elder people spend most of the day playing different traditional games and chatting.

Gender Relations

Women in Konso constitute 51.76 percent of the woreda population (FDRE, PCC, 2008). As in other cultures in Ethiopia, there is a division of labor according to gender and age in the woreda. Women in Konso have three roles: reproductive, productive and communal. Apart from their exclusive responsibilities in the household chores, child bearing and parent caring; women in the woreda are actively involved in all crop production activities and livestock production. As already indicated in the section dealing with non-farm activities, women in Konso are also increasingly involved in non-farm activities to augment the household income. They are widely engaged in local brewery ('*chaka*'), petty trade and spinning to generate income.

2.8. The Conceptual Framework

This study is generally aimed at investigating the major factors that undermine the sustainability of soil and water conservation practices in Konso Special Woreda, SNNPR. There could be a number of factors that challenge the sustainability of soil and water conservation practices. These factors might have relevance with the socio-cultural, economic, policy/ institutional support, environmental and other pertinent conditions. In the context of this study effort has been made to look into socio-cultural, economic and policy/ institutional support related factors. The researcher has attempted to develop conceptual framework for the main analytical exercise based on the literature reviewed.



Adapted from Hudson (1986) and Troeh et al.,(1999)

CHAPTER THREE

METHODOLOGY

The methodology describes how each specific objective will be achieved. It also shows how the research questions will be answered. It includes the data sources, sampling techniques and method of data analysis.

3.1. Data Sources

Both secondary and primary data were generated by employing quantitative and qualitative methods. The quantitative method involved the use of household survey while qualitative methods used included: (1) focus group discussion, (2) key informant interview and (3) direct personal observation. Direct personal observation encompassed visit of cultivated and non-cultivated areas, water sources like springs, streams and ponds in the study areas. The purpose is to obtain general information about the situation of SWC practices. Thus the researcher's opinion based on his visit of the study areas was included in the analysis of the study.

3.1.1 Primary Data Sources

The following techniques were employed to generate the primary data.

Household Survey

Structured survey questionnaire was used to obtain information from selected samples of 120 households from two kebeles. Included in the content of the questionnaire are: (1) household demographic characteristics (2) household socio-economic characteristics (3) issues related SWC practices and the existing challenge to the sustainability of the soil and water conservation practices and, (4) measures to be taken to improve the SWC practices in the area. In order to conduct the household survey, enumerators who know the local language (Konsigna) and culture of the area were assigned in the data collection process. The enumerators were oriented by the researcher before

launching the survey to make them understand the purpose of the survey and to familiarize them with the questionnaire.

Focus Group Discussion (FGD)

The focus group discussion was used as one of the critical sources of primary data in addition to the household surveys. Accordingly, with the help of checklists discussion was held with one FGD group from each of the *kebeles* that were included in the sample. The size of the participants in each FGD group is eight individuals in Buso kebele and ten in Abaroba kebele. The participants of the FGD included *kebele* chairperson, local elders, women, clan leaders and generation leaders (*xela*). The lead questions that were prepared emphasized on the following points.

- ✓ The beginning of SWC practices in the study area
- ✓ type of indigenous SWC practices in the past and at the present
- ✓ involvement of the community in the practices over time
- ✓ effort made by different agents (including NGOs and government organizations) to promote the practices
- ✓ The existing challenges/constraints (socio-cultural, economic, institutional etc) to the sustainability of the practices and
- ✓ the measures to be taken to sustain the practices

Key Informant Interview (KII)

A key informant interview was particularly important in getting information pertinent to the institutional aspect of the SWC practices. Through such instrument, information regarding the views of experts from Woreda Agriculture and Rural Development Office, officials of NGOs working on environmental conservation, experts from Woreda Culture and Information Office and Development Agents of the respective sample *kebeles* was collected.

3.1.2 Secondary Data Sources

The primary data are supplemented by review of documents and other secondary sources of data. The following are the major secondary sources of data that were utilized during the study.

- Books and periodicals, seminar papers, conference proceedings
- Previous works done as Master's thesis and PhD dissertations
- Statistical publications
- All relevant documents and project reports

3.2 Sampling Techniques

Both probability and non-probability sampling techniques were used to select the participants of the study. The selection of kebeles included in the sample, the participants of focus group discussion and the key informant interview involved non-probability sampling (purposive sampling). The reason behind applying purposive sampling technique is due to the fact that the kebeles selected were appropriate to the study. That means Buso is an exemplary kebele in SWC practices while Abaroba is the one where the practices are seriously deteriorating. The same sampling technique was applied in selecting qualitative data respondents because it is believed that these people know better about SWC practices in their respective areas. The selection of households included in the sample involved probability sampling (simple random sampling) as it is believed that the households are similar with respect to the characteristics that influence the research outcome.

Selection of Kebeles and Households

Out of the forty-eight (48) rural kebeles found in the woreda, two (2) kebeles (Abaroba and Buso) were purposefully selected for the study. In the two kebeles, there are a total of 1274 households. Out of this population, a sample of 120 households (about 10 % of the total households from the two kebeles)

was selected using simple random sampling. The following table indicates the kebeles and size of households that were included in the sample.

Table 3.1: Kebeles and Size of Households included in the Sample

Name of Kebele	Total Households	Number of Sample Households
Abaroba	833	80
Buso	441	40
Total	1274	120

3.3 Analysis of the Study

The process of analysis of the study was carried out using qualitative description and quantitative statistics. The quantitative data (information from close ended items of the questionnaires) was analyzed using frequency, percentage and mean where appropriate. A Chi-square test was applied to see opinion difference between the respondents of the kebeles. Qualitative data (information from focus group discussion, key informant interview and direct observation) was discussed to substantiate the study. The kebeles were purposefully selected for the study. Buso is selected as a kebele with relatively strong SWC practice while Abaroba is selected as a kebele with relatively weak SWC practices.

CHAPTER FOUR

SOIL AND WATER CONSERVATION PRACTICES AMONG KONSO COMMUNITY

This chapter contains two major sections. The first section is devoted to the historical background of the SWC practices in the study area while the second has given due attention to the current status of the practices.

4.1. Historical Background of SWC Practices among Konso Community

Under this section issues regarding the beginning of the SWC practices and factors that contributed for the strengthening of these practices were treated.

4.1.1. The Beginning of SWC Practices among Konso Community

The beginning of SWC practices among Konso community is more related to the beginning of their settlement in present area. For this reason, it is important to have some understanding about the origin of the people at the initial stage.

Hallpike (1972) indicated three waves of migration of Konso people and their ritual chiefs/ clan leaders, the *poqalla*. The first and the second migrations were from *Aylota* area. Some immigrants like the family of Bamalle, the ritual head of Dokato, came from Borana. The third wave of the migration of the Konso people was the invasion of Konso by Borana at the end of 16th c.

There is mythical history concerning the origin of Konso people. One of these is the myth of the Calabash. According to this myth, one day God came to the Konso land and opened a Calabash from which came out first the farmer,

etanta, with his farming tools in his hands, and next the craftsman, *xhaudha*, having weaving materials and other craftsman objects in his hands. Those two kinds of people filled the land of Konso (Mamitu, 2002).

According to a key informant of this study, a well-experienced versatile old scholar of Konso with natural resource management background, by counting the number of stones erected for generation responsibility transfer from one generation to another /*dhaga dhirumma*/; it is about 680 years since the Konso people began to live in their present area. Before them, Koirra people who might today belong to the people living in the Burji and Amaro-Kelle areas occupied the land. Later on, the Konso people fought the Koirra people and occupied the area. In this sense, the Konso people came to their present area from three different directions: those who came across Southeast from Borena land, those who came from West across Jimma area and those who came from Gedeo area who were called Monoqhta. The present Konso people are believed to be the mixture of these three groups of people (KG, a key informant).

Most of the studies including Hallpike (1972), Watson (1998) and Koshana (2006) indicate that the Konso people came to their present area from different directions. Similar result is revealed by the primary data source.

According to Tesfaye (2003), the Konso farmers began building SWC structures to prevent soil erosion and to harvest water within stone-reinforced structures. The Konso people also construct houses and encircle their villages by using stones.

In the past the population was too small and land was abundant. As a result, the people had experienced shifting cultivation and fallowing. Dangerous wild animals, enemies and diseases like malaria and yellow fever in the lowland areas restricted the expansion of settlement and movement. The reduced productivity following the reduction in shifting cultivation and fallowing and

the increased soil erosion due to the rugged nature of the terrain forced the people to seek ways to adapt to the environment.

Three different views were reflected among the FGD participants in Buso kebele with respect to the beginning of SWC practices among Konso community. The first view is the view advocated by Orkaido Genbo and Ayano Aleto, old men of 65 and 60 years of age respectively. Accordingly, in the earliest past settlements were so scattered that people even did not know each other as such. However, over time there were serious attacks from dangerous wild animals and enemies on the scattered settlements. The situation had forced the people to settle in close proximity in order to defend themselves against such attacks in unity. The people used stone terraces to fence the area where they settled in close proximity. The stone terrace-fenced settlement areas had only entrance gates, which were carefully kept. Therefore, in view of this group stone terraces were first used in and around settlement areas, and extended to farm areas with the decline of farm produce.

Nevertheless, according to Beyene Garo, about 37 years old, he has learned much about SWC practices from his grandfather. As to Ato Beyene, initially soil bunds and tied-ridges were practiced by cattle keepers in their effort to use stream water for their herds. Later on, these structures began to be used in the farmlands. In view of this participant of the FGD, the Konso people first practiced soil bunds and tied-ridges in their farms and later stone terraces to add strength to the former.

The third view is the view reflected by Kuyola Kussia, an old man of about 60 years. In his regard, construction of stone terraces and other SWC structures was a tradition among some famous families in Buso kebele; namely: Gara'a, Aycha, Turmale, Kutao, Kayiko, Kaya and Tawasha. Accordingly, stone terraces and other SWC structures were initially confined to the homesteads and farmlands of these families. The descendents of these families and the other people later learned from them.

Of course, there is no clear and scientific evidence regarding the beginning of SWC practices in the area. However, from the result of the FGD and literature sources, it can be understood that the beginning of SWC practices in Konso area is associated with the beginning of the settlement of the same community in that area. The rugged nature of the topography, which made the area difficult for farming, forced the people to develop the various SWC structures to adapt themselves to the environment. Therefore, the practice was developed by the people and lived with them since then.

4.1.2. Motives behind the SWC Practices among Konso Community

Motives in this context refer to factors that contributed for the strengthening of SWC practices among traditional Konso community. Included among the motives for SWC practices in Konso community are physical/ environmental, institutional and socio-cultural attributes.

4.1.2.1 Physical/ Environmental Motives

Indigenous conservation knowledge is accumulated largely in areas where local communities put great pressure on the natural resources, where ecosystems are fragile and where local societies have a long history of coping with such a situation (Kruger et al 1997). The Konso area generally has rugged surfaces with varied elevations dominantly hills and mountains intersected by valleys and gullies. The Konso people have long practiced a combination of labor-intensive SWC techniques, which enabled them to obtain a harvest from extremely harsh environment with poor soils and very low rainfall.

The rain season in Konso area is short, but when it rains, it is sudden and often violent. Due to rainfall shortage, Konso area is hot most of a year and thus there is acute shortage of water both for people and animals. According to Hallpike (1972), in order to cope up with drought and to conserve the heavy

rain that falls so unevenly in Konso area, many cisterns and cattle pools have been dug and in a few places huge reservoirs have been constructed to contain rain water in dry months.

From overflow abundance of stone, the Konso people drive the material not only for terraces but also for walls to protect fields against flood and cattle, and to encircle their villages. Stone is as much a particular of their life as soil, and they are highly skilled in using it as far as its limitations permit. Stone is used for grinding corn, for sharpening knives, for throwing at enemies and birds, for building dams in streams, for house building in some parts, for defense in the form of village walls as well, of course, as being essential for agriculture. Their use of stone gives a clarity and definition to their villages and homesteads which is extremely striking to the observer. Stone conveys a sense of harmony, order and industry and in these respects a true expression of their values.

The various types of SWC practices used by Konso people as listed during the FGD and key informant interview include:

► **Stone terraces/ *kawatta***: dry stone terraces cover the Konso hillsides. The materials used for construction of stone terraces could include stone and soil, wood trunk and chopped stone. Stone is the physical core element for stone terracing where wood trunks seldom mixed for strengthening and anchoring the structures. Soil is used as a cement to fill the small gaps left in between the constructed materials. It is compacted very well in order to maintain the structure firm together. Similar role is played by chopped stones. Included among stone terraces are:

Bench terraces: prevent soil erosion and maximize water retention

Flood protection walls/ *toomota*: refers to structures built of huge boulders of the bank of the stream to prevent surrounding fields from being damaged by flood. The boulders used are so large that they can only be constructed by calling a very large labor group like *Ukanta*.

► **Spill ways / *tehatota* /:** on sloppy and irrigable farms there are drainage outlets made of flat stones put over the top of the terrace to allow flow of water down the terrace. It is used to prevent damage from storm water and to improve irrigation to lower terraces by allowing water flow from one cultivated longitudinal interval between two stone terraces / *xheranta* / to the other.

► **Flood diversion canal / *kaba* /:** is structure constructed to take water from flooding rivers onto nearby fields. In the mean time, there is transportation of sand and gravel stone onto the field. So, removing the sand and gravel stones using a wooden bowl, *toma*, is an integral part of the SWC practices. A farm household is always expected to prepare its flood diversion canal / *kaba* / well in order to channel run off into its field. When water need of the field / *yeela* / is found to be enough, the flood diversion canal / *kaba* / is closed. Associated with *kaba* is a structure called *kulankula*. It is a structure built on the flood diversion canal / *kaba* / to minimize the amount of the sand and gravel stones that enter the field with the water.

► **Tied-ridges / *moona* /:** earthen ridges are also constructed, dividing the terraces into small square-basins / *kolba* /. These basins are effective in capturing rainfall and maximizing infiltration. The tied-ridge has to be high and solid enough to capture the rainfall and allow infiltration to the intended level.

► **Fallowing:** It was one of the important means to recover land fertility and minimize the amount of the soil taken through runoff. This is because, the practice allow the growth of different kinds of vegetations on the field which have dual purpose. The fallowing period ranged from short (half a year) to long period (three to five years).

► **Manuring:** It is the major source of organic matter to fields which do not benefit from stream run off. Such farms are usually called *lagaa/tarra*. Usually there is two ways of manuring the *lagaa/tarra*. The first one is by collecting the

waste materials (ash, animal manure and other home remains) and directly applying on the field. The second way is a situation in which the family prepares its own garbage place /*kuffa*/. The waste materials from the home are collected in the family garbage place and decompose there. Later on, the decomposed waste is taken to the field. Women usually organize themselves into labor group called Parka to carry the decomposed waste materials to the fields. Manuring is not done to farm fields known as yeela (farm land at river bank or anywhere else having a depression harvesting enough run off). Because such fields are expected to benefit from waste materials and fertile soils eroded from distant areas.

► **Canal to divert runoff away from the field /*tawusha*/:** such structure diverts away runoff, which originates near the field and usually carries soils with poor crop nutrient like sandy soils. The other SWC practices listed during the FGD and key informant interview include grass strips, trash lines, stone mulching, area closure and the like.

4.1.2.2. Institutional Arrangements

Until the incorporation of the Konso land by the Ethiopian emperor (Menelik II) towards the end of 19thc, each Konso traditional town enjoyed an autonomous status and used to be administered by traditional institutions. Council of elders was placed on top of these institutions (Hallpike, 1972).

The Konso traditional authorities served as important institutional motives for the beginning of the SWC practices in the area. The Konso people gave much weight to traditional administration and practice of age grading system. The age grading system was of central importance in Konso life. In Konso the important traditional administrative system included:

I. The Xhelta Organization

The term xhelta corresponds to an age group organization of Konso. It plays an important role in unifying the residents of all wards /*kanta*/ and in forming a single society of its traditional town /*paleeta*/. According to xhelta organization, Konso people are grouped into four classes.

1. Farayta / Tinayla: Represents all children and very young ones who literally have no social responsibilities. Members of this group are forbidden to get married until they move to the next superior grade, the *xhella/xhelita*. If pregnancy occurs during the *farayta* stage, abortion/*bircha*/ was obligatory. The restriction from bearing child /*farayuma*/ was important in terms of controlling population size and preparing able-body for such laborious SWC practices as the construction of flood protection walls /*toomota*/.

2. Xhella /Xhelita: Signifies a class of men who achieve the right to get married. They are responsible for the administration of Konso traditional towns /*paleeta pl.paleewa*/. According to Metasebia (1998), the responsibilities of *xhella* among other things are the following:

- ▶ Ensure the security of the people and the towns. In case of attacks from neighboring villages or from other non-konso people, it is the obligation of *xhella* members to defend their people or to take part in the armed conflict during its term of office.
- ▶ Protects town walls or restores them in case of damage or deterioration
- ▶ Keeping and cleaning water wells /*ela*/ and water ponds /*harta*/ and constructing the new ones whenever the need arises, controlling fire accidents and performing almost all the community works are the tasks of the responsible *xhella*.

This idea was also supported by Hallpike (1972). Accordingly, the *xhella*(warrior group) acted as police force before the arrival of Menelik II's force to the area. The *xhella* were arresting and punishing criminals on the

orders of the council of elders of the towns. They can marry and are in all other respects full member of the society.

The primary data also revealed that it is the responsibility of the *xhella* to mobilize the public for assistance in case flood protection wall /*toomota*/ of a particular household is seriously damaged due to heavy flood. The *xhella* also frequently make the assessment of the overall management of the land and water resources both at household and community level (Ayano Aleto, FGD participant).

3. Orshadha/ Qhimaya: is a class of community elders. This group consists of retired elders who had already served in *xhella*. It is a class of senior elders, which play a very important role in directing and managing community affairs. Its members have the right to bless the *xhella*. Thus the *orshadha* consists of persons who largely perform the activities of council of elders. Besides, it is the responsibility of *orshadha/qhimaya* to ensure the promotion of each generation to the next higher generation grade and the handing over of authority from the retiring to succeeding age group to take according to tradition.

4. Qhurulla: represents a class of very old men. Because of its grand age, its members do not almost have any social role.

II. Apa-timba

In Konso language *Apa-timba* literally means “father of drum “(*apa* is equivalent to the term father while *timba* refers the drum). The *timba* is a sacred drum and is an emblem of the Konso traditional administration. Each of the Konso towns is administered by their respective *Apa timba*. The following are among the duties and responsibilities of *Apa timba*:

- ▶ Considered as a guardian to the traditional law
- ▶ Control the performance of the administrative *xhella* (warrior group)
- ▶ Solve conflicts that arise between his people

III. Dhawra

The dhawra who have the role of mediation and reconciliation among the society are among the active units in Konso traditional administration. By tradition, dhawra are believed to be honest, pure and have a spiritual power. Due to this, they are highly respected and have acceptance of the people as spiritual leaders. Some of the important functions of dhawra according to Hallpike (1972) and Metasebia (1998) include:

- ▶ Responsible to pray at times of drought and famine wishing the well-being of their people
- ▶ Give blessing to people who appear before them
- ▶ Play conciliatory role/ mediate between conflicting parties
- ▶ They are considered as guardians of peace.

Korra Garra (2006) tried to indicate some social rules and regulations that strengthened the conservation of water sources among traditional Konso community. Accordingly, all the members of Konso community were fully alert for taking care of their water places. The management of water places is guided by the following rules:

- ▶ Water supply to the community, both for human consumption and other domestic animals need to be guaranteed all over the year.
- ▶ Each member of the community must take care of communal water sources besides his own interests and profits

There was a group of people called *porshoota* who look after communal places, protected forests around community settlements and all roads (Korra, 2006).

What can be understood from the institutional motives is the role played by the traditional administrative system/institutional structure/ in binding the people together through the rules and restrictions as well as belief systems. In this sense one can see the essential role played by the Xhelita organization, the Apa-timba and the Dhawra in strengthening the soil and water conservation practices.

4.1.2.3. Socio-cultural Motives

From socio-cultural point of view, Konso people have carried out the soil and water conservation practices over a long period and each member of the community acquires and practices as a societal norm. This has changed the practice into a culture, a useful and valuable one.

The labor-intensive SWC practices like the construction /maintenance/ of flood protection walls, public places, water wells and ponds help the people develop sense of harmony, cooperativeness and coordination and also allow them to learn respect, new skills, social values etc (KK, a key informant).

The very nature of life in the past that required unity because of the attacks from enemies and dangerous wild lives which restricted the movement of the people also indirectly served as an important socio-cultural motive to strengthen the practice among the Konso community. According to KK (a key informant), from personal observation a number of evidences can be listed for the existence of strong socio-cultural motives for the SWC practices among konso community in the past; including:

- ▶ Strong stone walls of 2m, 3m or above surrounding or found within Konso traditional towns
- ▶ Structures constructed around large public places
- ▶ Remnants of stone terraces in many hillsides and mountainous areas

There are some local labor groups that play crucial role for the SWC practices among Konso community. The following table indicates the list and description of some of them.

Table 4.1.1: Some of the local labor groups among Konso Community

Local labor group	Description
1. Parka	Voluntary assembly providing free service sequentially for all its members. Its usually encompasses six members.
2. Mana	Group of people organized on money basis but with reasonable charge. Its members are usually twelve.
3. Kapandhoosha	It is also called dhamdhamtota. It refers to suddenly formed group to work for a day & could be paid in terms of money/kind
4. Alumala/ Xhaya	Composed of people of the same age and physical fitness. It is money based.
5. Ukanta	Selective call by relatedness. There is no payment but food is prepared
6. Paleeta/ Kanta	Mass help provided from the ward (sub-village) during serious problems
7. Tolla	Labor from close family members

Source: Adapted from Koshana, 2006

The existence of special group /*harmota*/ that is highly skilled, highly valued and respected by the community served as another important socio-cultural motive for the practice. The existence of such group created competition among community members to reach the status acquired by the former and get the relevant social respect and values.

In the construction of a typical SWC structure, like stone terraces in Konso area, one can see division of labor among different social groups. This is especially true when the participants constitute different social category as in the case of *Ukanta* (see table 3.2.2). Women in traditional Konso play a paramount role in contributing to the effectiveness of SWC practices. They not only provide support but also directly handle the laborious terrace works in availing construction materials. Nevertheless Konso culture restricts women from constructing terraces. The informants attribute this to the fact that their

clothing does not allow them and the laborious nature of the work as well as the skill it requires.

Children especially under 18 years of age are supposed to be learners contributing indirectly for SWC practices. But as members of the community children learn the practice knowingly or unknowingly through their daily exercise on staying and playing with their age mates. Therefore, considering the indirect contribution of unfit children's and females' labor for the Konso traditional stone terraces, people especially elders use the term child and female terraces to mean unfit (unplanned) terrace with poor quality. The table below shows the division of labor in constructing a typical SWC structure in Konso area.

Table 4.1.2: Division of Labor among Different Social groups in Constructing Stone terraces

Social group	Type of labor division
Elders	Lay foundation of the terraces & direct the construction
Adults	Continue the construction up from the foundation laid by elders
Youth	Dig, bring or lift up stone boulders
Women	Add soil onto the structure, encourage the work through cultural song

Source: Focus group discussion, January, 2009

4.2. Current Status of Soil and Water Conservation Practices in Konso Area

Under this section, there are five sub-sections. The first sub-section discusses about the general characteristics of the participants of the household survey; followed by a sub-section devoted to their land holding and farming system. The third sub-section stresses on the construction and maintenance of the SWC structures followed by a sub-section discussing about the community participation in the SWC practices. The last sub-section has tried to look into the role of traditional institutions.

4.2.1. General Characteristics of the Respondents

Under this sub-section some general characteristics of the respondents including the sex, age and educational level of household heads and family size of the sample households were discussed. Table 4.2.1 shows these characteristics of the respondents.

Item number one from table 4.2.1, Shows the sex of the household heads included in the sample. As can be seen from the table, 90 %(36) of the sample households in Buso kebele were headed by male. The same thing is true at Abaroba kebele; that means 90 %(72) of the sample households were male headed.

Item number two from table 4.2.1 shows the mean age of the household heads in the two kebeles. Accordingly, the mean age of household heads in the sample households in both kebeles is about 42 years. That means on average the household heads in the two kebeles are in young adulthood which could have positive implication in terms of availing and coordinating family labor. When we try to see age variability (deviation from the mean), relatively more age variability is observed among household heads in Buso kebele than those in Abaroba kebele as it has been revealed by standard deviation of ± 10.616 and ± 8.741 years respectively.

Table 4.2.1: Distribution of Some General Characteristics of Respondents

No	General Characteristics of Respondents	Respondents			
		Buso (N=40)		Abaroba (N=80)	
1.	Sex of household head	Count	%	Count	%
	a. Male	36	90	72	90
	b. Female	4	10	8	10
2.	Age of household head	Mean	SD	Mean	SD
		41.77	10.616	41.80	8.741
3.	Education of household head	Count	%	Count	%
	a. No education	26	65	55	68.75
	b. Grade 1- 4	7	17.5	10	12.5
	c. Grade 5 and above	7	17.5	15	18.75
4.	Number of family members	Mean	SD	Mean	SD
	a. Male	3.48	1.694	3.78	1.432
	b. Female	4.13	2.43	4.10	1.846
	c. Total family size	7.30	3.252	7.88	2.513

Source: Field Survey, February, 2009

An effort has also been made to see the educational status of the sample household heads in the respective kebeles. So, item number three from table 4.2.1 reflects this aspect of the respondents. Accordingly, 65%(26) of the respondents from Buso kebele were found to have no education (illiterate) while about 69%(55) of the respondents from Abaroba kebele were found to be illiterate. In this sense one could say that in both kebeles included in the sample, the number of household heads that have no education dominates. This in turn could have its own implication in relation to dissemination of new technologies of SWC practices that could be integrated with local practices.

As attribute of the households included in the sample, one can also see the average number of male and female household members and the mean size of household in the two kebeles. In the sample households taken from Buso kebele, on average about 3 males and 4 females are found in each household

i.e. the average family size is seven. In the case of Abaroba on average about 4 males and 4 females i.e. on average 8 persons live in the households included in the sample. There is relatively higher variability in terms of size of household members among sample households from Buso kebele than Abaroba kebele as indicated by the standard deviation of ± 3.252 and ± 2.513 respectively.

4.2.2. Land holding and Farming System

The farmers in the study area are engaged in small scale farming using simple farming implements and methods of production. Because of the simple farming tools they use and very small yields produced, their farming is better described as subsistence. Annex-E indicates some aspects of the land holding and farming system of the respondents.

As can be seen from item number one of annex E, the overall households in both Buso and Abaroba kebeles derive their livelihoods from farming as it is indicated by 97.5%(39) and 98.8%(79) of the respondents respectively. Insignificant number of respondents from Buso and Abaroba are involved in service and other activities respectively.

Among traditional Konso community land is a private property except in the peripheral and lowland areas where small communal grazing lands are found. That means every piece of land whether cultivated or uncultivated belongs to a particular household. Together with other attributes the size of the land possessed by a farm household can have influence on an effort made to carry out a particular SWC practice in an area. According to Hagos et al (1999), small farm holdings may undermine farmers' interest in undertaking some kind of land improvement.

So, item number two of annex-E is designed in line with this condition to explore the size of the farm possessed by the respondents. The table showed that in Buso kebele the majority of the respondents 77.5 %(31) replied that

they possess very small farm land (less than one hectare in terms of size). In Abaroba kebele 50%(40) of the sample households possess farm plots with size less than one hectare while a considerable figure 40%(32) possess farm lands with size from 1-2 hectares. None of the respondents in Buso kebele possess farm plots beyond 2 hectare while in Abaroba the maximum farm plot size owned extends up to 4 hectare. This indicates that the average land holding owned by the respondents at Abaroba kebele is greater than that of the respondents at Buso kebele.

As it has been indicated by item number three from annex-E, respondents were asked about the status of their land holding in supporting the household's livelihood. The majority of the respondents from the two kebeles that means 87.5%(35) of the respondents from Buso kebele and 87.5%(70) from Abaroba kebele replied that they have no sufficient land that can support their families' livelihood. That means regardless of the size of the land possessed by the sample households, the farm lands were not productive enough to sufficiently support the members of the respective households.

Likewise those respondents who indicated the insufficiency of the land were asked whether there is an option to get additional land. Accordingly, 80%(28) of the respondents from Buso kebele and 75.7 %(53) of those from Abaroba replied that there is no option to get additional land. According to the respondents from Buso kebele, their environment is so confined that every piece of land has an owner. Hence, free land is non-existent in the area.

Regardless of the response obtained from the household survey, the participants of FGD have indicated as to how to access additional land. In this sense, people in Buso kebele today access land through inheritance, sharecropping and from relatives. Informal land sale in the name of land lease is also common. In view of the participants of FGD, land obtained through inheritance is the largest source to access land. But due to the division of land over several generations, farm holdings become too small.

According to the information obtained from FGD participants in Abaroba, the people have access to land through inheritance, sharecropping, from relatives and informal sales in the name of lease. The people at Abaroba kebele also have access to land in the low land areas commonly known as *Gomayta*.

Livestock play a very important role in the livelihood of farming communities. They provide the farming household with draught power, transport, cash income, food and manure. Here the sampled households were asked if they have livestock. As one can clearly understand from item number five of annex-E, almost all the respondents who were included in the sample 97.5 %(117) replied that they have livestock of a particular kind.

Item number six from annex-E shows the average size of different kinds of livestock owned by the respondents in the two kebeles. As it can be seen from the annex, those households who own livestock in Buso kebele have on average two, seven, and three; cattle, goats, and sheep respectively. In the case of Abaroba kebele the sample households who own livestock have average number of four, eleven, four and two; cattle, goats, sheep and donkeys respectively. This shows that people in Abaroba kebele possess more livestock than those in Buso kebele. This is due to the fact that households at Abaroba have access to grazing lands in lowland area /*Gomayta*/. None of the respondents in Buso kebele possess donkeys as compared to two donkeys on average possessed by a sample household at Abaroba kebele.

As it has been reflected by item number one from table 4.2.2, respondents were requested to rank the sources of their livestock feed in order of importance. Accordingly, crop residue and own grazing land are identified as the first and second important sources of animal feed in Buso kebele while in Abaroba kebele communal grazing land and crop residue are the first and second important source of animal feed .

Item number two from table 4.2.2, shows the response of the sampled households from the two kebeles regarding the size of the grazing land in their area over time. Accordingly, the entire respondents, 100%(40), from Buso kebele and almost all, 98.75%(79), respondents from Abaroba kebele replied that the size of grazing land is decreasing over time.

Table4.2.2. Sources of Livestock Feed

1.Source of animal feed	Name of Kebele								
	Rank	Buso(N=40)				Abaroba(N=80)			
		1	2	3	Total	1	2	3	Total
a.Own grazing land	Count	8	20	2	32	22	29	28	79
	%	26.7	66.7	6.6	100	27.8	36.7	35.4	100
b.Communal grazing land	Count	0	3	10	13	45	10	23	78
	%	0	23.1	76.9	100	57.7	12.8	29.5	100
c.Crop residue	Count	30	7	2	39	13	39	27	79
	%	76.9	17.9	5.1	100	16.1	49.4	34.2	100
2. Size of grazing land over time			count	%			count	%	
	Increasing		0	0		1		1.3	
	Decreasing		40	100		79		98.75	

Source: Field Survey, February, 2009

Respondents were also asked to list the reasons for the decrease in the size of grazing land. In both kebeles the respondents attributed it to the increase in the size of cultivated land, increase in livestock size, over grazing and subsequent degradation of fields and reduction in the amount of rainfall.

Assisted with the information obtained from FGD and personal observation what can be concluded from the above discussion is that, in Buso kebele land possessions are so small that households use crop residue from their fields as a major source of animal feed and supplement this with feed from pocket areas of own grazing. While the environment at Abaroba allows for free riding of herds as a result of which the communal grazing land serves as the major

source of animal feed. Furthermore, areas which were easily susceptible to erosion and formerly left uncultivated are under cultivation nowadays. This in turn has a negative repercussion on the size of the grazing land and the effort made to conserve the soil and water resource in the study area.

4.2.3. Construction and Maintenance of SWC Structures

Construction and maintenance of SWC structures is one of the most important features for the sustainability of the structures. Of course, such structures like stone terraces might stay undamaged for many years under careful protection. But structures like trash lines, soil bunds, tied-ridges and removing sand from fields around river banks demand at least seasonal effort.

Construction and maintenance of SWC structures among Konso people was an ongoing process, and was especially important after a heavy rain since any serious damage in the structures in one way or another may affect the produces. General repair work is concentrated in the period at the end of the rainy season when there is less work on the farm. The construction and maintenance of laborious SWC structures like stone terraces is usually undertaken by the male head of the household (Watson, 1998).

In the words of Shakayto Arkaya, an adult man of 40 years from Buso kebele, it is their frequent construction and maintenance of the various SWC structures that allowed their large population to survive and continue to live in such a very small area (**See figure 2**).

In view of the FGD participants, fallowing is no more a visible SWC practice among the people in Buso kebele because farm plots become too small and this in turn hinders the opportunity for leaving the plots uncultivated. Instead of fallowing the farmers stress on application of manures and other wastes from the home to maintain the fertility of the soil. The participants also indicated some serious problems associated with the construction and maintenance of SWC structures like flood protection walls /*toomota*/. The construction of flood

protection walls /*toomota*/ demands huge stone boulders. Lifting such boulders is laborious and they are scarce in terms of availability.

Figure 2: Family labor at Buso Kebele removing sand and gravels from the farm



Source: Field Observation January, 2009

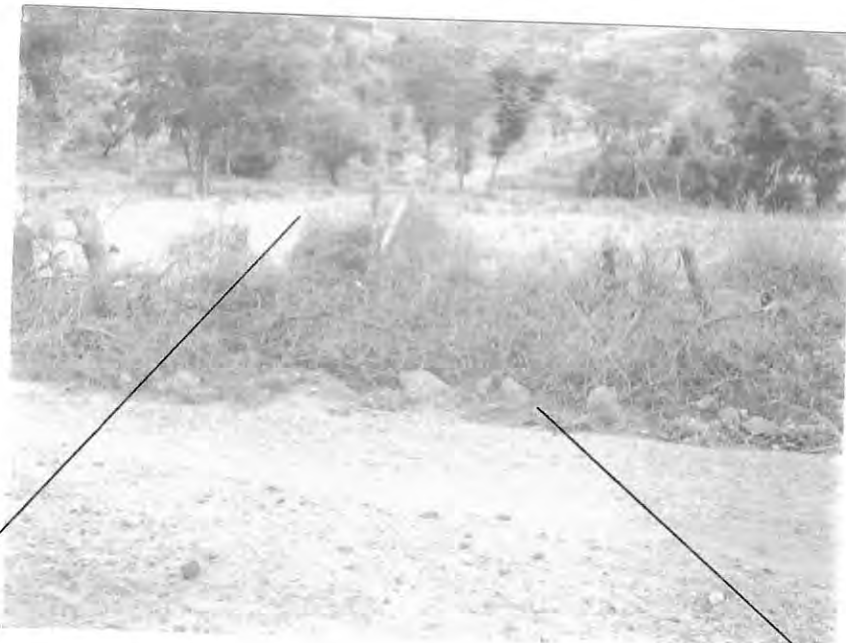
Because of much cultivation in the neighboring areas of Gume, Mechelo and Mecheke and the influence of Burkuda town, there is much discharge of runoff through Garfura River. As a result, the Garfura River is causing frequent damage to the flood protection walls /*toomota*/, the construction of which is laborious and costly in character. So, this has brought a new phase of challenge as to how to continue with the construction of flood protection walls /*toomota*/ as an important SWC structures around the river banks (FGD participants from Buso kebele).

Concerning the construction and maintenance of SWC structures in Abaroba while asked Lamita Ba'aya, an old man of about 70 years replied “**our farmers have gone from Komola to Gomayta then to Golale and Koirra to cultivate**”. In this sense the respondent is to mean that people at Abaroba moved from Komola (farmlands near the villages) to the Gomayta (distant

lowland area) under the pretext of lost fertility of land. The movement then continued to Golale and Koirra areas for the same reason. In the words of the respondent under consideration, their people are less involved in construction and maintenance of SWC structures. The saying of Konso people '*anta kuuta namma muginicho*' holds true here. This is to mean that much movement is threat to livelihoods.

The results from researcher's field observation supports what was replied by the above old man. In several places in Abaroba Kebele the researcher observed dismantled flood protection walls /toomota/ and farm fields totally covered with sand and silt (**See figure 3**). Throughout his field observation the researcher did not encounter any person in Abaroa Kebele constructing or maintaining SWC structures.

Figure 3: A Farm field totally covered with sand and silt following dismantled flood protection walls /toomota/ at Abaroba kebele



A farm totally covered with sand and silt

dislodged flood protection wall replaced with wooden fences

Source: Field Observation, January, 2009

4.2.4 Community Participation in SWC Practices

People's participation is a means to increase efficiency in the management of programs. The participation of the people increases efficiency since it provides for the free flow of information, encourages people to make good use of resources and raises their motivation to improve their own situation (Hapgood, 1969, Montgomery, 1988 cited in Yeraswork, 1995).

In view of the FGD participants at Buso kebele, there is commitment on the part of their community to participate in SWC practices. This is revealed both at the individual household and community level.

At the individual household level, the household head at Buso wake up early in the morning especially when there is no harvest on the field. He collects digging materials (locally known as *silpota*), wooden-bowl (*toma*) or spade depending on the nature of the SWC practices and makes his way to the farm.

After completing the domestic chores, the women carry heavy loads of manure to the farm field. They also bring what the husbands eat or drink at the field. It is customary to use the local drink known as *chaka*. The women distribute the manure on the field and provide support to the husbands in terms of adding soil to the structures or bringing stones or constructing trash lines depending on the nature of the field and the kind of SWC which is under construction.

In the words of the FGD participants at Buso Kebele nowadays the construction of village walls, construction and/or maintenance of water wells and ponds, the assistance of ward/sub-village/ to individual households during serious problems as in the case of sever flood damage on the field are good signs for the existence of strong community participation in SWC practices. Accordingly, the construction and maintenance of water ponds by the community today has increased two or three times of what was experienced some two decades back.

The FGD participants at Buso kebele also pointed out that the construction of cemented structures on the outlet of the water wells for sanitation purpose has a negative consequence on the volume of the water in the wells. In their view, including the water well of Aycha family many water wells dried up, some are with small amount of water while some others are full of leeches which highly affects the throat of cattle and expose many to death.

In relation to the situation of participation in SWC practices in Abaroba Kebele Kulila Duba, a woman of 38 years of age expressed the following:

Men at Abaroba always focus on Gomayta farms. In Gomayta they plow the fields using oxen and might construct tied-ridges (moona) and canal that can take water into the field(kaba) as SWC practices. When they are in hoe-cultivated area of Xhonso, they consider drinking chaka and katikala as their major task. The hoe-cultivated farms which require intensive effort in terms of SWC practices are left to women who actually have heavy work load both at home and outside.

As can be understood from the expression of the woman above, men at Abaroba do not give attention to fields nearby residence (*Dhila Xhonso*). They see these fields as fields cultivated over generations, which are no more productive. They stress on the oxen-plow farms at distant lowlands (*Dhila Gomayta*) considering farms near residence as source of animal fodder at proximity.

A number of advantages of the farms nearby residence (*Dhila Xhonso*) over the farmland in the distant hot lowlands (*Dhila Gomayta*) were listed by the participants of FGD at Abaroba. Accordingly, farms nearby the residence:

- ▶ can benefit from organic matters of home wastes and animal remains
- ▶ are important source of fodder for animals at home
- ▶ are always under the close supervision of the family members
- ▶ have little probability of being without any yield during the crop season
- ▶ give wide opportunity for intercropping of annual and perennial crops

The FGD participants indicated that farms nearby residence (*Dhila Xhonso*) are not without limitation. That is,

- ▶ they require intensive and varieties of SWC practices due to their rugged terrain
- ▶ they are small in size and have wide disproportion in ownership
- ▶ they are perceived to give low produce.

In the words of Orge Orano, a woman of 45 year of age from Abaroba, weakness or reluctance is observed on the part of women in participating on the SWC practices. In this regard, women in the past were not allowed to sit and drink commercially brewed local drink called *chaka arasa*. She also added that, today there is radical change. Women's stone mills have already become part of residence stone terraces. Women surround a stove and drink *chaka arasa*. It is not as such simple to see woman carrying animal manure to the field.

Figure 4: A Large Part of Farmland area in Abaroba Kebele Changed into a Large Gulley due to Poor SWC Practices



Source: Field Observation, January, 2009

Concerning the participation of wider community in the SWC practices, the FGD participants replied that no significant voluntary effort has been made to carry out a particular SWC structure over the past two or three decades. Most of the social values which had been important to the SWC practices were

subjected to serious deterioration with the fall of the imperial regime. The people are not able to catch up with the social values of the modern world as result they are in a to and fro state.

In connection with the participation of the community in the SWC practices, one can see the kind of the practices which are in use. Table 4.2.4 indicates whether the respondents use SWC practices on their cultivated and uncultivated land or not. All the respondents in Buso kebele and 68(86.1%) in Abaroba kebele indicated that they use SWC practices on their cultivated land. The types of SWC practices used on cultivated land listed by most of the respondents from Buso kebele included construction of stone terraces, flood protection walls(see **figure 5**), waterways, adding manure to fields, intercropping and removing sand and silt from fields. The types of SWC practices listed by most of the respondents from Abaroba kebele included soil bunds, intercropping, trash lines and waterways.

The reason for the difference in the type of the SWC practices used by most of the respondents from the two kebeles is that people at Abaroba focus on farms at distant lowlands (*Dhila Gomayta*) which are left free for livestock after harvesting. In Buso kebele cultivation is confined to farms nearby residence (*Dhila Xhonso*) which are protected from animals at any time.

What one can understand from the kind of the SWC practices listed by the respondents from the two kebeles is that the practices used in Buso kebele are laborious and costly which certainly give long term benefit. Those practices listed by the respondents from Abaroba are seasonally constructed ones which demand less labor and stay for relatively short period of time.

Table: 4.2.4. Respondents using SWC Practices on Cultivable Land and Uncultivable Land

		Name of Kebele		Total
		Buso	Abaroba	
Use of SWC on cultivated land	Count	38	68	106
	%	100	86.1	90.6
Total	Count	38	79	117
	%	100	100	100
Use of SWC on uncultivated land	Count	10	29	39
	%	25.5	36.3	32.8
Total	Count	39	80	119
	%	100	100	100

Source: Field Survey, February, 2009

In relation to the use of SWC practices on uncultivated fields, most respondents from the two kebeles indicated that they do not use SWC practices on uncultivated area. Of course participants of the FGD from both kebeles have indicated that if there is any SWC practice carried out on uncultivated land in their area, it does not go beyond fencing. Because the use of the various SWC practices is predominantly associated with cultivated land.

Figure 5: Flood protection walls /toomota/ at Buso kebele



Source: Field Observation, January, 2009

4.2.5 The Role of Traditional Institutions

In Konso area modern administration is a recent phenomenon. Most probably, Konso was included in the Ethiopian empire since 1897, that is, during the reign of Menelik II (Hallpike, 1972). Before that period, the Konso community was independent, autonomous and only ruled through traditionally well established institutional structures.

According to Hallpike (1972), the modern governance neglected the elders' councils (*Qhimaya*) who were created to punish wrong doers and maintain a strong hard working culture. The modern engineers of 'food for work' attempted to replace the local terrace designs with new ones; however, they were heavily criticized not only in Ethiopia but also in elsewhere (Giger, 1998; Reij, 1998

cited in Koshana, 2006). This was because they focused on hillsides, farmers developed dependency on grain and oil for all kind of development activities and there was increased gap between the indigenous knowledge of the farmers and learned experiences communicated to them.

According to FGD participants at Buso kebele, the traditional administration has been replaced by the modern administrative structure since the Dergue regime but in their area the elements of the traditional administration were not totally lost. This was because of the people's strong effort to maintain such elements. What is important under the current government in their understanding is the fact that in Buso today there is father of Drum (Apa Timba) who handles issues before they reach the formal government structure. Apa Timba plays crucial role in harmonizing the people together. Operating under the structure of Apa Timba are the council of wards (*Sara Kanta*) who mediate between the Apa Timba and the community at the ward (sub-village) level.

The existence of such elements of traditional administration is found as being paramount in harmonizing the life of the community & strengthening the loyalty of the people to the formal government rules and regulations. In view of the FGD participants at Buso kebele then, the capacity of their people to listen to each other and cooperate makes life meaningful in such a confined and hilly environment.

The FGD participants at Abaroba kebele indicated that the traditional administration and belief system of their community was seriously weakened during the Dergue regime. Because the people did not give attention to maintain the role played by such institutions. This in turn led to the weakening of the place given to the institutions in the lives of the people. As a result the people do not give attention or attach value to the institutions in an effort to restore their elements under the contemporary conditions. In an effort to construct or maintain public places (Moora) or village stone walls for example,

some people consider such places as sacred places of traditional beliefs and are not willing to involve in the work. The importance of public places/Moora/ and village walls is not limited to being sacred places. They are also symbols of social unity and hence identity of the people. What is reflected here is the unwillingness to obey to the traditional institutions under the pretext of religion; by saying “this contradicts my religious doctrine”, “this belongs to secular people”, or “it is devil’s act and the like”.

There is also poor respect for the local rules and regulations. In punishing an individual who violates the regulation, forming support and antagonistic group is a commonplace event. There is poor respect for the administration at the local level and to elders. In case for example, where an elder advice the youngster to go to farm and construct a particular SWC structure, it is customary for the latter to say “go and advice your kid” or “let you bear your own kid and advice it”. Poor respect and loyalty within a household is also indicated by the FGD participants.

Local labor groups as traditional institutions of the community play essential role in supplying SWC practices with labor. In Buso, local labor groups like Parka and Ukanta prevail also nowadays but with less availability as compared to situation of the past. Because with the increasing population, land size is becoming smaller, people want to supplement farm produce with other off-farm activities like petty trade, labor work and cultivation in some other areas.

They compensate for their work at own fields by using the labor group of *Alumala* and *Kapandhoosha*. Although *Ukanta* is a charge free labor group, accessing the necessary labor and availing food and drink are challenging tasks under the current life condition. Mass help gained from *paleeta/ Kanta* continued with much consideration to the seriousness of the problem. *Mana* is none existent while *Tolla* labor is less frequent for individualism (focusing on personal life) is deep rooted.

In view of the FGD participants at Abaroba kebele, *Paleeta/ Kanta* and *Manna* as local labor groups are no more in existence while *Alumala* and *Kapandhoosha* are widely available. People at Abaroba used *Parka* and *Ukanta* labor group to construct waterways and tied ridges in the farms of distant lowlands and to carry materials for the construction of their huts from distant areas. Nowadays it is difficult to see or hear a *Parka* or *Ukanta* in Abaroba involved in constructing stone terraces or removing sand and silt from fields. The labor from close family member is also hardly available for the role played by extended family is greatly weakening.

CHAPTER FIVE

TRENDS OF SWC PRACTICES AND CAUSES FOR THE WEAKENING OF THE PRACTICES

In this chapter effort has been made to discuss on the trends of SWC practices and causes for the weakening of such practices. To be in harmony with the objectives of the study, the causes for the weakening of SWC practices were discussed under three major topics: socio-cultural, economic and policy /institutional support related causes.

5.1 Trends of Soil and Water Conservation Practices

In order to see the opinion of the respondents about the trend of the SWC practices in the two Kebeles, indicators were prepared. Then the respondents were requested to react by saying “agree, undecided or disagree”. So, ten items were prepared to say some about the trend of the SWC practices in the two kebeles (**see annex-F for details**).

The first item requires the respondents to express their opinion about the increment in the kind of SWC practices used by them. Accordingly, 60% (24) of the respondents from Buso kebele and 66% (53) of the respondents from Abaroba indicated disagreement to the point raised. Hence, in both Kebeles majority of the respondents indicated that the types of the SWC practices used in the Kebeles are not increasing over time.

Respondents were also asked to give their opinion about the construction of SWC structures from time to time. Fifty percent of the respondents from each of the Kebeles replied disagreement. Nearly half percent of the respondents in Buso kebele also showed agreement. Of course, during the FGD it was revealed that even though there is restriction imposed by small farm size, the effort to construct new SWC structures in Buso kebele has widely continued.

Thirdly, the maintenance of the structures over time is raised. The vast majority of the respondents at Buso kebele 90% (36) showed agreement while at Abaroba 66%(53) of the respondents showed agreement; a relatively low figure as compared to the one at Buso. Discussion with FGD participants revealed the diminishing nature of the effort to maintain the SWC structures in Abaroba the kebele.

The fourth point is about respondents' opinion about increase in participation in the construction of the structures. In Buso kebele, 70% (28) of respondents showed agreement while in Abaroba 51% (41) showed agreement. A considerable figure of respondents from Abaroba, 42.5 % (34), showed disagreement. But the results of FGD and personal observation indicated that the participation is weakening overtime.

The fifth point raised improvement in the quality of the SWC structures constructed. In Buso Kebele 47.5 %(19) of the respondents showed that the quality of the structures constructed is increasing over time while in Abaroba nearly two-third of the respondents, 65% (52), showed disagreement.

The six points is about opinion of respondents regarding the improvement in soil fertility overtime brought about by the practice of SWC in their area. Closer figure of respondents, 65% (26) and 62.5% (50), from Buso and Abaroba Kebeles respectively indicated disagreement. Here what can be understood is that due to SWC practices the fertility of the soil might not necessarily improve overtime. But the practices could be important in terms sustaining subsistence production.

The seventh point is about the wide spread practice of the SWC in the community. Ninety percent of the respondents at Buso showed agreement. But, at Abaroba only 42.5% (34) of the respondents replied that, SWC practices are widely carried out in their community. Here wide variation is observed between the two kebeles in terms of the percentage of respondents who showed

agreement. A significant percent of respondents in Abaroba, 46.25% (37), showed disagreement.

Eighthly, increased integration of the local and modern SWC practices is raised in which case 75%(30) of the respondents at Buso and 62.5% (50) of the respondents in Abaroba Kebeles showed disagreement. In a sense, one could say that the effort to integrate local and modern SWC practices in both Kebeles is weak. This might be attributed to the weak effort made by WARDO (as it has been revealed in section 5.4.2).

The ninth point raises the decrease in soil erosion due to SWC practices. Sixty percent (24) of the respondents from Buso and 74 % (59) from Abaroba indicated disagreement.

The last point raised is about the wide availability of the various local labor groups important for the SWC practices. The vast majority of the respondents in Buso kebele (92.5%) showed agreement while in Abaroba only about half of the respondents showed agreement.

Based on the results of the points discussed above, it is possible to say something about the opinion of the respondents regarding the trend of SWC practices in the two Kebeles. Strong agreement is indicated to most of the items raised to the respondents at Buso kebele. That means, based on the opinion of the respondents, it can be said that the SWC practices in Buso kebele are continuing to be strong. But considerable tendency of weakness in the trend of the practices is also seen as can be understood from the large percentage of respondents who showed disagreement to the first, sixth, eighth and ninth items.

According to the opinion of most of the respondents in Abaroba, there is weakening trend in the SWC practice over time in the kebele. This is indicated

by the large percentage of respondents who showed disagreement to most of the issues raised.

5.2. Socio-cultural Causes for Weakening of SWC Practices

Pertaining to the socio-cultural causes for the weakening of SWC practices, five points were given focus. Table 5.2 shows the summary of these points.

5.2.1 Increase in Size of the Population

Increase in the size of the population can be one of the most important factors in determining the effort made to conserve the soil and water resources. The increase in the size of the population can influence the SWC process positively or negatively depending on the issue whether it has led to intensive or extensive agricultural process in the area. Thus the following items were designed to test this reality. Item number one from table 5.2 is designed in line with this.

As it can be understood from item number one from table 5.2, 62.5%(25) of the respondents in Buso kebele indicated that with the increase in the population size in their area, the involvement in the SWC practice is increasing. While less percentage of the respondents 35%(14) indicated that with the population increase, the involvement of their community in the SWC practices is decreasing. The majority of the respondents from Abaroba kebele 79 %(35) indicated that there is decrease in the involvement in the SWC practice in their area with the increase in the size of the population.

Effort was also made to see if there is opinion difference between the respondents from the two kebeles in response to the item under treatment. For this purpose Chi-square is used to see if there is a significant difference on the issue. The calculated Chi square is 34.675 while the critical value is 5.991.

Table 5.2: Percentage and Chi square Distribution of Socio-cultural Factors

No.	Socio-cultural factors for weakening of SWC	Respondents				Pearson Chi square		
		Buso(N=40)		Abaroba(N=80)		df	Cv	Tv
		Count	%	Count	%			
1.	Society involvement in SWC practices					2	34.675	5.991
	a. Increasing	25	62.5	9	11.3			
	b. Decreasing	14	35	63	78.8			
	c. Remain the same	1	2.5	8	10			
2.	Family motive for SWC	Count	%	Count	%	1	21	3.841
	a. Yes	35	87.5	35	43.8			
	b. No	5	12.5	45	56.2			
3.	Assistance for SWC	Count	%	Count	%	2	11.97	5.991
	a. Increasing	19	47.5	19	23.8			
	b. Decreasing	19	47.5	38	47.5			
	c. Remain the same	2	5	23	28.8			
4.	Participation of youth	Count	%	Count	%	2	4.764	5.991
	a. Increasing	12	30	12	15			
	b. Decreasing	24	62.5	64	80			
	c. Remain the same	5	7.5	4	5			
5.	Status of social norms	Count	%	Count	%	2	7.286	5.991
	a. Deteriorating	19	47.5	54	67.5			
	b. Improving	18	45	11	21.3			
	c. Remain the same	3	7.5	9	11.5			

Remark; df = degree of freedom cv= calculated chi value

tv = table value/ critical value

Source: Field Survey, February, 2009

That is the calculated chi value is greater than the critical value. The decision is to reject the null hypothesis. The interpretation is that there is sufficient evidence to indicate that the respondents from the two kebeles have opinion difference regarding the involvement of the society in SWC practices with the increase in the size of the population.

So, here one can understand that population increase is seen as much associated with decrease in the SWC practices by the respondents from Abaroba kebele. But what is reflected by the respondents from Buso kebele is related with the Boserupian thesis which advocates population pressure as a significant factor for the intensification of agriculture and hence for the adoption of improved farming practices. That means the increase in the size of the population results in the increase in the value of land. This induces even the poor peasants to invest in SWC measures.

In relation to the response to item number one from table 5.2, respondents were also required to give their reason. Accordingly, those who indicated increase in the involvement of the society in the SWC practices with increase in population put the following reasons:

- ✓ Increasing production from the small farm fields to meet the food requirement of the increasing population was seen as something that must be done due to which strong social bond is created.
- ✓ The people see increased involvement in the SWC practices as a means to compensate for the small land size

Those respondents who revealed that with increase in population there is decrease in the involvement of the society in the SWC practices listed such reasons as:

- ✓ Increased stress on other livelihood options. That means with the increase in the size of population and subsequent shrinking of land holdings, the people prefer to focus on other livelihood options like petty trade, wage laborer in nearby urban areas and temporary migration in search of job in distant areas.
- ✓ There is shrinking of cultivated land with population increase and this has reduced the motive and opportunity of the people to involve in the practice.

- ✓ Deterioration of social values which are important for SWC practices due to the diminishing role of the traditional institutions in the lives of the people.
- ✓ Expansion of urban centers and their competition for rural labor
- ✓ Cultivation of marginal areas: With the increased population size cultivation expands to marginal areas which are not suitable for cultivation. Because of the poor soil fertility and extremely hilly nature of the terrain, cultivation in such areas lasts only for few years. As a result people do not actively involve in SWC practices in such areas.

5.2.2 Willingness of Household Members to Involve in SWC Practices

Historically, the involvement of Konso community in SWC practices was based on their intrinsic motivation without any external influences. This condition allowed the practice to survive over generations. In this sense the willingness or motive of household members to involve in the practice has to do with the strengthening of the practice (Hallpike, 1972).

As one can see from item number two of table 5.2, 87.5%(35) of the respondents in Buso kebele indicated that their household members have motive to involve in SWC practices. In the view of these respondents, their environment is so confined that they are unable to get new land. In addition, they replied that fields are so small that production that could allow for subsistence life cannot be obtained unless household members are fully committed to involve in the SWC practices.

As can be understood from the item under consideration, 56.2%(45) of the respondents in Abaroba kebele indicated that their household members are not willing to involve in SWC practices while a considerable number of the respondents, 43.8%(35), from the same kebele replied that their household members are willing to involve in the practices. Those respondents who

expressed unwillingness revealed that with the exhaustion of the fertility of fields and consequent reduction in farm yields, household members prefer to search for new cultivable land in areas formerly considered marginal (**See figure 6**). Here it can be understood that in Abaroba there is some opportunity to access new cultivable land. The wide expansion of the use of alcohol drinks is also mentioned as seriously eroding the motive of the household members to involve in the practices.

A chi square was also calculated to see whether the difference in opinion between the respondents of the two kebeles on the point under consideration is statistically significant or not. So, the calculated chi value was found to be 21 while the table value/ critical value is 3.841. The calculated chi value was greater than the critical value and hence the null hypothesis was rejected. That means at 95% confidence interval there was statistically significant difference in opinion between the respondents of the two kebeles about the motive of their household members to involve in SWC practices.

From the above points of discussion it can be concluded that there is strong motive on the part of household members from Buso kebele to involve in SWC practices while the majority of the respondents from Abaroba kebele have less motive to involve in the SWC practices because they have opportunity to obtain new cultivable land.

Figure 6: Expansion of cultivation into Hilly marginal lands in Abaroba Kebele



Source: Field observation, January, 2009

5.2.3 Assistance Gained from Other Households

Item number three from table 5.2, indicates the situation of the assistance gained from other households for the SWC practices in the study areas. Accordingly, 47.5% (19) of the respondents at Buso indicated that the assistance gained is increasing while about 47.5%(19) of the respondents in the same kebele indicated that the assistance gained from other households for the practice is increasing. In Abaroba 47.5 % (38) of the respondents indicated that the assistance is decreasing while about 29% (23) of the respondents indicated that the assistance being gained remain the same over time.

A Chi-square test was used to see if there is significant opinion difference between the respondents from the two kebeles regarding the situation of the assistance gained from other households. The Pearson chi-square test with degree of freedom 2 at 95 % was calculated. The calculated chi-value is 11.970 is greater than the table value of 5.991. This implies that there is significant

evidence at 95% confidence interval to believe that there is opinion difference between respondents of the two kebeles regarding the situation of assistance gained from other for SWC.

A number of reasons were indicated by the respondents as to why the assistance gained increase or decrease over time. Respondents who indicated increase in assistance over time listed the following reasons:

- ✓ There is strong motive among the people to cooperate
- ✓ There is a need to fill the gap of labor shortage in the family
- ✓ There is a need to win the challenges of life in common
- ✓ There is strong cultural tendency to assist when one is constructing SWC structure

Those who indicated that the assistance gained from other households is decreasing mentioned as reason such issues as:

- ✓ People more focus on money (their own personal gains)
- ✓ With reduced farm productivity people are gradually focusing on off-farm activities
- ✓ Availability of sufficient labor at family level
- ✓ The decreased productivity also discourages the need for assistance from other households
- ✓ The deterioration of the social tradition of helping each other. This is due to the fact that people try to focus on their own personal gains than social benefits. That means there is stress on “how can I win my life than how can we win our life”; an egoistic or selfish type of life style.

5.2.4. The Participation of the Young Generation in the SWC Practices

The participation of the youth is of great importance in various social endeavors. It can be a clue to the extent to which the youngsters are ready to receive and maintain a particular social role to the next generation.

As it has been revealed by item number four of table 5.2, 61.5 %(24) of the respondents from Buso kebele indicated that the participation of the young generation is decreasing while in Abaroba 80 %(64) them replied that the participation of the young generation in the practice is decreasing. A considerable difference in terms of percentage of respondents is observed between the two kebele. Hence, chi square test was used to see whether the difference between the two groups is statistically significant. Thus a chi score value of 4.764 was calculated at 95% confidence interval with degrees of freedom of two. The calculated chi square value is less than the table value of 5.99. This indicates that the opinion difference observed between the respondents from the two kebeles about their participation of the youth in SWC practice is not statistically significant.

As one can understand from the discussion of the item under consideration, in the two kebeles majority of the respondents replied that the participation of the young generation in the SWC practices is decreasing. The respondents listed a number of reasons for this decrease in participation.

- ✓ The youngsters consider SWC practices as laborious activities and are not willing to involve in them.
- ✓ The youngsters are lacking the skill necessary for the SWC practices for they are not learning it
- ✓ They consider that the farms have lost their fertility and are no more productive. Such attitude leads to reduced motive and interest on the part of the youth to involve in the SWC practices.
- ✓ They have better livelihood options as compared to their fathers and grand fathers. The livelihood options can be sought in areas of services, trade, wage laborer ness and the like.
- ✓ They have got access to money through their labor work at Moyale town and Shakiso goldmine and do not give attention to what elders say.

5.2.5. The Place Given to Social Norms Important for SWC Practices

Social norms like respecting the elders play essential role in maintaining strong social bond and loyalty to the rules adhered to. Of course, elders are the source of the rich social experiences and wisdom. In relation to SWC practices they can be seen as 'social experts' who teach the community about what kind of SWC structure to construct, where, how, and when to construct (Hallpike, 1972).

As can be seen from item number five of table 5.2, in Buso kebele 47.5%(19) and 45%(18) indicated that social norms like respecting the elders which facilitate the SWC practices are deteriorating and improving respectively. In the case of the Abaroba kebele the larger proportion of the respondents 67.5 %(54) of the respondents replied that the social norms that facilitate the SWC practices are deteriorating.

A chi square is also used to see if there is statistically significant difference in terms of opinion on the same issue between the respondents from the two kebeles. With degree of freedom of two at 95% confidence interval a calculated chi value of 7.286 was found. The calculated value is greater than the table value of 5.99. This indicates there is statistically significant evidence to say that the respondents of the two kebeles have opinion difference about the point under consideration.

Respondents were also required to give reason to their answer regarding the social norms that facilitate the SWC practices. The most frequently listed reasons by those who chose deterioration of social norms include:

- ✓ Life of fathers and grand fathers is considered by the youth as backward type
- ✓ Weakening sense of interdependence: There is increasing tendency for self- reliance as to what to do, in what way, with whom and when.

- ✓ The influence of modern education in terms of creating alternative employment opportunity and attitudinal change,
- ✓ The influence of urbanization through exposure to new culture, media, movies and interaction with other social groups.
- ✓ Weakened role of traditional institutions in the life of the people

In the view of some of the respondents (mainly from Buso kebele) the social norms that facilitate the SWC practices are improving because:

- ✓ There is strong tendency to listen and respect each other in the society
- ✓ There is good linkage between traditional administration (*Apa timba and Sara Kanta*) and formal administration
- ✓ Some degree of adherence to social norms that strengthens the social bond which in turn of great essence in winning the challenges of life.

5.3. Economic Causes for Weakening of SWC Practices

5.3.1 Productivity of the Farm Land

The productivity of cultivable land can facilitate or deter the involvement of a household in the SWC practices. The following table was designed to examine issues related to it.

Accordingly, the vast majority of respondents in the two kebeles i.e. 94.7% (36) in Buso and 96.3% (77) in Abaroba replied that the productivity of their farm lands is decreasing from time to time. In this respect the results of this study agrees with Harrington (1992 cited in Berhanu, 2000) which indicated that agricultural practices including the SWC practices become unsustainable when productivity trends decline persistently, despite SWC practices are under taken to make productivity sustainable.

Table 5.3.1: Respondents' Opinion about Status of farm Productivity

Items		Respondents									
		Buso (N= 40)					Abaroba (N= 80)				
		No.		%		No.		%			
1. Farm productivity											
a. Increasing		2		5.3		0		0			
b. Decreasing		30		95		77		96.3			
c. Remain the same		0		0		3		3.8			
2. Productivity decline due to	Rank	1	2	3	4	total	1	2	3	4	Total
a. Increasing	No	21	9	8	1	38	59	8	5	4	76
b. farm size	No	7	8	10	13	38	4	15	27	31	78
c. Population	No	7	10	16	4	38	5	27	35	10	77
d. Soil fertility	No	4	11	4	19	34	9	23	10	33	75

Source: Field Survey, February, 2009

Respondents were also required to give reason to the answer they gave regarding the productivity of the land over time. That means they are required to put the reasons in terms of the order of importance. As it has been already indicated in the discussion above, the majority of the respondents in both kebeles indicated that the productivity of the land is decreasing over time.

As can be seen from item number two of table 5.3.1, the major reasons for the reduction in the productivity of the land as identified by the respondents in Buso kebele in order of significant influence are: decrease in rainfall, decrease in soil fertility and increase in population pressure. Similarly, decrease in rainfall, increase in population pressure and decrease in farm size were indicated as the first, the second and the third major reasons for the reduction in productivity of land respectively. The participants of FGD at Buso kebele mentioned that decrease in rain fall and small farm size brought about by the population pressure are the two serious causes for the decline of productivity of farms over time.

As it can be understood from the above discussion, the decrease in the productivity of the farms in the areas was the combined effect of a number of factors including decrease in rainfall, decrease in soil fertility, and increased population pressure. This in turn has led to the decrease in the investment made by the farmers in relation to SWC practices.

5.3.2 Involvement in Off-farm Activities

As poor farmers generally possess less land, they are more often engaged in off-farm activities such as petty trade. This can decrease their interest to invest on soil conservation practices (Ludi, 2004). As one can observe from item number one of table 5.3.2, about 60%(24) of the respondents from Buso Kebele replied that a particular member of their family involve in off-farm activities while 40%(16) of respondents from Buso kebele also replied that none of their family members has involvement in off-farm activities. In Abaroba kebele 54 % (43) and 46% (37) of the respondents indicated involvement and non-involvement in off-farm activities respectively.

Those respondents who involved in off-farm activities were asked to indicate the type of activities they were involved in, the distance of the work place from their home, the number of days they spend per year and the income they earn from such activities. Accordingly, labor work and petty trade were the predominantly mentioned off-farm activities.

As can be understood from items number two, three and four of table 5.3.2, a typical household member in Buso kebele engages in off-farm activities at a mean distance of 211.5 km from home for about five months per year, and earns average income of 1390 birr. In case of Abaroba the respondents involve in off farm activities at mean distance of 254.5 km for about four and half month in a year and earn mean income of 1035.5 birr. From this it can be understood that households in both kebeles devote a considerable amount of their time to off-farm activities.

Table 5.3.2 Situation of Respondents Involvement in Off-farm

No	Involvement in off-farm	Respondents			
		Buso (N=40)		Abaroba(N=80)	
1.	Family members	Count	%	Count	%
	a. Yes	24	60	43	54
	b. No	16	40	37	46
		Mean	SD¹	Mean	SD
2.	Distance from home in km	211.5	166.5	254.5	174
3.	Days spent per year	144.7	87.4	130	72
4.	Income earned per year	1390	934	1035	901
5.	Influence on SWC practices	Count	%	Count	%
	a. Yes	10	37	34	75.6
	b. No	17	63	11	24.4

¹ standard deviation

The sampled households who involved in off-farm activities were asked if the activities have any influence on their SWC practice. As revealed by item number four from table 5.3.2, large proportion of the respondents 63%(17) in Buso kebele indicated that the off-farm activities do not have negative impact up on their involvement in SWC practices while in Abaroba 75.6%(34) of the households who involve in the activities indicated that such activities negatively influence their involvement in the SWC practices.

Similar results were revealed during the FGD. That means the FGD participants at Buso kebele indicated that they use off-farm activities to diversify their income portfolio. In their opinion, they also subsidize the SWC practices through the income they earn from off-farm activities. In the view of the FGD participants from Abaroba kebele, off-farm activities like labor work at Moyale and gold mine areas and brewing local drink seriously affect the SWC practices in their area. Accordingly, rather than compensating for the SWC

practices through the income earned from off farm activities, people in Abaroba kebele would like to drink alcohol and arise chaos in the community.

Those respondents who indicated the influence of off-farm activities on SWC practices were asked to indicate the ways in which such activities have influence. Thus, they mentioned that such activities compete for labor, decrease the motive for the practices and the use of the necessary inputs on time.

What can be understood from the above discussion is that in case where the involvement in off-farm activities is driven by shortage of cultivated land and availability of extra labor force as in the case of Buso kebele, such activities could contribute to the diversification of income sources otherwise they could have negative consequences.

5.3.3 Availability and Access to Labor outside Household

Members

As it can be seen from the item number one of table 5.3.3, respondents were asked whether they use labor outside their family for SWC practices or not. Accordingly, 77.5%(31) of the respondents in Buso kebele indicated that they use labor outside their family for the SWC practices and also 80%(64) of the respondents in Abaroba kebele indicated they use it. Hence one can say that the majority of the respondents in the two kebeles use labor outside their family for the SWC practices.

Access to labor is of crucial importance in carrying out a particular conservation practice. Because access to additional labor enable households to compensate for labor shortage encountered at household level and carry out the SWC practice as intended. The same thing is true when we come to the SWC practice among Konso community. That means local labor groups provide the SWC practice with essential labor.

Table 5.3.3 Availability and Access of Labor outside Household Members

Availability and access to outside labor	Respondents					
	Buso (N=40)			Abaroba (N=80)		
1. Outside labor use	No.	%		No.	%	
a. Yes	31	77.5		64	80	
b. No	9	22.5		16	20	
2. Affordability of outside labor	No.	%		No.	%	
a. Yes	8	25.8		24	37.5	
b. No	23	74.2		40	62.5	
c. Pearson chi test	Degree of freedom		Calculated value		Critical value	
	1		1.278		3.841	

Source: Field Survey, February, 2009

Those respondents who use labor outside their family members were further asked if the outside labor is affordable in terms of cost. Seventy four percent of the respondents from Buso kebele and 62.5 %(40) of the respondents from Abaroba kebele replied that the outside labor could not be obtained with reasonable cost.

To see whether there is opinion difference between the respondents from the two kebeles about the affordability of outside labor a Chi Square was calculated at 95% confidence interval with degree of freedom of two. The result of the calculated Chi value is 1.278 is less than the critical value (table value) is 3.841(see item two from table 5.3.3). This means there is no statistically significant opinion difference between the respondents of the two kebeles with respect to the affordability of outside labor for SWC practices.

A number of reasons were indicated as to why labor outside own family members cannot be accessed at affordable cost. Reduction in production and productivity which in turn reduces the motive as well as capacity of the farmers to invest on the SWC practices, increased labor demand in urban areas and the

subsequent increase in wage for SWC practices and people's focus on personal gains than social benefits in all efforts of SWC are some of them.

5.4. Institutional Support Related Causes for Weakening of SWC Practices

While there is some argument that participation should be a wholly internal process and should be allowed to emerge solely on the basis of internal availability and directions, the practice reveals the inevitable presence of external agencies (like government and NGOs) to assist and promote the involvement of the community (Okley et al., 1991 cited in Gebremedihh 2004). This true particularly when the community has limited resources and institutional capacity (Okley et al., 1991 cited in Gebremedhin, 2004).

So, in this section attempt has been made to see into such institutional support related issues like access to extension services and credit sources.

5.4.1 Access to Extension Services Related to SWC Practices

Access to extension services helps farmers to gain better understanding of the potential effects of soil erosion and benefits of SWC practices as well as enhance knowledge on the application SWC technologies.

As can be seen from item number one of table 5.4.1, respondents were asked whether they have access to any extension program that could promote the SWC practices in their area. Accordingly, 69.2%(27) of the respondents in Buso kebele and 77.5%(62) of the respondents in Abaroba kebele replied that they have no access to extension services that promote their SWC practices. This indicates that the majority of the respondents in the two kebeles do not have access to extension service that can promote their SWC practices.

Table 5.4.1: Access to and use of Extension Services Important to SWC Practices

	Respondents											
	Buso (N=40)					Abaroba (N=80)						
1. Access to extension	No.					%	No.					%
a. Yes	12					30.8	18					22.5
b. No	27					69.2	62					77.5
2. Used the extension	No.					%	No.					%
a. Yes	9					75	12					66.7
b. No	3					25	6					33.3
3. Information source		1	2	3	4	total	1	2	3	4	Total	
a. Tradition	No	39	-	-	-	39	70	10	-	-	80	
b. Neighbors	No	1	36	3	-	40	9	68	2	1	80	
c. Dev't agents	No	-	4	19	2	25	1	1	57	1	60	
d. NGOs	No	-	-	3	7	10	-	-	1	26	27	

Source: Field Survey, February, 2009

Small number of the respondents from both kebeles indicated that they have access to extension services related to SWC practice. The respondents indicated that water harvesting was the most recent technology introduced through the extension service yet they did not find it effective in their area. Because in introducing the technology a top-down approach which considered the community as passive recipients was used. In relation to this Betru (1996) indicated that planners and implementers do not consider the real needs and aspirations of the local people and negative developments are often related to such ways of interference in traditional management system.

Item number three of table 5.4.1, shows the summary of the source of information for the respondents to carry out SWC. The respondents were asked to rank the information sources in terms of the order of importance they have for the practices. In both kebeles the local culture and people in the neighborhood were identified as the first and second important sources of

information in carrying out SWC practices.

5.4.2. Effort made by the Government and NGOs to Promote the SWC Practices

Soil and water conservation practices as issues of special concern are within the limit of the WARDO. In the view of the officials, due to the terrain nature, deforestation, increased population pressure, over cultivation of the land and shortage of rainfall; there is reduction in production and productivity and subsequent dependency of the population in the area on government and NGOs for food supply. To increase farmers' production and productivity as well as to attain food security, community centered and watershed based activities are underway through capital budget and projects in the year 2008/9.

The official report at WARDO indicated that the following activities were carried out in relation to SWC practices during the first quarter of the 2001 Ethiopian fiscal year. In selected watersheds in the woreda:

- 6332 meter cube stone terraces were maintained
- 45568 improved seedling planting structures were constructed

In addition, table 5.4.2.1 reveals the plan and performance inside and outside sub-watersheds in the woreda during the same period.

Table 5.4.2.1: Plan and performances of SWC practices in KSW in the First Quarter of the 2001 Ethiopian fiscal year

Plan	Performance
Construction of 12km soil bunds	5km constructed
Construction of 37.1km fanya juu	3.01km constructed
Construction of 142km stone terraces	19.98 constructed
Construction of 144.32km bench terraces	126.7km constructed
Construction of 12 km hillside terraces	-
For soil fertility & production increase 267 compost	16 done

Source: Konso WARDO, February, 2009

Despite such report by the WARDO, focus group discussion participants at Abaroba revealed that the effort of the government agents to mobilize the community is weak. In relation to this the idea of an old man of 50 years who participated in the FGD is as follows:

Some decades back, Kusse Berisha was the administrator of Abaroba Kebele. During the winter season he used to announce on the public meeting to the farmers to construct stone terraces on their fields, remove sand and silt from fields, construct waterways to use run off from rivers and other SWC structures. This was in order that farmers could prepare their fields on time so that they might not always request him asking for government aid. Today nobody makes such effort (Gatano Guyo,FGD participant).

The above idea reflects the effort that was made by the local administration to mobilize the community for the SWC practice. In this regard, the kebele administrator used to tell to the farmers ahead of time what would happen if they did not involve in the various SWC practices. That means loss of soil fertility, crop failure, dependency on aid and the like were listed as the consequences in case the farmers fail to use the various SWC practices.

From the discussion made with development agents of the two kebeles it was found that there was poor supervision of their work from the WARDO, lack of reward or incentives, lack of technical support and focus on project works which are irrelevant with their area of training.

The respondents of the household survey were also asked whether there is any specific effort made by the WARDO to promote the local SWC practices in their area. The result has been reflected by table 5.4.2.2. The majority of the respondents in the two kebeles, 33(82.5%) from Buso and 69(86.3%) from Abaroba), replied that there is no any specific effort made by WARDO to

promote the local SWC practice in their areas.

The issues reflected above are relevant with what had been revealed in Koshana (2006). The SWC practices carried out through food for work program ended up with failure because they did not integrate the community in its planning as well as implementation. The environmental component of the world food program and safety net programs implemented through the WARDO is usually pro-poor in its focus. So, the beneficiaries tries to weigh the programs in terms of food grain or money that they gain rather than having real motive to carry out the SWC for long term use (Koshana,2006).

Koshana (2006) further indicated that both the scientific community and the government seem to miscalculating the threat of land degradation and their role of stabilizing the country's food supply. The traditional farming and the mastery of art being lost to more lucrative and waged earning jobs and the young educated population lack the awareness of the people.

Table 5.4.2.2: Effort made by WARDO and Access to Credit for SWC Practices

		Respondents									
		Buso (N=40)					Abaroba (N=80)				
1. Effort by WARDO		No.	%			No.	%				
a. Yes		7	17.5			11	13.8				
b. No		33	82.5			69	86.2				
2. Sources of credit		1	2	3	4	total	1	2	3	4	Total
a. Ikub	No	8	14	10	-	32	25	51	3	-	79
b. Money lenders	No	11	9	2	9	31	53	24	1	-	78
c. Microfinance	No	-	15	9	6	30	3	39	1	-	43
d. Other sources	No	25	3	-	-	28	-	-	-	-	-

Source: Field Survey, February, 2009

As to the effort made by NGOs is concerned, in KSW there are a few NGOs which have their main office at Karat (the main town of the woreda). Among these are the Ethiopian Evangelical Church Mekane Yesus Development Center (EECMYDC), Konso Development Association (KDA) and Parka (Environmental and Cultural Protection Association).

EECMYDC has a long historical background in working on development projects with especial attention to food self sufficiency and water supply. Even currently it is implementing an irrigation project around Segen river basin.

KDA is a local NGO established in June 1993. It involved in carrying out projects in relation to food security, rising education and health service coverage, organizing and mobilizing the people for self help development endeavors.

Parka is a local NGO which focuses on protection of cultural values like the structures made of wood to symbolize heroes and famous people /*Waka*/, Public places/*Moora*/, Village walls and forest near the villages.

None of the above mentioned NGOs work with special attention to environmental conservation in general and SWC practices in particular. While the researcher was asking an official of one of the NGOs in the woreda as to why the NGOs do not stress on SWC practices, he replied that Konso people are well mentioned for their environmental protection. In his words, one cannot get fund for a project designed in relation to SWC practices regardless of the deterioration of the practices.

What can be concluded from the result of the survey and discussion made with FGD participants is that the effort being made by the government and non-government organizations to promote the local SWC practices in the study areas is insignificant.

Access to credit from reliable source has potential importance for the SWC in an effort to avail inputs like labor and equipments which are necessary for the practices.

As it has been revealed by item number two from table 5.4.2.2, the respondents from Buso kebele indicated that credit accessed through cooperatives from the project of World Bank which labeled here as “other sources” is the major source. Microfinance institutions and Ikub takes the second and third position respectively in terms their importance as sources of credit for the respondents.

The respondents from Abaroba kebele indicated local money lenders as their primary source to access credit while Ikub and Microfinance institutions take the second and third positions respectively. This indicates that respondents from Buso kebele have access to credit from reliable sources with minimal interest rate and this could have positive implication in relation to their involvement in the SWC practices. Respondents from Abaroba mainly get credit from non-reliable sources which demand much interest rate.

What can be concluded in relation to this section is that the strong socio-cultural and traditional administrative environment enabled the SWC practices in Konso area to sustain firm enough over generations. There is no doubt that support from modern institutional structures (like government and NGOs) is important under the contemporary condition in which the role of the traditional institutions has been greatly weakened. Hence, it is possible to infer that poor effort of the WARDO in terms of extension service provision, integrating local practices with modern ones and arranging opportunities to access credit is contributing its own part in undermining the sustainability of the SWC practices.

CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

This chapter deals with the summary of the findings, conclusion and recommendation of the study.

6.1. Summary of Major Findings

This study has attempted to investigate the major factors that undermine the sustainability of SWC practices in Konso special woreda, SNNPR. The study has focused on the status and trend of SWC practices and socio-cultural, economic and policy/institutional support related factors that undermined the SWC practices in the study area.

The beginning of SWC practices in Konso area of Ethiopia was associated with the beginning of the settlement of the Konso people in the respective area. The rugged nature of the topography combined with the disease ridden nature of the low land places of the area making them inhabitable, attacks from dangerous wild animals and frequent conflicts with other people in the neighborhood which restricted social mobility triggered the practices among the people. The SWC practices in Konso area were further strengthened through the strong role played by traditional administration (Which included the Xelta organization, Apa Timba and Dhawra) and various social labor sources.

The Xelta organization played crucial role in relation to keeping and cleaning of water wells /*ela*/ and water pond /*harta*/; and in supervising the construction and maintenance of the various SWC structures and the conservation of the overall physical environment. The Apa Timpa safeguarded the loyalty of the people to the traditional law while the Dhawra played conciliatory role in creating peaceful social environment.

Assisted by the social harmony and cooperative labor environment provided by these institutions the Konso people were able to develop and use various types of SWC practices for generations. Included among these practices are stone terraces, soil bunds, spill ways, tied-ridges, flood protection walls, flood diversion canal and manure application.

The study revealed that, with the increased population, there is subsequent increase in the size of cultivated area which in turn resulted in the shrinking of grazing lands and expansion of the cultivation into areas formerly considered as marginal and extremely fragile. The costly and laborious nature of the SWC practices greatly weakened the motive of the people to invest on the practices. The extreme expansion of cultivated area also has widely increased the degree of environmental degradation and rates of erosion in the study area. This in turn contributed to frequent damage of SWC structures.

Therefore, the current status of SWC practices in the study area is characterized by the frequent damage of the SWC structures due to increased environmental degradation and rates of erosion. This is due to the fact that with the increased population pressure every piece of land is brought under cultivation which in turn leads to increased rates of erosion. With increased erosion, streams and rivers frequently damage the flood protection walls and the other SWC practices; as a result of which the farm fields are covered with sand and stone gravel. Continuous search for new cultivable land also challenges the construction and maintenance of SWC practices. This is because the people continuously search for new arable land when fertility of fields seems exhausted instead of applying the various SWC practices to improve the fertility.

The current status of the SWC practices was also seen in relation to the participation of the community in the practices. Here it was found that farmers focused on farms that require less effort in terms of the SWC practices. This is

especially true in Abaroba kebele where men focus on oxen-plow fields at distant low lands and leave the hoe-plow fields that require intensive application of the various SWC practices to women who are not competent enough to such SWC practices like construction stone terraces/ *kawatta*/ and flood protection walls/*toomota*/. The expansion of the use of alcohol drinks was also identified as another challenge to the participation of both male and women in the practices. This is due to the fact that with the expansion of alcohol men and women spend most of their time drinking.

There is weakening of the role played by the traditional administration with the introduction of the modern administration into the area. The traditional administration was used to strengthen the social harmony and loyalty of the people to the existing social rules and regulations. With the introduction of the modern administration there has been gradual weakening of social bonds and respect. This in turn seriously influenced the participation of the community in SWC practices. Associated with the weakening of social bonds and respect, there is reduction in the availability of the various kinds of social labor groups for the SWC practices.

Strong agreement was indicated to most of the items raised in relation to the trend of SWC practices by the respondents at Buso kebele. That means, the SWC practices in Buso kebele are continuing to be strong. But considerable tendency of weakness in the trend of the practices was also revealed. Most of the respondents in Abaroba indicated weakening trend in the SWC practices over time in the kebele. This has been indicated by the large percentage of respondents who showed disagreement to most of the issues raised.

One of the socio-cultural factors causing decline in the SWC practices is increase in population size. With the increase in the size of the population, in Buso kebele there is increase in the participation of the community in SWC practices. The people at Buso kebele responded to the population increase by intensifying their production system hence; increased involvement of the

community in SWC practices. In Abaroba kebele, with the increase in the size of population, people focused on searching for additional cultivable land even beyond their own territory, the process which led to diminished involvement of the community in the practices.

The other socio-cultural factor found by the study was decreased willingness of household members to involve in SWC practices in Abaroba kebele. Accordingly, with the exhaustion of the fertility of fields and consequent reduction in farm yields, household members did not stress on use of the various SWC practices to increase production. They rather prefer to search for new cultivable land in neighboring areas or at extreme case bring under cultivation areas which were formerly considered marginal.

The study also revealed that there is a decreasing tendency in assistance gained for SWC practices from other households in both Abaroba and Buso Kebeles. This decreasing tendency in the assistance gained is mainly associated with deterioration of social values of helping each other and consequent focus on personal gains, the availability of sufficient labor at household level, and decrease in productivity of land which discourage the need for additional labor from outside.

Another socio-cultural factor identified by the study was the decrease in the participation of the young generation in SWC practices in the two kebeles. This decrease in the participation of the adolescents is attributed to the fact that they consider the SWC practice as laborious and the farms as exhausted fields which are no more productive. In addition, the youth lack the skill necessary for the practices and have better livelihood options as compared to their fathers and grand fathers.

Furthermore, the study identified deterioration of the social norms that facilitate the SWC practices as contributing their own share for the weakening of the practices. This has been mainly reflected by the majority of respondents

from Abaroba kebele.

In relation to the economic causes for the weakening of the SWC practices, reduction in the productivity of the farms brought about by low and unreliable rainfall, decrease in soil fertility and increase in population pressure was revealed.

Involvement in off-farm activities is the second point treated in relation to the economic causes for the weakening of the practices. A considerable proportion of the respondents from the two kebeles were involved in off-farm activities. In case where the involvement in off-farm activities is due to shortage of cultivated land and availability of extra labor force, as in the Buso kebele, off-farm activities contributed to the diversification of household income sources otherwise could have negative consequences.

Concerning the institutional support related factor, one of the important points revealed by the study was that the majority of the respondents do not have access to extension services that can promote the practices. The local culture and the people in the neighborhood were found as the major source of information in carrying out the SWC practices.

The study also indicated that there was no meaningful effort by the WARDO to promote the local SWC practices in the study area. This has been manifested through lack of attention and supervision of the works, lack of technical support and absence of incentives or rewards.

Further problem pertaining to the institutional support related constraint was lack access to credit from reliable sources. It was found that people from Abaroba kebele mainly get credit from local money lenders who demand high interest rate from the former.

6.2. Conclusion

In light of the above findings of the study, the following conclusions were drawn.

☹ Among the traditional Konso community, the traditional administration and social institutions played essential role in maintaining strong social linkage and cooperative labor environment. This attribute had greatly contributed for the strengthening of SWC practices among the community. But with the introduction of the modern administration, the role played by the traditional administration and social institutions greatly reduced and consequently the social harmony and the degree of cooperation among the people was threatened. This in turn seriously affected the involvement of the community in the SWC practices.

☹ In response to the increased population size, nowadays, cultivation has expanded into areas formerly considered marginal which were prone to erosion, such as very steep slopes and protected catchments. In such areas SWC practices are costly and laborious but the farmers focused on the construction of minor structures which are easily damaged. This is because, the farmers stress on short term return from the fields. So, the current status of the SWC practices in the study areas is characterized by frequent damage and poor involvement of the people in the practices. The combined effect of this has resulted in threatening of the sustainability of the SWC practices.

☹ From the effort made to look into the opinion of the respondents about what is happening to: the type of SWC structures, their construction and maintenance, quality of the structures constructed, the integration of the local SWC practices with the modern ones and the like ; a weakening trend in the overall SWC practices has been revealed by the study. This weakening trend of the practices has placed their sustainability under serious challenge.

☹️ The study has revealed decrease in the participation of youth in SWC practices and deterioration of social traditions which are important for the practices. As it is known, the involvement of the youth is so vital that it plays crucial role to the sustainability of certain endeavor. This is particularly true in an environment where the social traditions are respected. Nevertheless, this was not found true in the study areas. From this it can be concluded that the likely of the sustainability of the SWC practices in the study area seems under question.

☹️ Economically, the decreased productivity of farms, involvement in off-farm activities during labor shortage and increased wages that limit access to labor outside household members was identified. SWC practices by nature are labor intensive. On the other hand, the prevailing economic situation pushes away people from participating in the practices. Thus from this it can be concluded that the economic factors have played their own role to the deterioration of SWC practices in the study area.

☹️ Regarding the institutional support, though efforts being made were reported by the officials at woreda, there is little evidence that they support and/or promote the construction and maintenance of the indigenous SWC practices. From this, it is possible to conclude that the institutional support system given from the WARDO to the practices in the study area was found very weak that it could not help to integrate the traditional practices with the modern ones.

6.3. Recommendation

Based on the summary of the findings and the conclusion above, the following recommendations were forwarded.

☹️ It has been pointed out that the traditional administration and social institutions have played indispensable role in strengthening and sustaining the importance of SWC practices in the agricultural system of Konso people from the very past. In order to rejuvenate the essential role played by these institutions, strong cordial environment of work has to be created by the

government administrative bodies at local level. For this, for instance, arranging forum composed of both the government and the traditional institutions so that government initiatives on the SWC practices can be freely commented before they are fully implemented.

☹ In association with the increased population pressures a number of adverse effects on the environmental conservation of the study area and its SWC practices have been identified. So, seeking ways to minimize the pressure of the population of the environment needs to given due consideration. The specific measures that need to be taken could involve resettlement program, continuous trainings and awareness creation on family planning, and creating wider opportunities for involvement in off-farm activities.

☹ It is the duty and the responsibility of the family, the community and the government to shape the youth to be productive citizens who conform to the social traditions and values of their respective community. In this sense the youth be taught, advised as well as convinced about the importance and value of the SWC practices in the lives of the community. The family and the community at large have to be role model in participating in the SWC practices so that the youth could have the motive and enthusiasm to involve. Specific measures to be taken to improve the participation of the youth in the practices could include:

- ✓ Organizing the youth into self supporting groups so that they can have more opportunity to discuss on their own lives and share experience with adults
- ✓ Encouraging the youth to learn the necessary skills and participate in the SWC practices
- ✓ Promoting the voluntary effort of NGOs on indigenous knowledge system and local practices

⊕ Reduction in productivity was found to be one of the factors for the deterioration of SWC. To improve the productivity of the farms:

- ✓ The construction of micro-dams should be encouraged through various reward systems by government and NGOs.
- ✓ Focus should be given to intensive techniques of agricultural system that promote the use of various SWC practices to boost production from small plot of land.
- ✓ Women should be encouraged to organize themselves into labor groups so that they could uphold carrying manures and other home-remains to the farm fields.
- ✓ Attention should be given to agricultural extension services related to SWC practices in order to integrate the local practices with the modern ones.

⊕ To minimize the impact of high wages that discourages the use of labor outside the family, the formation of voluntary labor groups that stress on environmental conservation in general and SWC in particular should be encouraged. Giving trainings, experience sharing and frequent discussion opportunities could strengthen the role that could be played these voluntary labor groups.

⊕ Access to extension services can be important in terms of improving the qualities of local technologies and strengthening their integration with modern ones. In this regard the development agents should frequently discuss the problem of SWC practices with the farmers and the pertinent extension service should be disseminated to the latter.

⊕ As far as possible the WARDO should give attention to the local SWC practices beginning from plan formulation to budget allocation. The development agents should frequently be supervised, encouraged and motivated through workshops, in-service trainings and monetary rewards.

The WARDO should also be able to show its attention to the SWC practices in some practical way. Considering this as an incentive, the farmers could be motivated to frequently construct and maintain the SWC structures in their area.

☉ The SWC practices in the study area can be further promoted if they are carried out in conjunction with other developmental activities. These include: education of family planning, provision of selected seeds and insemination of local cows with reasonable costs. Priority of these services and delivery of items may be given to those farmers who continuously construct and maintain their SWC structures.

Finally, the researcher suggests that further research is needed to augment the findings of the study pertaining to the policy/ institutional support related factors that challenge the sustainability of SWC practices in the study area.

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Annexes

Annex- A Research Instruments

ADDIS ABABA UNIVERSITY

COLLEGE OF DEVELOPMENT STUDIES

INSTITUTE OF RURAL LIVELIHOOD AND DEVELOPMENT

I. Questionnaire for Farmer Households in Konso Special Woreda (SNNPR)

Dear respondents

The objective of this questionnaire is to assess factors that undermine the sustainability of SWC practices. Therefore, understanding that the questionnaire is intended for a solely academic interest, I request you give me pertinent responses.

Thank you in advance

A. Area Identification

1. Name of the Enumerator _____
2. Date of Enumeration _____
3. Name of the Kebele _____

B. Personal Information

4. Sex of the household head A. male B. female
5. Age of the household head _____
6. Educational status of household head _____
7. The number of family members: male _____ female _____ total _____

C. Land holding and farming system

8. What is your main occupation?
 - A. farming
 - B. laborer
 - C. government employee
 - D. Other specify _____

9. If your main occupation is farming, how many plots of land do you have?
 A. 1 B. 2 C. 3 D. 4 E. 5 and above
10. What is the estimated total size of your land?
 A. less than 1 ha B. 1- 2 ha C. 3 - 4 ha D. above 4ha
11. How do you see your current land holding to support the household?
 A. insufficient B. sufficient C. excess
12. If your answer to Q11 is insufficient, do you have any option of having additional land?
 A. yes B. no
13. If your answer to Q 12 is yes, what are the options?

14. If your answer for Q12 is no, what is the reason?

15. Do you have livestock?
 A. yes B. no
16. If your answer to Q15 is yes, what is the number of different domestic animals you have?
 A. cattle _____ B. goats _____
 C. sheep _____ D. donkey _____
 E. others specify _____
17. What is the source of your animals feed? (rank by giving 1 to the most important)
 A. own grazing land _____ B. communal grazing land _____
 C. crop residues _____ D. others specify _____
18. How do you see the size of grazing land over time?
 A. increasing B. decreasing C. remain the same
19. Give the reason for your answer to Q18.

20. Does any member of your family involve in off-farm activities?

A. yes

B. no

21. If your answer to Q20 is yes, fill the following table

Type of work	Distance from residence in km	Number of days per year	Income in birr per year
A.			
B.			
C.			

22. Do you see any influence of off-farm activities on your SWC practice?

A. yes

B. No

23. If your answer to Q 22 is yes, in what they could influence the practice?

D. Trend of SWC practices

Indicators of the Trend of SWC practices	A	U	D
24. The types of SWC practices you use are increasing			
25. New SWC structures are constructed from time to time			
26. The SWC structures are maintained from time to time			
27. Your participation in constructing SWC structures in your farm is increasing			
28. The quality of SWC structures being constructed is increasing			
29. There is improvement in soil fertility because of your construction of SWC structures			
30. In your community SWC practices are widely carried out			
31. There is an increase in the integration of local SWC practices with the modern ones			
32. Because of SWC activity the rate of soil erosion is decreasing			
33. Local labor groups like <i>fadheta/Uganta</i> are widely available for the SWC activities			

A= agree

U= undecided

D = disagree

E. Socio-cultural Issues

34. With the increase in the size of the population how do you see the involvement of the society in the SWC?

- A. increasing B. decreasing C. remain the same

35. What is the reason for your answer to Q 34?

36. Are your household members willing/ have motive to involve in SWC practices?

- A. yes B. no

37. If your answer to Q36 is no, what is the reason?

38. How do you see the assistance gained from other households for SWC practice?

- A. increasing B. decreasing C. remain the same

39. What is the reason for your answer to Q 38?

40. How do you see the participation of the young generation in SWC practices overtime?

- A. increasing B. decreasing C. remain the same

41. What is the reason for your answer to Q40?

42. How do you see the social norms, like respecting the elders, which facilitate the SWC practice?

- A. deteriorating B. improving C. remain the same

43. What is the reason for your answer to Q42?

44. List any socio-cultural factor that you think contributing to the deterioration of the SWC practice in your community.

- A. _____ B. _____
C. _____ D. _____

F. Economic Issues

45. How do you see the productivity of the farm over time?

- A. increasing B. decreasing C. no change

46. If your answer to Q45 is decreasing, rank the reasons by giving 1 to the most significant.

- A. decrease in rainfall _____ B. Decrease in farm size _____
C. increase in population pressure _____ D. Decrease in soil fertility _____
E. Other specify _____

47. If your answer to Q45 increasing, rank the reasons by giving 1 to the most significant.

- A. maintenance of SWC structures _____ B. access to new land _____
C. benefit from agricultural extension technologies _____
D. adequate rainfall _____ E. others specify _____

48. Do you use labor outside your family for the SWC practices?

- A. yes B. no

49. If you use outside labor, rank the following labor sources by giving 1 to the most frequently used labor source .

- A. *parka / alumala* _____ B. *uganta* _____
C. labor from ones clan (*kaffa*) _____ D. labor from ones village (*kanta*) _____
E. others specify _____

50. If you use outside labor, is it accessible with affordable cost?

- A. yes B. no

51. If the answer to Q50 is no, what is the reason?

59. If your answer to Q58 is yes, mention these efforts.

A. _____

B. _____

C. _____

60. Where do you get credit when you face shortage of money? (put in order of significance by giving 1 to the most important)

A. Ikubs _____ B. local money lenders _____

C. microfinance institutions _____ D. others (specify) _____

61. List any policy related factors that you think are obstacles to the SWC practices.

A. _____ B. _____

C. _____ D. _____

H. Soil and water Conservation Practices

62. Do you use the SWC practices on your cultivable land nowadays?

A. yes B. no

63. If your answer to Q62 is yes, list the SWC practices you use more frequently nowadays.

A. _____ B. _____

C. _____ D. _____

64. If your answer to Q62 is no, what is the reason?

65. Do you use the SWC practices on your uncultivable areas?

A. yes B. no

66. If your answer to Q65 is yes, list the practices you apply.

A. _____ B. _____

C. _____ D. _____

67. If your response to Q 65 is no, what is the reason?

68. What do you think SWC practices as agenda of discussion in your area nowadays?

- A. important B. not important C. not sure

69. What is the reason for your answer to Q68?

70. What measure should be taken to improve the sustainability of SWC practices in your area?

II. CHECKLIST FOR FOCUSED GROUP DISCUSSION

1. What are the main constraints to the overall agricultural production?
2. How did you see the soil and water conservation (SWC) practice carried out in your area the past?
 - Type of practices
 - Involvement in the practices
 - Social traditions, rules and regulations, work attitude etc.
 - Construction of new structures / maintenance
 - Benefit gained from
3. How is the situation of the SWC practice nowadays?
4. What are the constraints to the sustainability of the SWC practices in your area?
 - Socio-cultural • Economic
 - Policy / Institutional
5. What measures do you suggest for the sustainability of the SWC practice in your area?

III. CHECKLIST FOR KEY INFORMANT INTERVIEW

1. What does the overall agricultural practice look like in the area?
2. What are the main constraints to the overall agricultural production?
3. Any gradually developing issue in relation to the agricultural activities?
 - Land management
 - Agricultural productivity
4. What does soil and water conservation (SWC) practices look like?
 - Community involvement
 - Policy attention,
 - Economic viability
5. What problems being encountered in relation to the sustainability of the practice?
 - Socio- cultural
 - Economic
 - Policy/ Institutional
6. What should be done to promote the sustainability of the SWC practices in the area?

IV. CHECKLIST FOR DIRECT OBSERVATION

- Terrain nature
- Kinds of SWC practices in the areas
- New structures of SWC / maintenance the structures
- Distortion of structures
- Water sources like ponds and streams
 - Management
 - Use
- Other land management activities of community

SNNPRS
COORDINATION BUREAU OF FINANCE
AND ECONOMIC DEVELOPMENT

**REGIONAL STATISTICS AND
POPULATION BUREAU**

ADMINISTRATIVE DIVISIONS

LEGEND

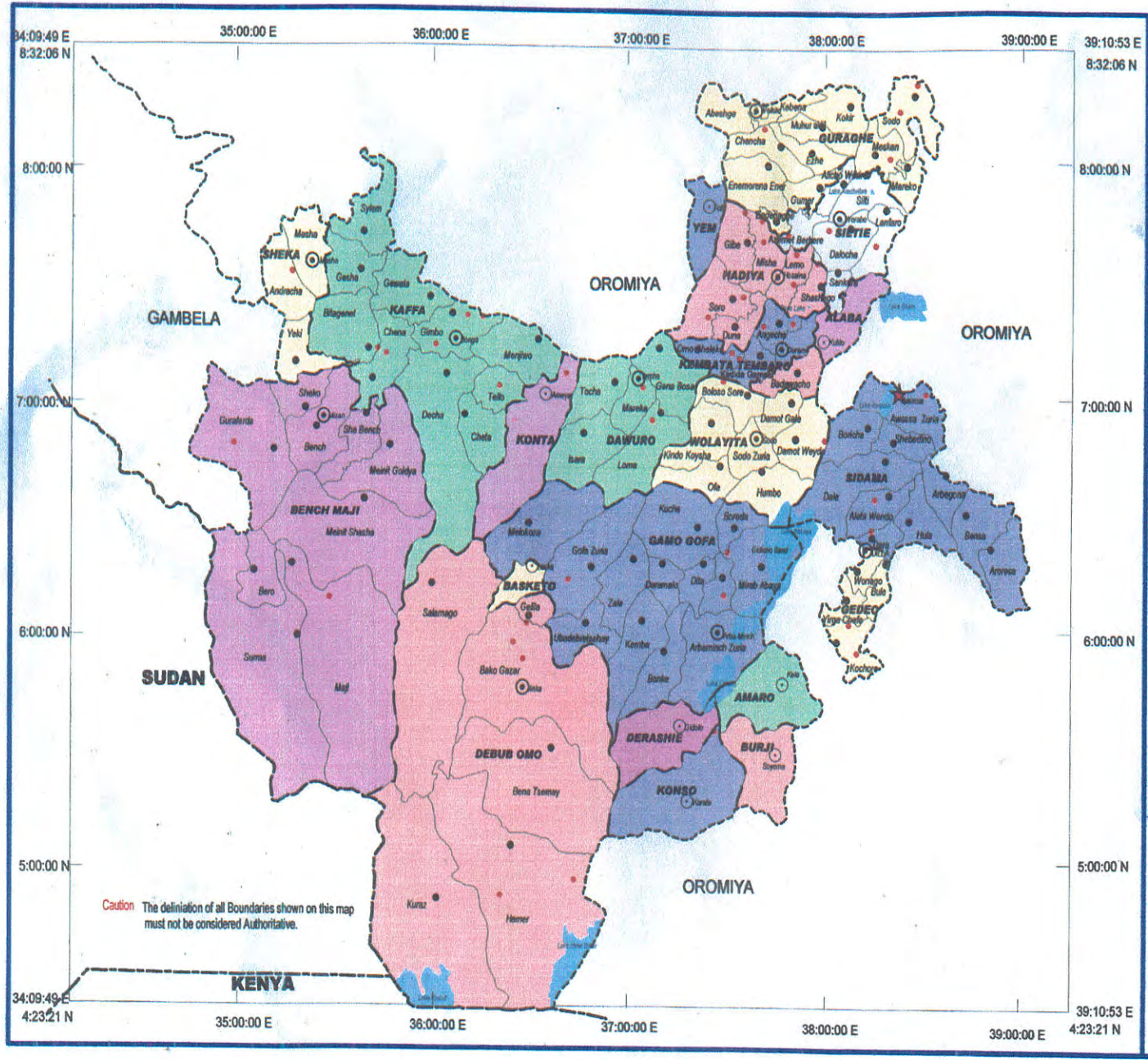
- Town**
- ★ Regional Town
 - ⊙ Zonal Town
 - ⊖ Special Wereda Town
 - Wereda Town
 - Other Town

Boundary

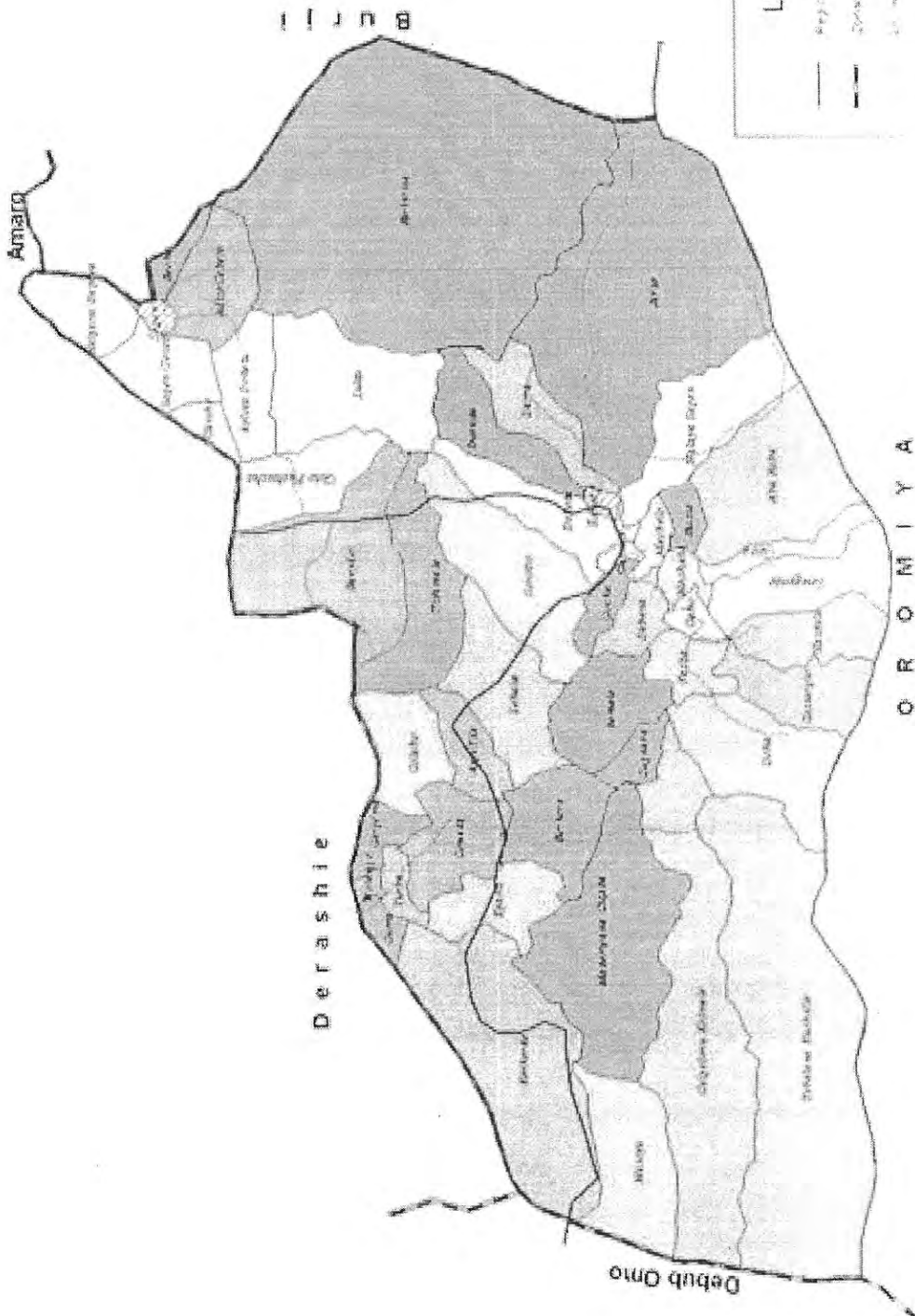
- International
- - - Regional
- - - Zonal
- Wereda
- Lake



Source : CSA 1994 Population and Housing Census Maps



KONSO ADMINISTRATIVE MAP



Scale 1:250,000

Annex – D Glossary of Local Words

Alumala	Labor group composed of people of the same age and physical fitness
Apa timba	Father of drum who is considered as a guardian to the traditional law
Dhawra:	People who have the role of mediation and reconciliation
Kaba	Flood diversion canal
Kapandhoosha	Suddenly formed group to work together
Kanta	Ward (sub-village)
Mana	Group of people organized on money basis with reasonable charge
Moora	Public place for assembly, dancing, law suits, and religious ceremony
Moona	Tied-ridges
Parka	Voluntary assembly providing free service for all its members
Poqalla	Clan leaders
Toomota	Flood protection wall
Ukanta	Voluntary labor assembly based on selective call of relatives and neighbors
Xelta	A generation grade (age group organization) of Konso people
Xella/Xelita	Class of men who are responsible for the administration of traditional towns of Konso
Yeela	Farm land at the river bank or anywhere else having depression harvesting enough water

Annex- E: Some Characteristics of Land holding and Farming System

No	Land Holding and Farming System of the Respondents	Respondents			
		Buso (N=40)		Abaroba (N= 80)	
1.	Main occupation	Count	%	Count	%
	a. Farming	39	97.5	79	98.75
	b. Government employee	0	0	1	1.3
	c. Others	1	2.5	0	0
2.	Total size of land owned	Count	%	Count	%
	a. Less than 1 hectare	31	77.5	40	50
	b. 1- 2 Hectare	9	22.5	32	40
	c. 3-4 Hectares	0	0	8	10
3.	Status of the land holding to support the family	Count	%	Count	%
	a. Insufficient	35	87.5	70	87.5
	b. Sufficient	5	12.5	9	11.3
	c. Excess	0	0	1	0.8
4.	option for additional land if the existing is insufficient	Count	%	Count	%
	a. Yes	7	20	17	24.3
	b. No	28	80	53	75.7
5.	Possession of livestock	Count	%	Count	%
	a. Yes	39	97.5	78	97.5
	b. No	1	2.5	2	2.5
6.	Size of different livestock				
	a. Cattle	Mean= 2	Max. ¹ = 7	Mean=4.31	Max = 20
			Min.=1		Min.= 1
	b. Goats	Mean=6.16	Max. =25	Mean=11.3	Max.= 40
			Min.=1		Min.= 1
	c. Sheep	Mean=2.7	Max.= 8	Mean= 4	Max.= 9
			Min.= 1		Min.= 0
	d. Donkeys	-	-	Mean= 2	Max.= 4
			-		Min.= 0

¹ Max. denotes Maximum, Min. denotes Minimum

Annex-F: Opinion of Respondents Regarding the Trend of SWC Practices

Indicators of the trend of SWC practices		Name of Kebele		Total
		Buso (N=40)	Abaroba(N=80)	
1.The types of SWC practices you use are increasing	A	14 (35%)	22 (27.5)	36 (30%)
	U	2 (5%)	5 (6.25%)	7 (5.8%)
	D	24 (60 %)	53(66.25%)	77 (64.2%)
2.New SWC structures are constructed from time to time	A	19 (47.5%)	32 (40%)	51 (42.5%)
	U	1 (2.5%)	8 (10%)	9 (7.5%)
	D	20 (50%)	40 (50 %)	60 (50%)
3.The SWC structures are maintained from time to time	A	36 (90%)	53 (66%)	89 (74%)
	U	0 (0%)	8 (10%)	8 (7 %)
	D	4 (10%)	19 (24%)	23 (19%)
4.Your participation in constructing the SWC structures is increasing	A	28 (70%)	41 (51%)	69 (57.5%)
	U	1 (2.5%)	5 (6.5%)	6 (5%)
	D	11(27.5 %)	34 (42.5 %)	45 (37.5%)
5.The quality of SWC structures being constructed is increasing	A	19 (47.5%)	15 (19 %)	30 (25%)
	U	9 (22.5%)	13 (16%)	14 (11.7%)
	D	12 (30%)	52 (65%)	64 (54%)
6.There is improvement in soil fertility overtime because of the practices of SWC in the area	A	11 (27.5%)	19 (23.8%)	30 (25%)
	U	3 (7.5%)	11 (13.8%)	14 (11.8%)
	D	26 (65%)	50 (62.5%)	76 (63.3%)
7. SWC structures are widely carried out	A	36 (90%)	34 (42.5%)	70 (58.8%)
	U	1 (2.5%)	9 (12.25%)	10 (8.4%)
	D	3 (7.5%)	37(46.25%)	40 (33.3%)
8.There is increase in the integration of local and modern SWC practices	A	5 (12.5%)	8 (10%)	13 (10.8%)
	U	5 (12.5%)	22 (27.5%)	27 (22.5%)
	D	30 (75%)	50 (62.5%)	80 (66.7%)
9. Because of the SWC practices the rate of soil erosion is decreasing	A	15 (37.5%)	16 (20%)	31 (25.8%)
	U	1 (2.5%)	5 (6%)	6 (5%)
	D	24 (60%)	59 (74%)	83 (69.2%)
10.Local labor groups like <i>Fadheta</i> and <i>Ukanta</i> are widely available for SWC	A	37 (92.5%)	42 (52.5%)	79 (65.8%)
	U	2 (5%)	15(18.75%)	17 (14.2%)
	D	1 (2.5%)	23(28.75%)	24 (20%)

Remark: A = Agree U= Undecided D= Disagree

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:



Gedeno Mollo

Candidate

Confirmed by:


Dr. Yohannes Aberra