

# **H i C N** Households in Conflict Network

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## **Resource Scarcity Induced Conflict and its Management: Implication for Sustainable Rural Livelihoods in Eastern Ethiopia**

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## Acronyms

ADLI	Agricultural Development-led Industrialization
ARDO	Agricultural and rural development office
CPR	Common Property Resources
EEA/EEPRI	Ethiopian Economics Association/ Ethiopian Economic Policy Research Institute
IFS	International foundation for science
masl	Meters above sea level
NGO	Non-governmental Organization
NRM	Natural Resources Management
TLU	Tropical Livestock Unit
PA	Peasant association
UNCED	United Nations Conference on Environment and Development

*Resource Scarcity Induced Conflict and its Management: Implication  
for Sustainable Rural Livelihoods in Eastern Ethiopia*

## **1. INTRODUCTION**

Land is considered the most fundamental resource to the poor and is essential to generate income, accumulate wealth and transfer it between generations, and enabling them to lift themselves out of poverty. More than 85 percent of the population in Ethiopia is dependent on land for livelihood. The last four decades have witnessed some land reforms in the Country, which were aimed at land redistribution and very recently introducing land titling. There is also a growing recognition of the centrality of land tenure in sustainable development process in the Country as witnessed by a number of regional initiatives. In this context, providing security of tenure is often seen as a precondition for intensifying agricultural production; and it is now being increasingly stressed as a prerequisite for better natural resource management and sustainable development.

Rural people generally need both secure individual rights to farm plots and secure collective rights to common pool resources upon which whole villages depend. Farmers will be more likely to make medium- to long-term land improvements if their tenure is secure because they will be more likely to benefit from the investments made by them. There would be fewer disputes and they would be able to use resources that might otherwise have been used for litigation (Roth and Haase, 1998). Assuming the existence of viable technologies, access to inputs and extension advice, and the availability of household labour and financial

resources, enhanced tenure security will lead to higher investment and higher agricultural production. Therefore, the way in which property rights to land are defined and the efficacy in administering it and resolving conflicts among economic agents is crucial for the country's overall development (EEA/EEPRI, 2002).

Despite the fact that security of land tenure is required for agricultural production and poverty eradication, cases of land tenure insecurity related conflicts have been reported in the Country. Conflict over natural resources such as land, water, and forests is ubiquitous. People everywhere have competed for the natural resources they need or want to ensure or enhance their livelihoods even though, the dimensions, level, and intensity of such conflicts vary greatly.

It is not surprising, therefore, that the challenge of achieving sustainable livelihood in rural areas of Ethiopia is so formidable within the existing framework of the inherent inability to solve the many problems related to incomplete property rights to land and environmental scarcity as well as the interdependence between the impoverishment of the resource users and resource degradation. Many researchers have raised a number of issues on the prevailing property right to land, its detrimental effect and potential disastrous consequences to the country's agrarian population (Dessalegn, 1984). Dejene and Teferi (1995) argued that existing tenure system has no mechanism to make land relatively accessible to more efficient vis-à-vis the less efficient ones. It is against such a conclusion that the Ethiopian Government has adopted an Agricultural Development-Led Industrialization (ADLI) strategy, in which the agricultural sector has been boldly identified as a key sector where the battle for a successful socio-economic transformation process must be fought and won, within

the existing property right on rural land as well as all natural resources which are exclusively vested in the state. However, it is no longer possible to blame the current situation of the country entirely on the confusion surrounding the incomplete property rights system.

Despite the importance of this issue, very few studies systematically identify the conditions under which resource entitlements reduce conflict among resource users and enhance sustainable rural livelihoods. Indeed, it is relatively recently that researchers started to focus on the dynamics and institutions of sustainability in community based natural resource management employing the concept of environmental entitlement (Leach et al., 1999). Different people derive their livelihoods from varied natural-resource use and management activities ranging from livestock and crop production, fuel wood collection to charcoal production for sale. Analysis using the environmental entitlement framework can show how access to and control over these resources is mediated by a set of interacting and overlapping institutions, both formal and informal, which are embedded in the political and social life of the rural people.

The use of natural resources is often a source of conflict for a number of reasons. First, natural resources are embedded in an environment that is so interconnected in space that actions by one individual or group may generate effects at far off-sites. For example, the use of water for irrigation in the upper reaches of a river can negatively affect downstream communities in need of water for domestic use and consumption. Linked biophysical or ecological processes in a specific environment disperse cumulative, long-range impacts such as erosion, pollution, or loss of plant

and animal habitats. The nature of the problem may not be apparent because ecological relationships are often poorly understood, and/or go unnoticed, at least in the short-run.

Conflicts over natural resources can take place at a variety of levels, from within the household to local, regional, societal, and global scales. Furthermore, conflict may cut across these levels through multiple points of contact. Conflicts occurring mainly in local contexts may extend to national and global levels because of their special legal relevance or as a result of efforts by local actors to influence broader decision-making processes. In this study, however, we concentrate on conflicts that involve fairly localized, site-specific interactions among stakeholders.

Understanding conflict is a prerequisite to developing approaches to resolving it through cooperative means, whether via community-based natural resource management or otherwise. This requires both a material analysis of the basis for resource use and a social analysis of the stakeholders involved. The implication here is that conflicts and their resolution need to be examined in their ecological, socio-cultural, economic, political, and policy contexts.

In the new political and socio-economic context of Ethiopia, researches focused on the management of community-based natural resources are emerging (Birhanu, et al., 2002; 2003). The finding of Birhanu et al., (2002) confirms that collective action for grazing land management is widespread in the highlands of northern Ethiopia and contributes to sustainable use of the resource. Even though in communities with higher wealth and heterogeneity and closer markets, alternative resource management arrangements such as privatization may be more effective.

Both formal and informal property right institutions govern the use and allocation of croplands, forestlands, and grazing lands. Although communal tenure systems on grazing and forest land tend to give various rights (grazing of livestock, collection of fuel wood and hatch grass) to different persons, more individualized tenure systems on crop lands concentrate exclusive usufruct rights to a plot of land to a single household.

The issue of resolving conflict in resource utilization has been given due attention by the Ethiopian Government, its development partners and NGOs. Indeed, various interventions have been crafted at both national and local levels to address what is believed by many to be Ethiopia's critical development challenge. Yet, it appears that such interventions should consider the added dimensions of resource entitlement and collective action to harmonize the environment-society relationship.

The management of natural resources in eastern Ethiopia depends on a complex body of rules established by local groups-rules established over time to resolve how best to regulate access to croplands and grazing lands. The definition of these rules, their supervision and adjustment depend on local organizations acting under the authority of traditional institutions. These organizations rarely act without having obtained widespread support for the decisions that need to be taken, by seeking the advice of community leaders and various local interests. In order to reinforce local management capacities, strengthening these consensual decision-making systems is of paramount importance.

Against the background provided above, this study aims at sensitizing policy makers, contribute to policy dialogue and to the development of

actions, which enhance capability of rural households to resolve resource scarcity induced conflicts and to help rural households to cope with resource degradation. Although limited in scope and coverage, it is expected that the study will identify significant variables in the resource scarcity - conflict linkage. The study will seek for effective ways to reduce conflict among resource users, and rural households' vulnerability by increasing the efficiency of land use and management in the study area based on proper understanding of the nature and role of conflict resolution mechanisms. The study will also consider how changes in land tenure institutions affect the natural resource base and environmental benefits through their effect on the management of land resource.

## **2. ENVIRONMENTAL DEGRADATION AND CONFLICT**

One of the major challenges facing humankind is the suffering of vast populations in the developing world from shortage of good lands, water, forests due to degradation and depletion of resources. A number of studies have documented the linkage between resource degradation and conflict (Dabelko, 1996). Even though the description of such linkages differs in terms of methods, definitions, and goals, a number of shared elements allow for some generalizations. Reduction in quality and quantity of a resource shrinks the resource pie, while population growth divides the pie in to smaller slices for each individual, and if the resource distribution is unequal, some groups get disproportionately large slices (Homer-Dixon, 1994)

While land distribution and related matters such as population growth have for some time been perceived as grave and urgent problems by most African governments, those emanating from problems of degradation of the environment appear to be relatively new to them. The term environmental degradation, understood as a human-made environmental change having a negative impact on human society, allows a differentiation between renewable and non-renewable natural resources (Libiszewski, 1992). When scholars speak about environmental problems, namely fresh water, soil, forests and biodiversity, they represent renewable resources as they are ecologically integrated in a feedback circle which guarantees their replacement. Where as minerals and fossil fuels are non-renewable as they are not integrated in such an ecosystem and they can be depleted but not degraded. Therefore, conflict over the

access to non-renewable resources can not be regarded as environmental conflicts (Libiszewski, 1992).

The relationship between conflict and resource scarcity is far from straightforward. This complexity is compounded by a scarcity of detailed studies of the relationship, and a lack of statistics about specific resource and/or environment and populations in conflict situations. Ground-level observations and intuition make a strong link between conflict and increased environmental degradation, but more research is needed. Some areas have experienced direct harm when conflict cause disruption to established patterns of work, environmental management and rights to resources.

Conflicts over natural resources may have class dimensions, putting those who own the resource against those who own nothing but whose work makes the resource productive (Chenier et al., 1999). Political dimensions may dominate where the state has a keen interest in a public good such as conservation (Fisher et al., 1999) or in maintaining the political alliances it needs to remain in power (Suliman, 1999). Differences in gender, age, and ethnicity may inform the use of natural resources, bringing to the fore cultural and social dimensions of conflict (Hirsch et al., 1999). Even the identification of natural resource problems may be contested in light of different information sources, world views, and values (Arrarte and Scarlato, 1999). Although this paper does not intend to explore all of these dimensions, the dialogue between them is multifaceted.

The dynamics of conflict over resource use are complex as a result of interacting factors related to the parties involved, the nature of the resource, and the stage of development of the conflict. Particularly, where

property rights on land are not clearly defined and peoples are marginalized from resource-planning processes, conflict may even escalate (Ayling and Kelly, 1997). In such cases conflict resolution mechanisms are required to promote understanding of the processes if resources are to be sustained to support present and future generations.

Maguire and Boiney (1994) interweave qualitative techniques for conflict resolution and quantitative analyses of decisions under uncertainty into a framework that helps communicate and analyze existing alternatives and also generate new alternatives. Kepe (1997) employs the environmental entitlements framework to show how access to and control over natural resources are mediated by a set of interacting and overlapping institutions, both formal and informal, which are embedded in the political and social life. The entitlement analysis, which was first proposed by Amartya Sen (Sen, 1981) has been interestingly extended and adapted to address environmental questions (Leach, et al., 1999). According to Leach, et al. (1999), alternative set of utilities derived from environmental goods and services over which social actors have legitimate effective command can enhance people's capabilities, which are what people can do or be with their entitlements.

Despite Hardin's "Tragedy of the Commons" (Hardin, 1968), policy makers and social scientists show increasing interest in cooperative means to manage common resources (Bromely, 1992; White and Runge, 1995). This interest is reflected in new attempts to strengthen common property system, to develop voluntary institutions to manage transboundary resources and to promote community based conservation (de Janvry et al., 1993; Lawry, 1990). The concern now is not whether

collective action can be effective, but under what circumstances it is appropriate (Uphoff, 1993).

Ostrom (1990), in her seminal book “Governing the Commons”, has developed a theory explaining why some efforts to solve commons problems failed, while others have succeeded, employing the theory of opportunistic behavior. She argues that the three types of opportunistic behavior, i.e. free riding, rent seeking and corruption occur quite frequently in common property resources (CPR). Ostrom’s key argument is that some individuals have broken out of the trap inherent in the commons dilemma, whereas others continue destroying their own resources. She asks what differences exist between those who have broken the shackles of a commons dilemma and those who have not, and concludes that investing in institutional arrangements can reduce opportunism.

There is a general tendency among scholars to interpret the linkage between environment and conflicts as a question of struggle for scarce natural resources. In fact, environmental conflicts can manifest themselves as conflicts over resources and that they often do so. The understanding of these conflicts requires a thorough understanding of institutions, which determine, or rather, shape human agency in regard to conflict as well as to natural resources. In this paper, we will carefully distinguish between institutions and governance structures, or between rules and organizations.

The basic functions of institutions are defined in accordance with the understanding of institutions not only prevailing in institutional economics, but also in most other areas of social sciences: institutions are

the rules of a society or of organizations that facilitate co-ordination among people by helping them from expectations which each person can reasonably hold in dealing with others. They reflect the conventions that have evolved in different societies regarding the behavior of individuals and groups relative to their own behavior and the behavior of others. In the area of economic relations they have a crucial role in establishing expectations about the rights to use resources in economic activities and about the partitioning of the income streams resulting from economic activity - ‘institutions provide *assurance* respecting the actions of others, and give order and stability to expectations in the complex and uncertain world of economic relations’ (Runge, 1981, Ruttan, 1984).

In order to overcome the dichotomy of customary/traditional versus state/modern institutions as well as to reconcile environmental conflict perspectives, institutions are, in a first moment, apprehended from a sociological and ethnographic perspective (Ensminger 1998; Ensminger and Ruttan 1991; Mehta, Leach, and Scoones 2001). We apprehend institutions as established practices, which “homogenize individual behavior, generate patterns of perception and interpretation, normative settings, and bearable modes of action in society which allow for the peaceful coexistence of any social group” (Sottas et al. 1998).

Moreover, institutions are “sets of working rules that are used to determine who is eligible to make decisions in some arena, what actions are allowed or constrained, what aggregation rules will be used, what procedures must be followed, what information must or must not be provided, and what payoffs will be assigned to individuals dependent on their actions” (Ostrom 1990). Institutions thus regularize patterns of behavior through embedded “rules in use” which constrain and enable

social behavior. Institutions themselves are part of normative orders, societal values and representations that are historically constituted.

In the Ethiopian context, the discrepancy between official rules and laws and actual local practice can be apprehended through the concept of *legal pluralism* (Benda-Beckmann 2001; Woodman 2001). While formal institutions are backed up by state legislature, informal institutions include kin networks, local cultural administrative structures, customary land tenure rules, as well as conventions about marriage, inheritance or trade and customary procedures to resolve conflicts over resources (Swift 1996; Watson 2001). Formal and informal institutions are complementary, interactive, overlapping and mutually constitutive (Meinzen-Dick and Pradhan 2001). Where there is vague set of rules about resource use, actors tend to choose that set of rule they will base their actions on and appeal to. Therefore, people use a *combination* of formal and informal institutions to define and enforce property rights to resources (Ensminger and Rutten 1991).

### 3. PROPERTY RIGHTS AND ENTITLEMENTS

One of the main reasons for underlying the increased incidence of land related conflict in most sub-Saharan African countries is the failure of the prevailing property right to land tenure to respond to the challenges posed by population growth and other exogenous factors including technological change (Deininger and Castagnini, 2004). Land tenure system in Ethiopia is also described as failing to provide the basis for higher levels of investment and productivity enhancing land transfer rather than the dissipation of land degradation.

Property rights refer to the sanctioned behavioral relations among actors that arise from the existence of physical entities and focus on the cost and benefit streams from using them. Effectively, property rights assignments specify the norms of behavior with respect to these costs and benefit streams that each person must comply with, or bear the cost for non-compliance. Property rights can be defined as *“the capacity to call upon the collective to stand behind one’s claim to a benefit stream (Bromley 1991).”* Thus, property rights involve a relationship between the right holder, others, and an institution to back up the claim. Property rights over land and other natural resources are often broadly classified as public (held by the state), common (held by a community or group of users), and private (held by individuals or "legal individuals" such as companies)

Property rights consist of bundle of rights. To be simple to describe property rights, this paper uses the classification developed by Schlager

and Ostrom (1992), but modifies it a little to suit the local conditions in the study villages.

Access- the right to enter and use (*usus*) a defined physical property (e.g., the right to enter allocated forest, or to walk on a piece of forestland)

Withdrawal- the right to obtain the products of the natural resource (*usus fructus*) (e.g., the right to cut a tree, the right to collect NTFPs)

Management- the right to change its form, substance and location (*abusus*), which includes many decision-making rights such as management (to modify or transform a resource, e.g. by planting trees or shrubs, enlarging a canal, or restricting what can be harvested)

Exclusion- The right to determine who will have an access right, who is allowed to cut trees (e.g., right to stop violators from cutting trees without permission)

Alienation- The right to transfer, exchange or mortgage the above rights (e.g., right to exchange land use rights, right to inherit land use right, right to use forestland certificate as mortgage).

Complete title is generally interpreted as holding all four sets of rights—*usus*, *usus fructus*, *abusus*, exclusion and alienation (Pejovich 1990; Cooter and Ulen, 1997)

Property rights may be distinguished by actors, goods and village. For example, the rights of cutting tree may be handed over to forest recipients, but non-forest recipients do not have. Non-timber forest products could be harvested by every villager, but rights to felling of timber is hold by specific individuals. Timber trees may be allowed to be cut only by forest dwellers, but it may not be allowed for villagers of neighboring villages.

"Ownership" is often taken as having complete control and rights over a resource. If we consider only state-defined ownership of many natural resources, we often find that the state claims ownership and is unwilling to give that up, as mentioned above. But if we look at particular bundles of rights, it is easier to identify specific rights that can be or are already held by users, either individually or collectively. Schlager and Ostrom (1992) further aggregate the bundles of property rights discussed above into:

- ***use*** rights, including *access* (to enter the resource domain, e.g. the right to across a piece of land, go into a forest or canal) and *withdrawal* (to remove something, e.g. to take a pot of water, some kindling, fodder, or fish); and
- ***control*** rights, including *management* (to modify or transform the resource, e.g. by planting trees or shrubs, enlarging a canal, or restricting what can be harvested), *exclusion* (to determine who else may use the resource), and *alienation* (to transfer rights to others, either by inheritance, sale, or gift).

Property rights theory is often misunderstood as an approach explaining the definition and distribution of disposition rights focusing on physical entities (Hagedorn et al., 2002). Strictly speaking, actors only attribute (positive or negative) values to a physical good because the right holder is favored by *benefit streams* or in case of a duty is burdened by *cost components* which are connected with the physical good.

Bromley (1991) calls these nature components countryside and community attributes. A natural good, like soil, is usually considered to carry only one homogeneous property title. However, such rights cannot only be classified according to the conventional division into (a) the right to use, (b) the right to alter and (c) the right of alienation. What is more, categories of property rights can be separately defined for *numerous economic or ecological properties* of the physical piece of nature, each of them related to particular costs and benefits. For each of these differentiated rights components, the *institutional design* of the right or duty can differ: private, collective and state property regimes are imaginable, and also the absence of property rights definition and delineation in the sense of open access (Bromley, 1991; Ostrom, 1990). In addition, property rights on such attributes of natural or physical capital require adequate *governance structures*, because they must be supervised and sanctioned to become effective instead of only remaining formal in nature.

In other words, concepts of property rights are only complete and consistent if

- all main attributes of a physical or natural object are subjected either to private property rights or other property rights regimes if these are superior, and
- governance structures for each component of this bundle of rights are developed, not neglecting the required political structures for decision making and implementation.

The reason, why formal or legal ownership rights may lead to very incomplete effective rights, could be implementation problems and obstruction from the level of local administration. Incentive to preserve natural resources and invest in soil conservation and other land improvement for future benefits will be thwarted without clear property rights, simply because future benefits will not accrue to those who manage them. This does not necessarily imply that a private ownership system with clear land title is socially most desirable. Ostrom (1990) argues that private ownership system may lead to negative externalities, create an equitable distribution of benefits from natural resources and farmers may not be able to protect their own property if it is costly to exclude other users. In such cases common property regime may be socially more desirable.

Therefore, a key problem in developing alternative approaches is the balance between generalized approaches and catering to specific instances, between top-down technocratic implementation and bottom-up participatory design, between new institutions and modification of existing institutional means of dealing with conflict. Even a single medium-scale watershed may have diverse local settings in which

application of policy, however progressive, needs to be adapted to local circumstances for successful and equitable resolution of resource conflict.

An entitlement analysis was first developed by Amartya Sen to explain how people can starve in the midst of food plenty as a result of a collapse in their means of command over food (Sen, 1981). However, Sen's version of entitlement does not go far enough since there are many ways of gaining access to and control over resources beyond the market. Therefore, it seemed appropriate to extend the entitlements framework to whole range of socially sanctioned, as well as formal legal institutional mechanisms for resource access and control (Gore, 1993).

Later on, Leach et al. (1999) developed Sen's original idea to the environmental entitlement framework to explain how the consequences of environmental change are socially differentiated. The framework allows an insightful look into the interaction between people, as social actors, and the environment through embedded systems of property rights. In this interaction, both social actors and the environment influence and are influenced by each other.

The extended and adapted approach addresses environmental questions by adopting the term endowments as the rights and resources that social actors have such as labour, land and skill. It is important to note that endowments fluctuate over time in accordance with the developmental cycle of domestic groups. The spatial and temporal variability in the resource endowments, which define rural livelihoods, suggest a number of features of a resource scarcity and access. However, it is important to note that resources are only scarce in a relative sense. Markets, for

example, could have provided an alternative means of access to land and other resources. Farmers with enough capital, for instance, may rent or buy land in other areas. Others might seek off-farm employment, participation in local, regional and national labour markets, in order to substitute cash for land resources in their endowment portfolio. Thus, even when there is absolute local scarcity of a resource, this can often be overcome through institutional interactions.

Thus, in cases of resource scarcity or plenty, participation in different institutions plays a key role in accounting for variations in resource endowments among households. Participation in plough and oxen sharing arrangements, in land, labour, and agricultural markets, in ad hoc rotating labour associations, in credit contracts, and claims on the basis of national legislation can determine the types and quantities of resources with which a household is endowed and where they fall along the wealth/poverty continuum.

Within any institution, some individuals often have more environmental entitlements than others. Following Leach et al. (1999) environmental entitlements refer to alternative set of utilities derived from environmental goods and services over which social actors have legitimate effective command and which are instrumental in achieving well-being. How effectively individuals operate within institutions, their power to advance their claims relative to others, and institutional leverage derived from investments in these institutions determine their actual entitlements (Crowley, 1995).

Entitlements in turn enhance people's capabilities, which are what people can do or be with their entitlements. For example, command over pasture

derived from rights over common grazing land gives the ability to rear livestock, and so contributes to rural livelihoods. The utilities derived from consumption of livestock products and cash sale of animals contribute to the households capability to ensure that the household members are well fed and to satisfy other cash dependent basic needs.

Management and use of natural resources, especially the commons, give rise to several problems. Conventional theories try to explain why individuals do not cooperate and therefore, the inevitable result is a social dilemma situation or, more specific, the destruction of the natural resource. Such kind of conduct is mostly explained with the theory of opportunistic behavior.

There is also an enhanced awareness of the importance of collective action to ensure resource sustainability at different spatial scales, particularly in respect of the sustainability of cultivable land resources, where common property resource regimes as such are not present but where collective action is a prerequisite for sustainable land management (Birhanu, et al., 2002). Soil and water conservation within a catchment provides a typical example: in the absence of co-ordinated conservation efforts by farmers in the catchment, isolated attempts at conservation on individual farms are likely to suffer the external effects of other farmers who do not undertake conservation.

## **4. SUSTAINABLE RURAL LIVELIHOODS AND CONFLICT RESOLUTION**

The sustainable livelihoods (SL) approach is an integrated development method, which brings individual approaches together to achieve sustainable development. Since its first adoption to rural development thinking by Chambers and Conway in the early 1990s, it is now widely employed by various organizations in their effort to enhance community capability to harness sustainable development (see for instance, Drinkwater and Rusinow, 1999; Frankenberger and Drinkwater, 1999; Ashley and Carney, 1999; Eade and Williams, 1995; and the UNDP Sustainable Livelihoods website ([www.undp.org/sl](http://www.undp.org/sl))).

According to Chambers and Conway (1992), a livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable if it can cope with and recover from stress and shock, maintain or enhance its capabilities and assets and provide sustainable livelihood opportunities for the next generation. The SL approach involves an assessment of community assets, adaptive strategies and technologies contributing to the livelihood systems, and the analysis of cross-sectoral policies and investment requirements to enhance livelihoods (Agobia, 1999). It is versatile tool for use in understanding the complex local environment and improving access of the poor to livelihood resources.

The approach requires that the researchers, as outsiders, to investigate, observe, and listen, rather than jumping to quick conclusions or making hasty judgments about the exact nature of the strategies/outcomes that people pursue. In particular, they should not assume that people are entirely dedicated to maximizing their income. Rather, they should recognize and seek to understand the richness of potential livelihood gains. This, in turn, will help us to understand people's priorities, why they do what they do, and where the major constraints lie. The insight developed from such approach can help target external intervention more effectively, whether the objectives are to protect and promote the environmental entitlement of particular social groups, or to foster particular environmental outcome.

The need to develop secure and sustainable livelihoods in Africa is widely recognized. Yet this is occurring at a time of increasing livelihood vulnerability, and conflict often associated with environmental scarcities. Percival and Homer-Dixon (1995) distinguish among three types of scarcities: (1) supply-induced scarcity which is caused by degradation of natural resources, (2) demand-induced scarcity which results from population growth within a region and (3) structural scarcity arising from an unequal social distribution of resources. These scarcities may occur simultaneously and interact to produce several social effects including economic decline, migration and weakened institutions to the extent of causing socio-economic deprivations which, in turn raise the level of grievance. More over, environmental scarcity causes poor households to focus on narrow survival strategies as they turn inwards their own concern. This reduces the trust, norms and networks among social actors.

The last decade has seen growing interest in research which addresses the problems of environmental scarcities and conflict (Homer-Dixon, 1991, 1994, Percival and Homer-Dixon, 1995). Percival and Homer-Dixon (1995) have shown that environmental scarcities have reached alarming levels in many of the former homelands in South Africa. Rural areas are unable to support the growing population as soils are degraded, water resources are inadequate and decreasing in quality, and fuel wood scarce. Barbier (1994) shows that many low income countries especially those displaying low or stagnant growth rates, are highly dependent on natural resources. These economies experience dramatic land use changes: conversion of forest area to cultivation as well as problem of low productivity, land degradation and constraints of population carrying capacity.

In some developing countries, scarcities have also inflamed distributional struggles that may obstruct efforts geared towards raising standard of living of the poor. Wallich (1994) noted that environmental scarcities exacerbated the poverty of Haitian rural communities but produced significant profit opportunities for powerful elites, which deepens division and distrust between rich and poor. A thoughtful analysis of 120 countries on the possible cause of deforestation, Dercon (1995) finds out that population growth which increased competition for land and insecure property rights as a result of political environment that is not conducive for investment to be the most significant variables. His results support the hypothesis that the social and political instability across poor countries leads to low level of conservation and productivity enhancing investment and also resource scarcity.

With recognition that entitlement of natural resources has broad economic ramifications on resolving scarcity induced conflicts and pave the way to sustainable development in countries like Ethiopia, where the basis of livelihood of the overwhelming majority of the population is predominantly rural and agricultural, there has been burgeoning literature addressing the issue in various ways. The consensus in the wake of the United Nations Conference on Environment and Development (UNCED) suggests that the implementation of sustainable development should be based on local solutions derived from community initiatives (Ghai and Vivian, 1992; Ghai, 1994). Such approaches argue for an appropriate sharing of responsibilities for natural resources management between national and local governments, civic organizations and local communities (Baland and Platteau, 1996).

Equally fundamental for reducing incidence and impact of resource related conflicts is to be associated with a high degree of popular participation. Where local resource users are able to make their views known, can influence the decision-making process, and fill that their interests are sufficiently represented; they are more likely to conform to rules. Thus conflict management is enabled through the inclusion and participation of stakeholders who are not directly involved in violent disputes over natural resources. Contemporary scarcity induced conflicts in the highlands of Ethiopia, as elsewhere in Africa, not only engage direct resource users such as cultivators or developers, but also politicians, administrators, security forces, civil society organisations, etc. although not all of them are physically involved in resource consumption on the ground.

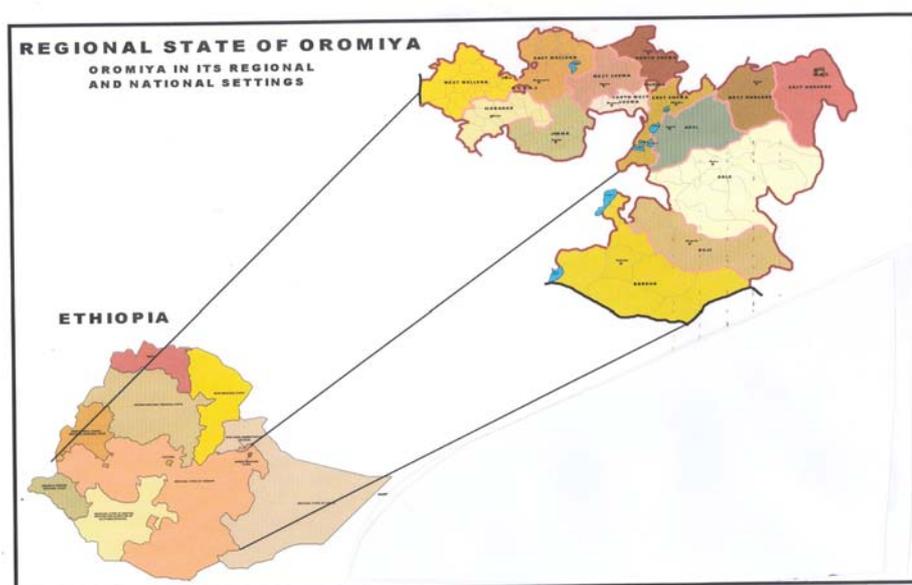
That is, many are affected by conflict dynamics relating to resource use and their interests need to be articulated and taken into account. Yacob Arsano (2002) argues that an inclusive procedure involving a wide variety of stakeholders is the most beneficial way of sharing scarce resources. Suliman (1999) demonstrates that the exclusion of the local leadership from peace negotiations was the determinant variable explaining the failure to reach peace in the Sudanese Fur conflict. Broad actor alliances are often more legitimate as they encompass crosscutting “horizontal” and “vertical” linkages with and among different stakeholder groups (Lederach 1997). The formation of committees composed of

representatives of conflict parties, local government officials, religious leaders, and members of different community-based organizations has been suggested as a valid strategy to mediate and de-escalate longstanding violence over natural resources on the community-level.

## 5. STUDY SETUP AND METHODOLOGICAL ISSUES

### 5.1. Agro-ecology of the Study Area

The study has been conducted at the Hirna watershed of Tulo District in West Hararghe Zone of the Oromia National Regional State, Ethiopia. Geographically, Hirna is located in eastern Oromia at about 370 km east of Addis Ababa and 150 km west of Harar city on the Addis Ababa-Harar highway.



**Figure 1 Map of the study area with reference to map of Oromia and Ethiopia**

The Hirna watershed lies within 5 - 15 km radius of the Hirna town, the capital of Tulo district. It has an altitude ranging from 1750-1990 meters

above sea level (masl). The watershed is bounded by a series of hills and mountain chain in the west, east, southeast and north with a narrow common natural drainage channel following the Hirna River in the south west of Hirna town, thereby forming a topo-sequence. The watershed is characterized by rugged topography and steeply sloping mountainous landscapes. These characteristics along with the climate, govern the variations in agro-ecological zones and the type of plants and animals.

The Hirna district is situated in the semi arid to sub humid agro-ecological zones of the country. Rainfall is bimodal with a dry spell every year between late May and end of June with an average annual rainfall of 1064 mm. The average annual rainfall for the periods from 1999-2003 is 1035 mm indicating a decreasing trend of annual rainfall with time. The small rainy season (*Belg*) occurs between March and May with a mean seasonal rainfall of 366 mm whilst the main rainy season (*Kiremt*) covers July to September with a mean seasonal rainfall of 636 mm and a peak mean rainfall of 226 mm being received in August. The annual mean minimum, average and maximum air temperatures at the Hirna station are 18.2, 23.6 and 25.7 °C, respectively.

Based on the recent agricultural zonation of the country, the climate of most of the Hirna district falls under the semi arid zone. The lands are steeply sloping (up to 70% slope) with severe erosion hazard. The landform is rolling type of sloppy land with low to moderately high water table.

Being close to the district town of Hirna and connected to the Addis Ababa – Harar (Dire Dawa) main highway, there is ample opportunity for economic agricultural production in the watershed. Subsistence farming,

predominantly under mixed (grain crops and livestock) farming system characterizes the Hirna area. Of the grain crops, maize followed by sorghum is the most widely grown crop. Other crops cultivated in the area include *teff*, chat, wheat, legumes and sweet potato. Patches of remnant forests, shrub/bush lands and grazing lands occupy about the hill tops and very steeply sloping lands.

The sorghum and maize leaves are largely removed from the farm land by the farmer for cattle feed, stalks for construction and firewood purposes, roots for firewood and grain for human food. Hence, the land remains barren and thus exposed for the devastating soil loss by runoff water, erosion and deposition and sedimentation. Generally, the agricultural activities are intense even on the top of the mountains.

The area is one of the highly populated regions in the country. Similar to other rural areas of the country, agriculture is the only source of food and income of the people in the district. Crop and livestock production in the region is largely determined by climatic factors. Agricultural productivity in the region is generally very low. Major soil and water related agricultural problems in the region include *inter alia*, low and poor distribution of rainfall, soil moisture stress, poor drainage and flooding in the valley bottoms, soil erosion and/or land degradation, low soil fertility, mainly low organic matter and nitrogen contents, shallow soil depth and coarse textured (droughty) soils.

The period between March and June with rainfall distribution of 50 to 100 mm per month for four consecutive months suggests that only the low water requirement crops such as Field bean and grasses can be grown whereas during the period between July and September (100-300 mm

rainfall/month), crops like maize and sorghum may be suitable. However, between November and February, when the rainfall is below 50 mm per month, no crop can practically grow profitably.

## **5.2. The Enclosure of Hirna Watershed**

The establishment of the Hirna watershed enclosure, especially the delimitation of its boundaries which started in 2000, provoked the first major conflict of interest with the local population, essentially over the move from a system of free access to one of restricted access, without any effort to provide information, or negotiate with key users of the resources.

The process of change began in early 2000, partly as a result of the prevailing resource degradation that demanded local groups and officials to undertake a great many initiatives. In the year 2000, when the Agriculture and Rural Development Office (ARDO) of Hirna District decided to protect the watershed by declaring the Hirna watershed enclosure — at the initiative of a group of experts and conservationists from the research and education communities — little attention was paid to the needs and interests of the local population and other groups. Moreover, because there was no legal or administrative framework to back up the provisions for establishing the enclosure both at regional and national level, the district council delegated the initial task of delimiting the boundaries in parts of the enclosure to the ARDO of the District. This decision was protested on the part of the community who had already encroached the hillslopes of the watershed. They created a climate of mistrust and anticonservation sentiment among the local populace, a feeling that persists strongly even today. The measures were challenged

and defied in various ways and to varying degrees by the affected households.

The local populace, poorly informed and excluded from the decision process, adopted a generally reactive position. People refused to recognize the continued dispossession of the land by the state. Very loosely organized resistance has been reported in various villages. These required a lot of work for development agents, peasant association leaders and district administration to defuse the tension. Some farmers attempted to disrupt the activities by uprooting seedlings and launching armed attack on guards, principally to reclaim the alienated land and to defend the remaining land from further expropriation. Others let their livestock graze on the hillslope during the night. Many households reported paying fine (*afelama*) for the damage they inflicted by grazing on the protected land. This opposition against land enclosure practices on the hillslope of Hirna watershed was waged primarily against the development agents who are responsible to implement the activities.

The unclear property right regime on the hillside resource coupled with complete absence of management plan hindered efforts to strike cooperative agreements and resolve common issues. The constant tug of conflict of interest between the resource users and the government seems to have obstructed objective appreciation of the long-term and/or indirect benefits of the conservation activity in people's lives.

Although local people lost access to the hillside resources and use of its resources, there are marked differences in attitude among community members. Some community members see their interest as extracting the maximum possible present benefit from the resource. Others, on the other

hand, tend to be more sensitive to initiatives aimed at sustainable use of the resource and to be ready to make a long-term commitment to this end.

However, the measure was under attack from most of the affected households for the following reasons:

- Lack of participation by major resource users;
- Conflicts among institutions and interest groups;
- Confusion over the administrative structure and distribution of benefits; and
- Lack of coordination to establish an effective patrol system.

Cognizant of the above problems, a forum was created for regular discussion between involved local parties. It adapted some participatory research methods to allow participants to visualize complex issues through the use of simple techniques and pass resource governance to local institutions such as youth groups, women associations, idir (afosha), and group of villagers. The process began with interactive problem-solving discussions that sensitize groups involved. These groups are engaged in managing the area allotted to them in the hillside and engaged in various conservation activities such as constructing and maintenance of physical soil conservation practices including terraces and checkdams, and tree planting.

### **5.3. Survey Design and Data Acquisition**

In order to have a clear understanding of the problems associated with environmental scarcity and conflict in which natural resource management fall into the responsibility of a group of users, it is necessary

to be able to trace the interdependence through effective methodologies of acquiring reliable information. The first task in data collection phase was to identify major issues in the management of land and other resources in the region through literature review, examination of secondary data, and informal exploratory surveys. Informal surveys are particularly useful because reliable prior studies on resource degradation and conflict are often unavailable or, if available, are mostly incomplete. Since it was necessary to obtain a variety of information through questionnaire survey, the pre-tasting of the survey questionnaire was also done during the informal survey.

In the extensive survey, all the Peasant Associations were covered and semi-structured group interviews with community representatives were conducted. These were supplemented by information acquired from key informants with the help of moderation toolkit. At this stage data was collected on:

- Land use pattern and farming systems
- The evolution of enclosure of the hillside and its progress
- Land rights and land tenure systems, rules of resource use, development of formal and informal land market.
- History of and change in use of natural resources (farm land, forest and wood lands, grazing lands) and their acquisition
- Institutions that mediate resource conservation

The selection of appropriate communities for intensive household survey was based on the intermediate results of the extensive survey. One of the selection criteria was to ensure representation of communities with contrasting characteristics in terms of prevailing land tenure institutions,

farming systems, and degradation and protection of the natural resources. The sample size considered the complexity of the issue and accuracy and coverage of data necessary for the statistical analysis to be used. Three Peasant Associations were selected purposively for the study, namely Kira Kufis, Reketa Fura and Oda Belina which consist of 39 villages and 3164 households. The first peasant association has 12 villages and 1050 households, the second has 8 villages and 1014 households, and the third has 19 villages and 1700 households. Then we followed the probability proportionate to size random sampling procedure to select 43, 34 and 62 households from Kira Kufis, Reketa Fura and Oda Belina peasant associations, respectively (See Table 1 for the details). Even though, random sampling procedure has been generally applied, the households that became near-landless due to the enclosure and were forced to migrate the Hirna town as laborer and those who decided to settle else where in the country through government support but returned back for different reasons were included in the sample, purposively.

Table 1 Distribution of sample households

Peasant Association	Total cultivated land (ha)	Number of member households	Proportion of affected households	Sample size
Kira Kufis	1054	1050	14.7	43
Reketa Fura	925	1014	17.5	34
Oda Belina	1400	1700	24.6	62
Total	3379	3764	19.6	139

A structured questionnaire was designed and pre-tested before executing the intensive household survey. The survey elicited information on standard household characteristics such as demographic characteristics, education, inventory of assets, history of acquisition of assets, current production and non-labor input use, property rights, investment in conservation of natural resources, among others. The plot level information was supplemented with subjective assessment of soil fertility and slope, details of land related conflict, participation in land market and decision-making and agricultural output. Well-trained enumerators conducted the intensive household survey with close supervision of the principal investigator.

## **6. RESULTS AND DISCUSSION**

### **6.1. General Characteristics**

Factors that have contributed to natural resources scarcity are manifold and varied ranging from socio-economic to environmental, the spectrum is indeed very broad. Among the socio-economic factors are demographic characteristics of rural households, inadequate resource endowment, and inadequately developed infrastructure such as schools, health centers, and roads. Table 2 provides with information on general characteristics of the households included in the sample.

The mean family size is 6.7 persons per household of which 3 are females, with a head who is 41 years of age. The age structure of rural households reflects the level of dependency of elder and younger members of the household and can influence its production decision as well as livelihood strategies. A typical household in the study area consists of 3.74 dependent members and more than 34 percent of the sample households have at least 4 dependent members. The implied dependency ratio, the ratio of the number of household members younger than 14 years and older than 64 years old to the number of household members between 15 and 64 years old, is 1.51.

There are adequate findings suggesting that education can improve productivity of rural households. It is evident that education promotes the efficiency of resource use at the farm level in response to resource scarcity. It affects the smallholders' state of knowledge of available technologies and management practices and helps them generate ideas at

the right times and places to keep resource scarcity from negatively affecting their wellbeing.

**Table 2 Demographic characteristics of sample households**

Household Demographic characteristics	Kira Kufis	Reketa Fura	Oda Balina	Overall
a. Household size (number)	5.95	7.47	6.79	6.70
Household size (AE)	4.95	6.12	5.68	5.56
Age of household head	41.33	39.74	40.63	40.63
b. Gender structure	-- mean number per household --			
Female	2.95	3.71	2.90	3.12
Male	3.00	3.76	3.89	3.58
c. Age distribution - people per age group	-- mean numbers --			
<=14	3.30	4.41	3.68	3.74
15 – 64	2.60	3.06	3.08	2.93
> 64	0.50	0.00	0.03	0.03
d. Dependency ratio	1.51	1.66	1.43	1.51

Although this is the general fact, the ill-funded educational sector of Ethiopia until recently could not fulfill the development needs of the economy. Not surprisingly, the gross enrollment ratio is among the worst in the world, the estimate for the 2001 being 57.4%. The results obtained from the survey data also confirm the same fact. Over all, almost 24.5% of the household heads are illiterate and further 36% never attended

school but can read and write. This calls for concrete action by policy makers towards creating human capital which can serve as an engine to escape from poverty and persistent food insecurity. There remains a lot to be done at least to bring these figures to a level which may be acceptable at the world standard.

In addition to the geophysical constraints, limited access to education and other socioeconomic constraints leave many people in the rural areas of Ethiopia with little to protect themselves from problems associated with environmental scarcity. Poor access to education and information reduce the opportunities for out migration and lower the remittances sent back to the village communities. Lacking access to information, education, and training, subsistence-based communities have difficulty improving their livelihoods and diversifying their off-farm activities and largely depend on extracting the products of nature by exposing it for further degradation.

## **6.2. Resource Endowment**

### **6.2.1. Land holding**

A key indicator of welfare of rural household in Ethiopia is the possession of land and livestock. Land is essential natural resource both for survival and prosperity as well as important source of violent conflict. Land is becoming more and more scarce as a resource. Competition among different uses is becoming acute, more frequent and complex. Population pressure in rural areas has resulted in the expansion of

cropping to more marginal lands where physical factors limit potential productivity and the risk of failure is higher.

After the fall of the socialist regime in 1991, the new government constitutionalised state ownership of all rural lands. The new constitution, drawn in 1994, however, allows temporary leases and guarantees the rights of peasants of free access to land and the right to improvements they make on land including the right to bequeath, transfer, remove or claim compensation for such improvements when the right to use the land expires. In principle, farmers now have the right to use the land indefinitely, lease it out temporarily to other farmers and transfer it only to their children. However, they still cannot sell or mortgage their lands. Although the constitution has resolved some issues, it seems to create other ambiguities and does not address some important issues (Fistum et al 1999). For example, given land scarcity, it is not clear how farmers' rights of free access to land can be assured in practice and how much land they are entitled to. Regional governments have been charged to resolve those issues and there have been significant differences across the regions with respect to development of a regional land policy and redistribution of land.

For example, in the Tigray region, land redistribution was stopped in 1991, and the policy of no future redistribution was made official by a new land policy in 1997. In the Oromiya region too, there has not been a land redistribution for more than almost 15 years, although the regional government has not made any official statement about abandoning it.

In the Amhara region, however, land redistribution has been very common, with a recent and major one undertaken in 1997 and 1998.

Although there is no regional land policy per se, administration and use of land in the region have been guided by the provisions made in the national constitution. In 2000, the regional government passed a land policy document that will determine the administration and use of rural land in the region. The provisions in that document are similar to those provided in the national constitution, including: the right of peasants to free and indefinite use of land, transfer to dependents, consolidate holdings and rent out; right to use, sell, exchange or transfer the wealth cultivated on their land; but not the right to sell or exchange the land.

Data from the 139 sample households show that the average cultivated land has declined from 6.8 qindi (0.85 ha) in 1990 to 6.4 qindi (0.80 ha) in 2003. However, it has shown increment between these years because of encroachment to the previously protected hillslope. From this farm size, an average household supports 6.7 persons which imply that every person should live on 0.13 ha of land in 2003, which is too little to make a livelihood sustainable. The problem has manifested itself in terms of eroding the capacity of rural households to attain food security.

Land fragmentation, caused principally by institutional, agro-climatic, and socioeconomic factors, is a common phenomenon in the study area. The sample households hold a minimum, maximum and an average of one, seven, and three plots, respectively. Sample households hold a total of 112 ha of cultivated land distributed over 352 plots with average plot size of 0.32 hectares. Fragmentation of land is considered by some as a strategy adapted to overcome agro-climatic and natural problems and to respond to subsistence needs of the peasant households. Due to continuous fragmentation, however, farm plots are turned into smaller and sub-optimal sizes that are not convenient for efficient use of the

available resources, technology adoption, and natural resources conservation.

However, peasants and some of the concerned government organs that could otherwise be active in seeking its solutions have not acknowledged this problem. Division of land among heirs, land redistribution, the gift of parents to sons (increase in size of population), agro-climatic influences, subsistence and strategic needs of peasants, differences in potential and suitability of different plots, etc. are factors that contribute to the impossibilities to avoid further land redistribution or consolidation. Initiating and promoting willful exchange of plots among households is among factors that help the consolidation. To create awareness among the peasants and to show them other alternatives could also be helpful, are one step forward in this regard.

Different institutions and their different hierarchies are involved in land cases in the study area. However, lack of common knowledge, understanding and interpretation of the laws and guidelines that have been issued regarding land tenure among these institutions has resulted in conflicting and competitive procedures of the different intervention approaches which are reflected in increasing incidence of land related conflicts.

**Table 3 Land holding and plot characteristics of sample households**

Cultivated land holding	By peasant association			Overall
	Kira	Reketa	Oda	
	Kufis	Fura	Balina	
a. Mean area cultivated per		Hectares		
Household	0.73	1.05	0.73	0.80
Person	0.13	0.14	0.11	0.13
Adult equivalent	0.15	0.17	0.14	0.15
b. Households with ..... hectares		Percent of households		
<= 0.50	46.5	20.6	29.0	32.4
0.51 – 1.00	37.2	50.0	64.5	52.5
1.01 – 1.50	14.0	8.8	4.8	8.6
1.51 – 2.00	2.3	11.8	1.6	4.3
> 2.00		8.8		2.2
c. Households with ... ha per adult equivalent		Percent of households		
<= 0.05	7.0	0.0	0.0	2.20
0.06 – 0.15	65.1	0.0	80.6	71.9
0.16 – 0.20	18.6	23.5	11.3	16.5
0.21 – 0.25	7.0	8.8	8.1	7.9
> 0.25	2.3	2.9	0.0	1.4

### **6.2.2. Livestock Holding**

The importance of livestock as a production factor, store of wealth and hedging against risk deserves an important place in the discussion of resource endowment of subsistence farmers in Ethiopia. The livestock system provides a multitude of products which may find themselves in conflict. The number of oxen in a herd that are needed for draught purposes are indirectly kept at the expense of female breeders, thus reducing the herd's reproductive potential and milk production but promoting crop production.



**Figure 2 Plowing with pair of oxen**

A pair of oxen is required to draw the *maresha* (traditional plow) for land preparation. It will take five to six days to plow a hectare of farmland with a pair of oxen depending on the soil type, slope and stage of land preparation, the first plow requiring the longest time.

From Table 4, we observe that nearly 31% of sample households do not possess any oxen, a further 45% have only one ox. That implies almost 76% of the sample households do not possess the required minimum number of oxen (i.e. two) to perform land preparation. The livestock system also contributes to crop production by provision of manure. In the study area, farmers are observed frequently applying manure on plots on which high value crops are grown.

The contribution towards cash income of rural households is also another function of the livestock production system. Milk and poultry products are the most frequently marketed products. They are mostly handled by women to cover day to day household expenditures on coffee and spices. Goats and sheep are used as cash generators and sold at need, for example, for paying land taxes, school fees, meeting social obligations (contributions) and buying clothes. Cattle are, to a large extent, used as a store of wealth, to be kept and built up over as long a period as possible. They are mainly disposed off in case a household faces acute emergencies such as a consecutive drought years, death of household head or when the animal becomes less productive due to age.

In the context of smallholder mixed farming system, the availability of feed is the most important determinant governing livestock population. In the study area, the main source of feed is thinning from sorghum and maize fields and grazing along borders of cultivated plots.

**Table 4 Livestock holding characteristics of sample households**

Livestock ownership	Kira	Reketa	Oda	Overall
	Kufis	Fura	Balina	
a. Tropical livestock unit	2.51	3.91	3.14	3.14
b. Number of livestock	-- mean number per household --			
Ox/Bull	0.72	1.35	1.00	1.00
Cow	0.86	1.21	1.11	1.06
Calves and heifers	1.12	1.38	1.27	1.25
Sheep and goat	0.19	0.26	0.13	0.18
Donkey	1.79	3.21	2.03	2.24
c. Households who do not own any	-- number (percent) of households--			
Livestock	7.0	0.0	0.0	2.20
Ox/Bull	46.5	23.5	24.2	30.9
Cow	25.6	11.8	14.5	17.3
Calves and heifers	16.3	14.7	17.7	16.5
Sheep and goat	44.2	26.5	35.5	83.5
Donkey	81.4	79.4	87.1	36.0

Farmers deliberately use relatively higher planting densities at the time of sowing which are later thinned and fed to animals. Moreover, maize and sorghum leaves are defoliated and provide feed for the rest of the year.



**Figure 3 Livestock feeding on thinning from maize crop field**

It is also common practice to leave animals browse on crop lands just after harvest. This provides a fertile ground for an area of conflict between the mixed crop-livestock production system and soil conservation practices. During the dry season, most terraces and other physical conservation structures are damaged by animals and it becomes virtually infeasible to employ permanent biological conservation techniques which might preserve the natural resource.

### **6.3. Socio-economic effects of resource scarcity**

#### **6.3.1. Perpetuation of poverty and food insecurity**

Until 1960s, Ethiopia largely enjoyed food self-sufficiency. After that period food supply per head has steadily declined. This was officially attributed to reduced precipitation, resource degradation, lower technological inputs, and economic mismanagement. In the recent past, millions of Ethiopian population has suffered severe food shortages and even famine. The drought that affected the whole Sahel in 1984 also struck a large part of Ethiopia. In 2002, famine again threatened people in large parts of the country, particularly in the north. Insufficient rainfall in eastern Africa during both short and main rainy seasons of 2002 was blamed for the abnormal harvest.

There is no disagreement about the current dreadful state of resource scarcity, expressed in terms of cultivated land per household. It has reached an alarmingly lower level exposing millions of rural households to vulnerability to food insecurity. As households fail to meet the requirement of their household members and get more impoverished, they are forced to strip the land of its resources. They strip trees for firewood, charcoal making and construction poles, leaving the hillslopes bare, exposing it to erosion. As a consequence, agricultural potential decreased. In the survey year, farmers harvested only 962 kg of cereals per hectare as compared to 1132 kg in 1995. Almost 58% the sample households stated that the harvest they obtain from the cultivated land is not adequate to support their family members through out the year. The survey revealed that 30.6 percent of the sample households can feed their family

members from January (harvest season) until June (the most critical month).

As agricultural resources are degraded, poor households switch to low-paying jobs in the near-by towns, but their plots are quickly taken by others desperate for cultivated land. Resource scarcity also causes individual households to focus on narrow survival strategy, which reduces the interaction of civil society and weakens local institutions. This segmentation reduces social capital- trust, norm and networks, which gives an opportunity for powerful groups grab control over resources inviting conflict.

Such erosion of local level institution is very crucial for managing social conflict which may arise from resource scarcity. The strength of local level institutions is highly influenced by the depth of its social capital. The degradation of resource has resulted in social segmentation as some members withdrew to protect their own interest. This segmentation has broken down social networks, weakens community norms and erodes trust. This loss of social capital, in turn, undermined the ability of institutions to function. More over, identification with ones ethnic group is becoming more necessary for survival and even advancement within the context of the current ethnically based federal system in Ethiopia.

This is manifested by the decline in frequency and duration of participation of households in community affairs. As compared to a decade ago, only 43.7% of the household heads maintained their membership of local organizations. More over opportunities for collective action to successfully maintain the natural resource are failing. Almost all sample households feel that it is the responsibility of the government to

look after the sustainability of the natural resource. These responsibilities include planting trees and maintenance, constructing various conservation structures and enforcing rules for use and non-use of the resource on the enclosed hillslope.

### **6.3.2. Incidence of conflict**

Increased scarcity of cultivated land which can support a family of rural households provokes for action by households towards protecting their interest. The culture of selfishness rules over the culture of cooperation, goodwill, civic mindedness, and mutual trust. These narrow interests often impede building institutions that reflect the broader interest of the society. They hinder efforts to reform social institutions which may encroach their personal interest, but provide public or environmental services. The change of government in 1991 has greatly affected social integrity at the micro-level and created a loophole in the property right regimes.

The volatile political situation which prevailed during the transition period has changed the intra- and inter-communal institutional dynamics with regard to property right to resources. Local level conflicts over entitlements aggravated livelihood destruction, which was triggered by uncontrolled and unsustainable use of the commons found on the hillslope. At this time of critical transition, local institutions were vital part of the complex conflict setting and as such were incapable of addressing the regulative needs of common property use. While most families seem to entertain friendly relationships with their neighbors, a majority reported a lack of unity and frequent quarrels in their villages.

In Hirna watershed area, access to the hillslope common forestry resources used to be officially governed by the district office of Agriculture, which mainly worked through Community Forestry Section and Council of Peasant Associations (PA). The main purposes of Council of PAs are to provide various administrative services, facilitate social mobilization, and the conservation and management of natural resources. However, the performance of the PA Councils which were introduced from ‘top-down’ by the central government varies greatly, both in space and in time. They range from well organized societies that are able to offer a variety of services to its members, to those merely existing in the records of the district office of Agriculture.

However, it is important to stress that internal conflict did occur, and the PAs seem to have been characterized by a vivid internal power struggle, where powerful actors derived considerable access to natural resources while others lost out. Individual power linkages had to be established and constantly renewed within the hierarchically structured PAs. While it is difficult to assess the details of the power dynamics in retrospective, i.e. who gained and who lost out access to resources, it is important to note that the PAs were the single most important link to government. The PAs served as an avenue for the rural households’ pooled social capital, which was transformed by certain powerful players into political capital, using existing institutional channels provided by the state.

The PA council found itself right in the eye of the continually evolving conflict as “open access property regime” was repealed when it became an enclosure, where any movement was controlled directly by the District Bureau of Agriculture. Houses built at the hillslope after 1991 were

demolished and land cleared for cultivation abandoned. The examination of the development of social capital during this time points at a complete disruption of social networks in the village with regard to taking cooperative action on matters of resource use.

As many rural households lost part of their cultivated land at the hillslope and had thus become economically vulnerable, they often did have no choice other than taking the risk and try to come to terms leading to conflict with the neighborhoods particularly by blurring the boundaries between plots. Out of the total of 352 plots owned and operated by the sample households, it is reported that 63 plots (nearly 18%) were subject of conflict of varying degree, ranging from minor dispute between individual owners to conflict among communities and peasant associations.

## **6.4. The conflict management approaches**

### **6.4.1. Arrest resource degradation and enhance productivity**

Most households generally declare themselves unwilling to ever give back the land they have encroached and consider their own. The people who lived there for many years and cultivated the land for almost a decade are obviously unwilling to accept this hillslope enclosure.

The agriculture and rural development office has arranged a series of meetings with elders of the community (locally known as *jarsota*) and peasant association leaders and tried to show the extent of the problem and how environmental degradation could be slowed down or even

arrested. If that is possible, then the social effects of degradation should theoretically diminish, too.

The government of Ethiopia places a high priority on halting environmental degradation. It clearly understands that the necessary food for an increasing population can be produced only within a healthy environment. Preservation of the environment and protection of nature are also regarded as vital for economic development.

Many efforts to halt degradation are being undertaken in Ethiopia, among which banning cultivation on slopes greater than 30% and controlled grazing on protected hillslopes supplemented with tree planting, hillside terraces and checkdam are the once under implementation at Hirna watershed. However apart from the social tensions that can be expected from such conservation measures, there are technical obstacles: As has been said above, such attempts would likely provoke serious reactions from households which are in dire need of more cultivated land. The task would be huge, considering that an average household has less than a hectare to support a family of five members.

Some small progressive steps have also been made in saving wood by using energy-efficient stoves. However, even if changes in use of energy sources were made, this would not change the fact that there still is a lasting and growing need of wood as a source of energy and construction material. To cope with this challenge and to control degradation, natural resource departments coordinate resource management with the ultimate goal of sustainable use.

To break the cycle of poverty and land over-use that subsistence farming can lead to, different institutions and facilities have been created. Peasant association and producers' and marketing cooperatives are common. They should support first the survival and independence of farmers, and then provide some entrepreneurial flexibility. Yet some of the institutions have become more of an obstacle to rural development than a help because they are slow and bureaucratic. Cases of abuse of cooperative funds/resources have weakened the confidence of the members.

Since many smallholders are economically obliged to engage in other activities, it would be important to support them by providing access to off-farm jobs. Training and extension activities should be implemented to spread knowledge about new, better farming techniques among a large part of the rural population. Because women do a large part of the work, there can be no development without paying particular attention to them, too.

The form of land ownership must be discussed. Generally speaking, while most farmers feel private ownership of cultivated land, this is less the case regarding the hillslope, where shared use used to be the rule. The question about which form of land use is more likely to avoid environmental damage is controversial. In my opinion, it can be left open here. What seems more important is to provide rules and laws concerning land ownership that are predictable and enforceable.

Many of the programs to protect of the environment are being carried out by NGOs directly trying to safeguard the environment. Other NGOs playing roles in environmental management alongside governmental efforts have made considerable efforts to halt environmental degradation.

These have to be upheld and even reinforced to enhance productivity of available natural resources.

#### **6.4.2. Traditional institutional arrangement**

Institutional arrangements, which are also called governance structures, are mechanisms to co-ordinate economic and social activities. Important contributions in the recent literature on questions about institutional arrangements focus on hierarchies, which is based on authority. Hierarchy involves the capacity to supervise and control, including the right to make decisions (Slangen, 2001). Community organizations cannot operate exclusively through command: they also require co-operation by their members. Such co-operation involves their commitment to specific goals, their willingness to endorse or transform existing routines, and their responsiveness to incentives deliberately designed to maintain or improve their participation.

Important basic elements of these relationships are motivation, trust and commitment among the community members who work towards a common goal. With repeated interaction they promote solidarity, consensus, trust, and common values and norms in a group. These norms can be considered as implicit social contracts to cooperate, are self enforcing and embedded in customs and rituals, and result from repeated interactions. If households are not extremely constrained by resource scarcity and their survival is not threatened, they tend to abide by these norms. This, of course, diminishes the incidence of opportunistic behavior between the members of the community.

Communities in the Hirna watershed area have relatively effective institutional arrangement to manage environmental conflicts with regard to land. Therefore, some will be dealt very briefly in this report. Even though there is a very general understanding that it is the duty of the state to distribute scarce resources, at least where other means of distribution fail or lead to social tensions, it is doubtful whether the state is really able to fulfill this duty. Therefore, traditional institutions such as *jarsota* (group of elders) attempt to manage conflict whether it is resource related or otherwise.

To neutralize the opposition to land expropriation and the conflict that emerge as a result, the office of natural resources has also exploited traditional institutions and their extensive network. Traditionally, rural households in the study area have an institution (*arrara*) through which they resolve land related or other conflict among community members. This institution is composed of group of elders (*jarsota*) active in process of reconciliation and peace-making. When conflict arises among community members, most usually the neighborhood initiates the process of conflict resolution. This will also be facilitated by development agents as well as village leaders (*aba genda*) to bring the two conflicting members together. In consultation with the elders representing both sides, a date will be arranged to bring the two parties together in the peace-making process.

In most cases the meeting takes place under a shed of a tree with participants provided with *t'chat* and *hoja* (local hot beverage). The *jarsota* and their counterparts from the conflicting parties sit together to talk about the misunderstandings and what should be done to reconcile.

Ideally, the history of the conflicts must be revealed from the perspectives of both parties, the underlying reasons and events that had led to the confrontations named. The present situation is to be described as compared to that before the confrontations. The responsibility of each party to the conflict should be weighted. The possibility and willingness of each party involved to change the situation which led to the conflict must be examined.

The opponents must be given the opportunity to speak their points of view clearly so that their mutual claims can be considered. In this way, a possible solution will really be able to follow the needs of the parties. The claims will have to be dealt with strictly according to traditional customs. Questions regarding ownership of land must be answered swiftly in any case.

The process of mediation will continue until both parties reach a common agreement that neither of them benefits if the conflict heightens and the district court is called to intervene to settle it. They therefore decide to resolve the case between themselves on the basis of their cultural beliefs and practices. The value of mutual trust firmly rooted in oath-taking rituals lay down the cornerstone for an enduring process of reconciliation and peaceful coexistence. As show of mutual commitment, each side makes a pledge to remain loyal to the other concerning the terms of the agreement and promise. Guilty individuals are also pinpointed and the aggrieved member compensated depending on the extent of damage suffered.

If the any member suffered casualties in the course of conflict, the responsible side will pay blood money (*guma*) or may pay fine (*afelama*)

according to the damage made on crops or grazing land. Thereafter, the conflicting parties should enter in to commitment to abstain from acts of provocation and retaliation. In order to make the conflict resolution process more binding, representatives of the *Jarsota* inform the peasant association council and relevant authorities about the outcome of peace making process. In doing so, they confirm that justice has been done with the guilty penalized, the injured party compensated, and thus peaceful relations restored.

It is generally believed among the community members that the *arrara* provides effective and enduring solutions in a situation where conflict occurs among family members particularly in the course of distributing land among descendants. A key informant who served in this institution for more than 14 years now stated that land related conflict among descendants is increasing in frequency as land gets scarcer. However, there is an increasing apprehension that such traditional systems of institutional arrangements are faced with rapidly changing environment which threatens their role as mediators. Mediators in traditional communities are usually elders, whose decision must be respected by all parties. During the last three decades however their authorities have been undermined and lost some of their effectiveness, particularly during the time of socialist revolution, as new powers sprang up at local level.

The formation of peasant associations with their justice system invited community members to look for “institutional shopping” (Egeimi, et al., 2003). If a member is not happy with the decision of the traditional village leader, s/he always has recourse to alternative institutions, which may be more in favor of her/his cause. More over, the ever worsening resource scarcity is making negotiated settlement for land related conflict

relatively difficult. Grazing lands were cleared as a significant number of people took up cultivation activities, while pressure from livestock also increased. With virtually no one fully responsible for the development and management of common rangeland resources, combined with the effect of population growth, has challenged institutions of sustainability in the study area. The heightened resource scarcity has implicated the protection of patches of grazing land by fencing or putting land marks and required institutional innovation, in which the former communal resource regime on grazing lands gives way to more localized management.

## 7. CONCLUSIONS

This study tried to argue that land scarcity in the context of failure in property right institutions and technology response is bound to induce human insecurity leading to conflict. Even though precise quantification of the multidimensional effects of incompletely defined property right to land is impossible, some useful indicators include land degradation, stagnant or decline in productivity, perpetuation of poverty and food insecurity which may lead to strife and tension.

The case study, Hirna watershed offers a good illustration of such interlink between property right and degradation of the local ecosystem. There getting access to the rich agricultural land of the valley bottom was made difficult because of population growth. This forced the landless and poor community members to move to the hillside, which was supposed to be common land. Some migrated to the nearby towns and others moved to least productive and sometimes most ecologically vulnerable regions. They bring with them little knowledge or money to protect the fragile ecosystem and their small scale farming often caused horrendous environmental damage, particularly water erosion. This has set in motion a cycle of falling food production, the clearing of more plots on the hillside for cultivation and further land degradation.

As a result farm productivity has declined and also forced individual households to focus on narrow survival strategy, which reduces the interaction of civil society and weakens local institutions. This segmentation has reduced social capital- trust, norm and networks, which

gave an opportunity for powerful groups grab control over resources inviting conflict.

The study has also attempted to examine how the change in land tenure institutions affected the natural resource base, which serves as a basic source of livelihood of the great majority of Ethiopian population. Even though not yet conclusive, the findings suggest that insecure property right to land resulted in resource degradation, and decline in productivity by 14 percent at plot level in terms of cereal production during the last ten years.

Scarcity of cultivated land has also enhanced the likelihood of conflict that relates to use and control of natural resources. This calls for technological options that enhance productivity and at the same time capitalizing on indigenous institution to resolve conflicts. Finally, we need to remind that if our vision is to ensure human security, the issue of property right should deserve its proper place in the development policy dialogue of Ethiopia.

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