

# Leaving two thirds out of development:

## Female headed households and common property resources in the highlands of Tigray, Ethiopia



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**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS**

**Livelihood Support Programme (LSP)**

An inter-departmental Programme for improving support for enhancing livelihoods of the rural poor.



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Photograph by Erin Smith

This paper was prepared under contract with the Food and Agriculture Organization of the United Nations (FAO). The positions and opinions presented are those of the authors alone, and are not intended to represent the views of FAO.

## The Livelihood Support Programme

The Livelihood Support Programme (LSP) evolved from the belief that FAO could have a greater impact on reducing poverty and food insecurity, if its wealth of talent and experience were integrated into a more flexible and demand-responsive team approach.

The LSP, which is executed by FAO with funding provided by DfID, works through teams of FAO staff members who are attracted to specific themes being worked on in a sustainable livelihoods context. These cross-departmental and cross-disciplinary teams act to integrate sustainable livelihoods principles in FAO's work, at headquarters and in the field. These approaches build on experiences within FAO and other development agencies.

The programme is functioning as a testing ground for both team approaches and sustainable livelihoods principles.

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## Access to natural resources sub-programme

Access by the poor to natural resources (land, forests, water, fisheries, pastures, etc.), is essential for sustainable poverty reduction. The livelihoods of rural people without access, or with very limited access to natural resources are vulnerable because they have difficulty in obtaining food, accumulating other assets, and recuperating after natural or market shocks or misfortunes.

The main goal of this sub-programme is to build stakeholder capacity to improve poor people's access to natural resources through the application of sustainable livelihood approaches. The sub-programme is working in the following thematic areas:

1. *Sustainable livelihood approaches in the context of access to different natural resources*
2. *Access to natural resources and making rights real*
3. *Livelihoods and access to natural resources in a rapidly changing world*

This paper looks into issues of gender and access to forest and tree resources, women and men's use of common lands and botanical resources, and the importance of these resources for the livelihoods of people in highland Ethiopia. The paper draws on secondary sources, previous research and on qualitative information from 30 households collected in 2005. The paper discusses gender relations and female household headship and on formal and informal rule of access to common property resources. The report represents a synthesis of a full report that can be obtained by contacting the authors directly.

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## **Foreword**

This report contains the results of a study of gender and access to forest and tree resources, women and men's use of common lands and botanical resources, and the importance of these resources for the livelihoods of people in highland Ethiopia.

The team consisted of a lead scientist, a senior researcher, an assistant field researcher, and three survey enumerators, as well as an assistant who supported transcription of field notes. The lead scientist was Patricia Howard and the senior researcher was Erin Smith. The field research was carried out over a four-month period during which the research team made considerable demands on many people who generously and graciously gave their time: first and foremost, the residents of Adiarbaetu, then the colleagues associated with the FAO Project, and lastly all of the DAs and many other officials at the kushet, tabia, and woreda levels. There are far too many names to mention; we thank you and hope to return something of value to you.

The results presented in this report reflect the findings and opinions only of the lead scientist and senior researcher, and not of the FAO.

This report represents a synthesis of the full report, which is over two hundred pages and contains more than 90 graphs and tables. The full report is available by contacting the principal author at [Patricia.Howard@wur.nl](mailto:Patricia.Howard@wur.nl).

## **1. A POINT OF DEPARTURE: POSTULATIONS AND OBJECTIVES**

Drought and famine are historically recurrent phenomena in the Ethiopian highlands, but drought appears to be increasing in frequency and impact, and hunger has become a seemingly permanent feature of the region. For decades it has been known that famine and hunger are not inevitable consequences of drought, and the Ethiopian Government, national and international development agencies, and NGOs have been attempting to understand and address the factors that come together to generate the drought-hunger-poverty nexus. Another phenomenon, which is certainly not new but which is also likely to be much more common and consequential now than in the past, is the high incidence of female household headship and the striking correlation between extreme poverty and female headed households, which seems to be as intransigent as drought. Being a member of a female headed household in highland Ethiopia means having a 35 percent chance of being destitute, compared with only an eight percent chance if one belongs to a male headed household. Female household heads are far more likely to be landless and, when they do have land, 70 percent must sharecrop it out (losing around half of the yield in the process), since they lack access to male labour and oxen to farm it themselves. Female headship and poverty are certainly no strangers in other parts of the world. However, in the case of highland Ethiopia, this very close relationship requires explanation, particularly considering that formal equality between men and women in access to assets such as land and livestock has been part of the region's customary kinship and tenure system for hundreds of years, and today is embedded in Ethiopia's constitution, as well as in many other laws governing property rights. While currently poor female headed households are supported by food-for-work programmes, their specific needs are otherwise barely addressed and they are largely socially and economically excluded. Development dynamics appear not just to marginalize, but to continually generate, these extremely poor households, as though they were a structural feature of particular economic policies, like under-employment or inflation.

Another of the most important and tenacious problems that is argued to either cause or seriously aggravate the drought-poverty-famine nexus in the plough-based cereal farming system of the highlands is severe natural resource degradation, particularly manifest in soil erosion, deforestation, and devegetation. Government and international efforts to understand processes contributing to this degradation and to reverse it have been massive and certainly predate the renowned 1984-85 drought and famine. Successes in reforestation efforts, in protecting other resources such as grazing lands, and in implementing soils and water conservation measures on private holdings, have been significant and some of the degradation appears to have been reversed. However, thus far it appears that little success has been achieved in regenerating people's capacities to earn their livelihoods without foreign aid, widespread malnutrition and misery, and continued degradation of resources especially on common lands that are not protected through enclosure. Natural resource degradation also appears as to be structural feature of the development dynamics of the highlands.

Institutions in the highlands, particularly those that are meant to manage land and other natural resources, have undergone substantial change since the mid-1970s. In that process, rights to exploit and manage both private and communal land resources,

and the trees and other flora and fauna that are associated with them, have been redefined time and time again. In such processes, of course women's rights were also affected. There were three possible outcomes: reforms ameliorated pre-existing inequalities, reproduced or compounded them, or generated new inequalities. However, it is argued in this report that the processes that have resulted in the current unequal access to assets between male and female household heads in the highlands have only barely been affected by land reforms. The reforms were intended to create equality in land holdings, but they have failed to resolve land hunger. Land hunger and the current lack of economic viability of most smallholdings, are generated by the same processes that result in the over-production of women-headed households. The particular forms of household formation and dissolution, and the customary relations of marriage, divorce, and inheritance, are a highland legacy that led to large-scale conversion of common lands into agricultural holdings and, when this was no longer viable, to the diminution and fragmentation of farms. Setting up a new household, divorcing one spouse in order to marry another with more land, and having children with more than one woman, all presented other means especially for men to gain access to additional land. To mention only a few indicators that hint at the nature of the problem: one study in Tigray found that the average marriage lasted only 7.5 years; larger-scale data from the region show that the average number of children that a Tigrinian woman will have in her lifetime is around 6.8; and two thirds of all households in Tigray own less than a half of a hectare of land. As will be discussed in various sections of this report, these same household dynamics are also responsible for generating a large number of poor female headed households. Nor is it casual that women constitute the majority of the disadvantaged: this is firmly embedded in gender relations.

Common property resources have in a sense "fallen victim" to the dynamics discussed above, since common land was in effect the only land available to assuage the land hunger generated by high rates of household formation and dissolution. However, common land is an essential constituent of livelihoods in an area where the plough-based farming system is dependent on feed resources from communal grazing lands; where house construction, fuel, agricultural and household implements are all mainly derived from trees and other plant species that are found in only miniscule quantities, if at all, on private holdings; where medicines as well as fruits, vegetables and other essential nutrients are also generally not supplied by the cereal and legume-based production system; and where cultural associations with indigenous and wild botanicals have such strong religious foundations that these continue to thrive in local churchyards that are so rich in species diversity and density that other communally-protected forested areas pale in comparison. The institutional reforms of the past thirty years, and the massive campaigns to halt degradation and reforest the highlands, have had a major impact on those common land areas that have remained. Laws governing the management of such areas have changed repeatedly and have also often failed to define many user rights. Those areas that are protected ("enclosures") have generated considerable environmental benefits, but policies have largely neglected to consider the population's needs for botanical resources other than grass and timber. Enclosures have largely failed to contribute to the livelihoods of the very poor who, lacking livestock and cash, cannot use many of the livelihood resources that they do provide. Common land areas that are not protected have been largely left out of conservation policy: large tracts of land have become de facto open access, and it is upon these lands that the majority of the highland populations rely to meet these multiple material



and cultural needs. It is only realistic to expect that continued degradation of this “third” of all livelihood resources will result.

The outcome of the interplay between these factors means that much of the highland farming population cannot survive from their holdings, while their rights to exploit and manage non-farm natural resources and common land areas have been severely limited by environmental conservation and regeneration efforts, on the one hand, and by degradation ensuing from de facto open access on the remaining land, on the other. Female headed households, which are the product of civil war, high divorce rates, irresponsible paternity, and unequal division of marital assets, lack the resources to benefit substantially from the limited resource extraction allowed in enclosed areas. On the other hand, in comparison with households that have greater assets, they are forced to rely more heavily on areas that are open access and thus, together with others who are landless and poor, women heads aggravate the degradation that is one of their greatest banes.

It is hoped that this introduction highlights the importance of exploring the possible interrelationships between common property resource access, resource degradation, poverty, and household headship in the highland context as a series of postulates. Currently, although there has been much research on development dynamics in the highlands, little is actually known about several of the inter-connections posited above, although they may be vitally important both to human welfare and to environmental recovery in the region.

The global objective of this research was to investigate the interrelationships between female headship and access to natural resources in a specific development context in highland Tigray, where the Food and Agriculture Organization of the United Nations operates a programme oriented toward enhancing food security. The specific objectives that guided the research design, literature review, and choice of methods are presented in Box 1. It was soon found, however, that the connections between common property resource access and female household headship were much more complex than anyone first assumed: there are a substantial number of “intervening variables” in which to become entangled. However, it is this process of disentangling both the direct and indirect relationships that sheds considerable light not only on the nature of the development dynamics in the region, but as well points to the need for new approaches to resolving degradation, enhancing conservation, and contributing to livelihood security in Tigray, by addressing the “missing two thirds” of development.

The title of this report thus reflects the initial concerns of FAO’s Livelihood Support Programme when it commissioned the study (the point of departure), but it also reflects the conclusions reached after months of literature review and field investigation, which are presented throughout this report and summarized in chapter 7. It was found that women-headed households have in fact been almost completely neglected in policy-making and in development interventions other than in food aid. Common property resources (CPR) were also found to constitute a very important part of livelihood resources (at least a third) but these resources have also in fact been very largely neglected. It was also found that neglect of both almost certainly together generate further “externalities”, including the reproduction of poverty and resource degradation, and as well as possibly the alarming recent increase in HIV/AIDS in Tigray.

### **Research Objectives**

1. To determine livelihood dependencies on wild and indigenous botanical resources and their dynamics.
2. To determine dependencies on different types of common lands.
3. To determine the importance and diversity of homegardens.
4. To determine differential access to common land resources.
5. To capture determinants of poverty and differentiation of households.
6. To capture determinants of livelihood strategies, especially those related to botanical resources.
7. To capture contributions of plants and trees to food security.
8. To capture the significance of gender relations and household headship; and the importance of botanical and common land resources to women and female headed households.
9. To provide recommendations regarding possible means to strengthen the access of the poor, and particularly of female headed households, to botanical resources.

The report is organized into seven chapters. Chapter 2 presents a review of the most relevant literature and the discussion of development dynamics in the Ethiopian highlands as they have been posited to date. Chapter 3 gives an overview of the research design, the conceptual framework and definitions employed, the methods and instruments used, and critical reflections on their implementation in the field and ways in which implementation affected the research outcomes. Chapter 4 provides an overview of Adiarbaetu, the research site, and its population. Chapter 5 takes an in-depth look at access to assets, livelihoods and livelihood strategies of 15 female and 15 male headed households in the study area. Chapter 6 presents and analyses the field data collected in relation to access to common property resources, the uses that the population makes of common lands and their botanical resources, and the ways in which use and access are differentiated among individuals and households. The discussion focuses in particular on gender relations and female household headship and on formal and informal rules of access to CPR and how these affect CPR use, and then teases out the relationships between such access rules and poverty dynamics affecting especially female headed households. Chapter 7 returns to the questions posed by the FAO and analyzes them in the broader context, assessing their implications for local action and regional policy, as well as for external agents. It examines the degree to which the empirical research findings support the hypotheses that are formulated and presented in the context of the literature review in chapter 2 and as well in the introduction to this chapter.

## **2. DEVELOPMENT DYNAMICS: NATURAL RESOURCES, GENDER, AND HEADSHIP**

In the Ethiopian highlands, development dynamics have recently plunged the region into crisis. These dynamics are very complex and are not yet well understood. At least six factors are considered to contribute to this complexity. First, agroecological conditions are very difficult since the region is both mountainous and prone to highly variable rainfall and periodic drought. Second, ploughing is a permanent feature of the farming system, however cattle and other livestock populations are considered now to be too high to be sustained. Third, the tenure system that persisted until the 1970s was ancient and highly sophisticated, involving both private and communal property and associated local traditional institutions (especially clan and church), whereas land reform and institutional change have since been imposed from above in a manner that both complements and contradicts these traditions, and that both resolves and creates tenure insecurities. Fourth, severe resource degradation, particularly soil erosion and devegetation, affect most of the highlands. Fifth, much of the highlands, and particularly Tigray, has recently been the site of prolonged and intense civil war. Sixth, the process of demographic change in the region is entwined with the specific form of land tenure, household formation, composition and dissolution, and both are related to the fragmentation and diminution of farms to the point where most are currently economically unviable. Households are equal insofar as they are mostly all poor, so that the major distinctions made among them today are between the “poor” and the “destitute”. Promoting both sustainable resource management and sustainable livelihoods is a great challenge that is not likely to be achieved in the short term.

### **2.1 The farming system**

In 2005, Tigray’s population was around 4.3 million and growing at 3 percent annually, where 81.2 percent resides in rural areas. Tigray covers 80,000 sq. miles. The region is relatively dry and is subject to frequent drought. Farming depends mainly on rainfall which is strongly seasonal and erratic and ranges from 450-980 mm annually. The main cropping season (meher) is from mid-June to September, when rains are concentrated. There are three altitude zones: *qolla* (lowlands), *weyna dega* (midlands) and *dega* (highlands). Lowland crops include maize, pearl millet and sorghum; midland crops are wheat, barley and teff, and in highland areas, barley and potatoes dominate. Pulses and lentils, oil seeds, vegetables and spices are also produced across the highlands. Crop productivity is low due to factors such as soil degradation and erratic rainfall: half of the households surveyed by FAO produced 100 kg of grains or less per year in 1994/95 (FAO n.d.). External inputs such as fertilizers and seed have not been found to have a substantial impact on crop productivity mainly because of these factors (Gebremedhin et al 2002). Land must be ploughed by oxen two to six times per year to permit sufficient depth of cultivation and soil granulation. Grain is harvested using sickles and oxen or horses are used for threshing. Cattle provide traction for 95 percent of grain production as well as milk, meat, dung (for soil fertility and fuel), income and personal savings which serves as a hedge in periods of drought and famine (Gebremehdin et al 2000; FAO 2004b).

The farming calendar has several labour peaks and there is a relatively marked gender division of labour only insofar as ploughing and sowing are considered to be strictly

male tasks. “The fact that farming is plough-based gives great importance to male labor in this farming system, a fact that puts households which lack male labor at a serious disadvantage” (Amare 1999). Labour peaks between June and August when fields must be cultivated and weeded, and weeding is onerous, heavy and highly time demanding, and is mainly done by women (Beyene 2003). Harvesting begins in October and lasts through November-December, presenting another labour peak. Little labour-saving technology is employed and labour demands are often great over short periods due to the strict cropping calendar.

Food availability is also strongly seasonal. The months of greatest food shortage are typically from late May to September. Dietary intake is also affected by food culture: there are many religious prohibitions especially among Orthodox Christians. The Ethiopian Orthodox Church observes 250 fasting days per year when no meat or dairy products can be consumed. Most food consumed in the highlands (Selinus 1971) consists of stews and sauces eaten with injera, large pancake-like bread made ideally from teff but, since teff is often in scarce supply, barley and other grains are substituted. During non-fasting days, the diet consists primarily of beef, goat, or mutton cooked in berbere (a spice mix) sauce, and few or no vegetables are eaten unless meat is unavailable. However, on fasting days, meals consist of legume stews and vegetable dishes, and wild plants are also often consumed.

Households have relied on own grain production to satisfy their requirements for staple food and only purchase grain when harvests are insufficient. Grain sales have been the most important source of cash income (Amare 1999). Animal and animal product sales are also a source of cash (particularly hides, cheese, eggs and butter), although their contributions to total household income are usually small. Because farms in Tigray are so small, they are barely capable of producing marketable surpluses (Wolde-Georgis 1996). Other common sources of cash are sales of pulses, tela and other local alcoholic beverages made from grain and honey, and skilled work such as weaving, healing, and carpentry, but few people have such skills (Amare 1999). Poor infrastructure and great distances to markets militate heavily against the success of market-oriented enterprises (FAO n.d.). Food-for-work and other community programmes oriented toward infrastructure development and conservation that are paid largely in food have become major sources of sustenance.

## **2.2 Land tenure and reform**

While the State re-engineered rural institutions and land access after 1975, it did this largely on the basis of customary land access principles. Prior to the State reforms, the major form of land access in Tigray was the customary rist system. A field held by rist rights was not an enduring unit but represented a share of a much larger tract of land held jointly by a group of descendants of a legendary figure who is believed to have first held the land: “rist refers to the right a person has to a share of land first held by any of his or her ancestors in any line of descent” (Hoben 1973: 11-12). While all male and female descendants of the individual “founders” were entitled to land, these could not be transferred outside of the descent group.

Under the rist system, newly married couples generally were given small amounts of land and livestock from their parents, and gained additional land by incorporating community land. Litigation was another means to gain land access. While access was

relatively egalitarian and the incidence of landlessness was low, population increase and legal conflicts led to insecure property rights, encouraged fragmentation of landholdings as well as successive reduction over generations, prohibiting accumulation (Beyene 2003, citing Bruce 1976).

Inequalities in land access were much more common and problematic in southern Ethiopia, and it was this that compelled the Derg Regime, upon taking power, to nationalize all land and implement land reform in 1975. Farmland was allocated to anyone who would cultivate the land; land sales, exchanges or transfers were prohibited. The implications for private land access in Tigray were not dramatic, but the traditional rist institutions were eliminated and land distribution was arranged by the State, which at the same time created new local institutions: Peasant Associations (PA) (which allocated land), agricultural collectives, and cooperatives assumed most of the traditional institutions' former functions.

In Tigray, the Tigray People's Liberation Front (TPLF) waged a 17-year war against the Derg regime. The TPLF and the Derg Regime implemented their own versions of land reform, which barely differed, in areas that they respectively controlled. The TPLF established the baito rather than the PA, which implemented reforms at local level. The main provisions of the land tenure rules in Tigray over the past three decades are:

- 1) Only local residents could be allocated land.
- 2) Property must be equitably divided in the case of divorce or death, regardless of capacity to cultivate.
- 3) A male must be 22 years and a female 15 years of age to obtain land. Adults obtained equal shares and four underage children count as one adult.
- 4) Rights are vested in individual members of a household – particularly husband, wife, and adult sons/daughters received titles to land allocated to the household.
- 5) Area and quality of land were considered during land distribution as well distance and location of plots (Beyene 2003).

The change in government in 1991, when the TPLF and the Ethiopian People's Revolutionary Democratic Front (EPRDF) assumed power, did not alter the reforms but, in 1995 they were incorporated into the constitution and power and administration were decentralized to nine Federal States. Regional governments were empowered to establish land distribution and registration regimes. Land registration was introduced in Tigray in 1998, covering most farmers and signalling the end to land redistribution: the main reason for ending redistribution was that landholdings had become so small that they were no longer economically viable (Ibid.). Today, in the FAO project area in southern Tigray, the landless young now constitute 10 to 25 percent of the population. Landholdings can no longer provide the food and income needed to sustain an average family: most are less than one hectare and many are only a quarter of a hectare. Families cannot divide land among their children (FAO n.d.). Sharecropping and, to a lesser extent land rentals, provide the principle legal means for land-poor households and landed households that do not have access to oxen or to someone to plough their land (including the majority of female headed households - FH) to use their land to produce grain. On the other hand, it provides households that have sufficient labour and oxen to access additional land. Sharecropping was

prevalent under the rist system for similar reasons (Hoben 1973). The main disadvantage of sharecropping is the lower rate of return for the plot owner: tenants usually have to supply half of the seed, both of the oxen, and all of the labour, in turn receiving from a half to three-quarters of the harvest.

Beyene (2003) argued that the lack of economic viability of landholdings and tenure insecurity created by inter-generational instability contribute to land degradation and economic stagnation. The current land allocation system prioritizes equity in land access over economic viability of landholdings, and creates perverse incentives for landholders. More land was distributed to household heads in comparison with adult children living in the same household, so it was advantageous for people to establish their own households as soon as possible. Aging households lose access to their children's labour and household resources are often divided to facilitate this process. Upon death of the parents, the land is further divided between offspring. The process of land division is perpetuated inter-generationally, leading to land fragmentation. Beyene did not discuss the significance of FH in this process, but it is argued herein that familial instability, together with discrimination against women in resource allocation, can only contribute to increasing landholding fragmentation, decreasing size of holdings, insecurity of tenure, and hence destitution and resource degradation. As we demonstrate in this report, for women in Tigray, this differentiation becomes acute and often forces them into destitution, due to (a) marital instability and the subsequent high divorce rates; (b) high mortality rates or male absence due to civil war; (c) higher female household dependency ratios; (d) unequal division of household assets upon divorce or widowhood (with women accessing fewer resources of lower quality); and (e) unequal opportunities to farm and to participate in civil life. High numbers of FH further promote fragmentation and a decrease in average landholdings. FH are more dependent on common lands, but many such areas are in fact of minimal use to them due to area enclosures (AE) (see below), which in general are not governed with their resource requirements in mind. Those that remain open are under increasing pressure because they are relatively free access, and increasing numbers of people in FH and young households depend upon them for subsistence.

### **2.3 Women's assets, female household headship and poverty**

With respect to women's rights to land and other household assets, it should be kept in mind that there was substantial continuity between the rist system and the reform era. There is still today a difference between formal and de facto rights and practices in which local tradition plays a strong role, in part because community authorities today appear to be reluctant to become involved in regulating the division of assets upon marriage and divorce.

Under the rist system, households were monogamous, and first marriage occurred early. Matches were arranged by parents or elders who attempted to ensure that both parties had actual or potential rist land rights: "The object here is to make certain that equal amounts of moveable property will be given to the bride and groom" (Hoben 1973). The new household was created by pooling labour, cattle and other livestock, and perhaps cash given to the bride and groom in equal value by their respective parents, and eventually by pooling rist rights to land, usually upon the parents' death. Exogamy forbid marriage between those who shared a common ancestor in any line in six or fewer ascending generations, so that the bride and groom had at least a large

part of their rist rights through different descent lines. Virilocality also predominated: a woman was expected to leave her native village to join her husband's household. The couple remained with the husband's parents for the first few years and contributed to the parent's household before establishing their own residence. The groom's parents usually provided a small amount of land for their son's homestead: where community land was available, it could be cleared in proportion to the amount of labour that was available to the new household. There were and are, however, other types of arrangements regarding marriage and marital assets: in livestock rich areas, parents typically provided their marrying children with two head of cattle and up to ten to fifteen sheep. It was even fairly common for a spouse who did not have any of the necessary assets to enter a marriage as a hired person who did not have any rights to household property and who received an annual wage.

Currently, the Ethiopian constitution provides for equal rights for men and women to use, transfer, administer, and control land, and to equal treatment with respect to divorce and inheritance. Since the Derg reforms were implemented, the principal source of land for married couples has been the baito or PA. The study carried out by IFPRI (Fafchamps and Quisumbing 2001), based upon a survey of 1500 households in 15 villages across rural Ethiopia in 1997, found that the PA directly allocated two thirds of the land held by households, whereas dowry and bride price account for only a small proportion of land transfers. Some researchers argue that FH's inferior land assets are therefore directly attributable to gender bias in government land allocations: that allocated to FH was usually of minimum size and of poorer quality in comparison to that allocated to male headed households (MH). The proscription on women's use of oxen for ploughing was interpreted to mean that land would be cultivated by men, and therefore should be registered in their names. Upon death of the husband, a disproportionately large reduction in household landholdings occurred, but no land was taken from the household when a wife died. Widows therefore often had insufficient landholdings.

Fafchamps and Quisumbing (2001) found that 22 percent of their sample was of single adults, particularly widows and divorced women, and that 35 percent of those living in monogamous marriages were previously married. A third of the marriages had ended in the death of one of the spouses, whereas the remainder ended in divorce or separation. The highest proportion of single women was found in Tigray, which they posited might reflect high male mortality associated with civil war. These data demonstrate the degree to which divorce is prevalent. While the baito or PA must still formally support land transfers following marriage, divorce, or death, in practice they do not usually intervene except when villagers directly solicit it. However, if the baito or PA does not interfere, then it is quite likely that local customs that are derived in part from the rist system enter into force. In other words, if women receive land from the baito or PA, irrespective of whose name it is registered in, they may lose control over this land if local customs so dictate.

Bauer's study (1985) in Tigray showed that the average length of a marriage was only 7.5 years. For men, one incentive for divorce was that having children by a number of women permitted them to claim more land. A man can claim rights to a woman's rist after he has a child by her, and can keep it as long as he continues to support that child. A man could thus acquire new rist rights through every woman with whom he had children: even when they were born out of wedlock. Amare (1999) also found that

women who bring no resources into a marriage are easily replaced by propertied women, and that divorced women with property are much more likely to remarry. Poor women are likely to “remain destitute and single as a result”, their only alternative being to marry equally poor men, and thus remain in poverty (Ibid: 49).

Although legally each spouse is entitled to equal shares of a household’s resources upon divorce, it is commonly reported that women generally give up all or most of their share of household resources, which also contributes to the incentives that men have to divorce and remarry. Amare (Ibid.) found that men are favoured in the division of land and children since they are thought to be the main producers and best able to defend children’s interests. Bauer (1985) reported that the amount of communal and individual property that each spouse received upon divorce depended on the type of marriage contract; the lack of a contract, or a marriage contract where unequal assets were brought into the marriage, would lead to unequal division of household property. Hoben reported that “A well-to-do man often allocates the use of a field or two to a divorced wife if she has children by him and has not married again. She, in turn, gives the land out in tenancy” (1973: 139). This means that women were not receiving equal shares upon divorce, and that their rights were still dependent on the largesse of their ex-spouses (that is, they were “usufruct” rights that depended on the maintenance of their ex-husband’s minor children).

Virilocality also deprived women of land to which they were entitled upon divorce. They could retain land from their marriage if they remained in their husband’s locality, but they would often return to their native villages and subsequently remarry. When they remarried, they had to give up control of the land. The PA reallocated a woman’s share to her ex-husband since he was expected to remarry within the locality. If a woman wanted to live independently in her ex-husbands’ village, she would be less likely to remarry because stigma was attached to the act of “coming into a woman’s house,” and “it is not considered proper to marry the ex-wife of a man who could be a neighbor or relative” (Amare 1999: 49).

Marriage arrangements today appear to differ little from that which was described under the rist system. In Tigray, however, the land proclamation raised the age of marriage: men must be 22 and girls must be 16. While arranged marriages predominate, increasingly couples choose their own partners, but such marriages still need to be approved by parents. Land reallocation ended in Tigray after 1991, which also ended land reallocation upon divorce and therefore any intervention in divorce on the part of the baito or PA. This has allowed women to leave their former households and localities and still retain control of their share of land even after remarriage. Nevertheless, some social disapproval is directed at women who successfully retain land from their previous marriage and then marry other men in the same locale, since remarriage does not give these women greater rights to land, but their new spouses are thought to have gained an unwarranted addition to their land resources.

As mentioned previously, inheritance in the rist system did not formally discriminate between male and female heirs, and as well current law stipulates that all children receive equal shares of parents’ assets upon death. Amare (1999) found that inheritance was in practice biased toward sons, since families sought to maintain land within their descent groups and, if the land passed through daughters to son-in-laws, it would then be likely to pass to the son-in-law’s decent group. Further, when



landholdings are small, as they generally are, land would often not be divided amongst all of the heirs, but be passed on to the male heirs in order to avoid landholding fragmentation. A girl is expected to marry and, if she is widowed, she is expected to remarry. Remarriage is an option for women and necessary and inevitable for men.

The major constraints that FH are commonly reported to confront are diminished household assets, including land, livestock, and farming implements (particularly ox ploughs), inability to plough their own land, lack of livestock feed, and shortage of male labour. Because FH are often unable to plough their own land, they must sharecrop out and, in the process, relinquish a major share of the harvest. Some women find means to mobilize oxen and male ploughing labour through ties with kin or ex-spouses, or through labour-sharing arrangements or by trading dung or crop residues, but, in the latter case, this means that they have less of these resources for themselves (Ibid.). Grazing animals, and cutting and piling hay and grain stalks, are also considered to be male tasks for which FH who have no older sons need assistance, and FH may have to sell animals that they have retained from marriage due to the lack of feed and the need to cover such expenses.

Sharp et al (2000) recently investigated the causes of destitution in north-eastern Ethiopia based on a stratified random sample of 2,127 households, 14 percent of which were destitute. Of the MH, eight percent were destitute, in comparison with 35 percent of FH. The most important determinant of destitution was not how much land a household owned but rather how much land they cultivated themselves: “the typical destitute household gives up control of half their farmland. Their effective control over farmland falls from .55 to .27 hectares...” (Ibid: 89). More than 70 percent of those that sharecropped land out were FH. Also, almost all destitute households (92 percent) did not own oxen. “Since oxen are perceived as the property of men, it is not surprising that oxen ownership is concentrated in households dominated by men: two thirds of MH own one or more oxen, but three-quarters of FH own no oxen at all” (Ibid: 90). MH owned 91 percent of all livestock, almost three times that which FH owned.

Beyene (2003) found that households that do not own oxen do not have access to the other resources (e.g. male labour) required to sustain and intensively use them: for these households, exchange with oxen owners is the best means to avoid the risks associated with oxen ownership. This implies that it is at least equally important to examine FH access to male labour. In fact, Sharp et al (2000) reported that other destitute and poor households share certain characteristics with many FH besides landlessness or near landlessness, sharecropping, and lack of oxen. Destitute households, although found to be smaller in size, have higher dependency ratios than non-destitute households. Household size may decrease as an effect of destitution or as part of the process of becoming destitute: divorce and separation are common consequences, as well as causes, of destitution. Destitute households are more likely to lose their older children, whereas better off households are more likely to gain labour through adoption, absorbing adult relatives, and hiring workers. Destitution relates “primarily to differences in control (ownership access) over key productive assets, notably draught oxen and male labour” (Ibid: 77-78).

## **2.4 Land degradation and common property resources**

The severity of soil erosion in Tigray results from the mountainous topography, torrential rainfall, and low vegetational cover. The loss of vegetational cover has been acute. As late as the 1950s, nearly half of the region's land area was still covered in woodlands and forests, while less than 30 years later, in 1979, nine percent remained (Wolde-Georgis 1996). Forests and woodlots currently cover about 1.6 percent of the land area (Gebremedhin et al 2000). Tigray is almost entirely dependent on imported construction material, fuelwood shortages are acute, and "Despite the fact that about 40 percent of the total land area is used for grazing, shortage of feed sources is the major livestock production problem" (Gebremedhin et al 2004: 2). In addition to land clearing for agriculture, other major causes of deforestation and degradation are cutting trees for fuel, timber, and tools (Gebremedhin et al 2000).

The high level of dependence of highland populations on livestock, particularly cattle and oxen, couples human population growth with livestock population growth. Ethiopia has the largest livestock population in Africa. In Tigray, there are more than 36 livestock units per km<sup>2</sup> and more than 40 per capita, which are among the highest ratios in Ethiopia (FAO 2004b). Researchers generally concur that grazing land carrying capacity is exceeded. Site-specific research shows that heavy to very heavy grazing pressure significantly increases surface runoff and soil loss, reduces infiltration (Mwendera and Saleem 1997), and significantly reduces ground vegetative cover and biomass yields, especially on steeper slopes, leading to the predominance of less palatable species (Mwendera et al 1997). Crop residues used to maintain soil structure and fertility by providing organic matter, but residues are now mainly used for animal feed and fuel (Gebremedhin et al 2000). Dung was used for fertilizer but, with fuelwood shortages (see below), it is increasingly used for fuel (Amare 1999). Attempts to find solutions have been made particularly through permanent and seasonal enclosure of grazing and other land to permit grass regeneration. The question remains, however, about whether the management of such grazing lands resolves or contributes to the problems discussed above.

It has been reported that, before the Derg regime, much of the land in Tigray was effectively open access (Berhanu 2004); however this perception is almost certainly due to the fact that little research has been done on traditional CPR management regimes. For example, Chisholm (2000) noted that, in the villages he studied in Eastern Tigray, forests had been carefully managed by local communities for a long time, and there were well-established rick rights permitting households to use clearly delineated sections of the forest. Such management systems generally survived turbulent political periods, the incursions of outsiders and civil war, up until 1975 when they were abolished under the Derg regime: even so, these rights endured to a certain extent. Deforestation accelerated under the Derg regime because of its lack of clarity concerning tenure rights, particularly on unenclosed hillsides: "outsiders" began to enter them to cut trees and, since communities could not control this, they began to cut the trees themselves.

Reforms have been seen to have negative effects on resource management both on individual holdings and in common land areas. Tenure insecurity led to a lack of conservation and tree planting investments on private land. In Tigray, "The effect of such policy changes was to convert the property rights regimes governing trees from

private or CPR rights to de facto open access: households were then effectively induced to over-exploit these resources as a consequence of the perverse effects of State policy” (Chisholm 2004: 8). Berhanu (2004) also attributed the severe environmental degradation that took place to State intervention that led to the collapse of customary institutions, leading to de facto open access.

The Derg regime attempted to tackle the problem of deforestation and resource degradation. Soon after taking power and, with assistance from the World Food Programme, soil and water conservation activities were initiated on a large scale. In Tigray, more than 80,000 ha of hillsides were enclosed to most use in order to regenerate indigenous plant species but, by the end of this period, for a series of technical, political, and social reasons, most of the AE were either harvested or destroyed (Gebremedhin et al 2000). In 1991, the TPLF devolved much decision making around conservation and reforestation to the local level. It created the respective local level institutions based on a local level participatory planning approach and, with the support of the peasantry, initiated “mass-based soil and water conservation efforts, including a considerable amount of voluntary collective labour, and . . . the setting aside of heavily degraded areas for revegetation” also on a large scale (Chisholm 2004: 8). The most degraded land was enclosed. Up to 1998, over 260,000 ha of communal land had been rehabilitated through the creation of soil and water conservation structures, re-vegetation through tree plantations, protection or AE to facilitate natural regeneration of grass for grazing as well as woodlot production (Berhanu 2004). Nevertheless, there is no separate bureaucratic structure that is in charge of natural resources and no staff has specific responsibility for their management. Field staff are not trained in AE management and lack the competence to deal with the complex social issues involved (Nedessa et al 2005: 26), which results in an emphasis on technical management and conservation priorities rather than on local sustainable use. At community level, the baito is responsible for formulating bylaws, planning, implementing, and monitoring and evaluating natural resource management with technical assistance from woreda specialists and Development Agents (DA). There are also social courts appointed by the baito that are responsible for hearing cases and take legal action against violators.

In addition to AE, the Tigray Government created restrictions on the use of certain tree species that are enforced by DA who are assigned to each village for this purpose. Restrictions apply to all common land areas, regardless of whether they are open or enclosed. The immediate positive environmental effects of the AEs and the species restrictions are nearly universally acknowledged both by researchers and by local populations. Nevertheless, there is a steadily growing body of literature questioning the effectiveness and sustainability of these measures. Below, first the discussions around enclosed woodlots are taken up, followed by those related to restricted grazing lands, and finally wild botanical resources are briefly considered.

In Tigray, one of the most widely implemented efforts to reforest and halt environmental degradation is the development of enclosed woodlots. From 1992 to 1996, it was reported that some 49 million seedlings were planted, with a survival rate of only around 40 percent (Gebremedhin et al 2000). Woodlots were established mainly to achieve ecological regeneration, rather than to provide economic benefits to communities. They are present in around 90 percent of the tabias, with nine woodlots per tabia of an average of eight ha each. Most are managed by the baito and are

planted to eucalyptus. The main use of woodlots is for cutting and collecting grass for feed, roof thatch, and baskets. Fruit collection and beekeeping are also often allowed, but cutting trees, or shrubs, collecting roots, fuelwood, bark, leaves, or dung are not allowed. Only during a drought are livestock permitted to graze in woodlots (Ibid). Woodlots guards are paid in kind or allowed to harvest grass. Violations are usually punished by cash fines set by the baito or local court.

The main benefit of enclosed woodlots to date appears to be improved environmental conditions in the woodlots themselves and in their immediate vicinities: decreasing topsoil erosion in woodlots and increased soil protection in adjoining farmlands, higher levels of soil nutrients compared to non-protected areas, and increased timber and bee forage availability. However, Gebremedhin et al (Ibid) also reported that fuelwood scarcity may have been aggravated by woodlot creation, which leads to an increase in the use of crop residues and dung for fuel, thus contributing to environmental degradation.

Since permitted uses are quite limited, the remaining benefits from village-managed woodlots are reported to be very small. A study conducted in 2000-2001 covering 185 woodlots at community, village, sub-village and household level showed that, due to the use restrictions placed on these areas, “Quantities of NTFPs harvested from woodlots are generally very low and unlikely to significantly contribute to incomes” (Ibid: 19). Further, community members must purchase some of the products, especially grass and poles. The same study provides data on the labour input into woodlots and shows that these are very high, especially for community managed woodlots. Community woodlots rely upon non-voluntary uncompensated labour, voluntary uncompensated labour, and voluntary labour that is compensated usually through food-for-work. After accounting for labour costs, which comprise the vast majority of woodlot costs, they concluded, “The contrast of high costs and very low economic benefits in a region where demand for woodlot products is very high is troubling. The need to improve access to woodlot products, both for subsistence and for income generation is essential” (Ibid: 21).

On the positive side, the estimated value of the eucalyptus stands in community-managed woodlots was around five million birr, so residents are convinced that they will eventually perceive economic benefits (Ibid.), but many authors have also reported that the quantity and distribution of future benefit streams from enclosed community woodlots are unclear, and that weak management plans and such undefined benefit streams represent their major weaknesses, which is discussed further below.

Several authors reported that tree planting on private land was constrained due to tree tenure insecurity and the lack of government or NGO initiatives to encourage it, but it is no longer unusual in Tigray since land reallocation came to an end and the regional government now promotes a pilot project for this purpose. Plantations, particularly of eucalyptus, contribute substantial amounts of income to farmers, and there is evidence of a process of conversion of agricultural land to eucalyptus plantations in the highlands.

Restricted grazing lands present the other most common type of AE. Most regulated grazing lands (68 percent) are indigenous initiatives managed by village organizations

or elders, which organize members, draft regulations, and enforce rules. The State does not interfere in these, although the regional government has promoted some of these organizations and may provide technical and material assistance. Grazing lands have guards, and most villagers contribute to their payment in cash or kind. All of the villages surveyed in 1998-99 had unrestricted grazing areas and nearly 90 percent had one or more. The average total amount of restricted grazing land area per village was 38 ha, whereas each grazing area was on average 10.5 ha. More than half were designated for oxen only. In comparison with enclosed woodlots, the use of restricted grazing lands was more liberal (Gebremedhin et al 2004). Besides grazing livestock, most villages permitted dung collection, two thirds permitted fruit collection, and slightly fewer allowed bee keeping. More than half allowed fuelwood collection, and a minority permitted grass cutting, however cutting trees or shrubs was never allowed. Penalties for violations were widely used and consisted mainly of cash fines.

In all communities studied, grazing lands have regenerated significantly because of restricted use, but Nedessa et al (2005) called into question whether the results are either effective or sustainable from an economic or environment standpoint. Policies are based on conventional range management models developed for temperate areas, which assume a constant livestock carrying capacity. However, in Ethiopia, climatic variability largely determines vegetation amounts and cover, so grazing systems must adapt through herd movements, different mixes of livestock types, and herd size fluctuations. Given these conditions and the differences in the degree of land degradation that are found across Ethiopia, the scale of enclosures becomes very important: “. . . in extensive systems where livestock grazing involves movements over large areas, restricting animals from portions of these areas will have consequences for the grazing system as a whole . . . It may be that the AE is improving biomass production in the area, but has resulted in increased grazing pressure on areas outside” (Ibid: 6). Another problem is that, in Tigray, many AE allow only oxen to be grazed, which can have an important negative impact on biodiversity since grazing only one type of livestock leads to the domination of only certain species, which further reduces grass. Further, regulations about the use of woody species have led to an increase in woody vegetation where thinning or pruning is prohibited, thereby depressing grass productivity.

Research on CPR in Tigray has concentrated on AE and, within them, on grass and timber. Within AE, little attention has been paid to other botanical resources. Other common land areas, such as churchyards, open hillsides, roadsides and borderlands, and even private farmland that are accessed by community members for certain uses, have also received very little attention although it is in these areas where most botanical resources are found. Further, the use of botanical resources for purposes other than timber or fodder has also received very little attention, although studies in other areas of Ethiopia are increasing, particularly in regions that are perceived to have substantial wild and indigenous vegetation. Tigray is not one of these regions. The dearth of research in turn appears to reflect the lack of attention that these areas and these plant resources appear to have received from development and government agencies in general.

Some 90 percent of Ethiopia's energy needs are provided by biomass, primarily fuelwood (Williams et al 2003; Vivero n.d.), and at least half of all fuel consumption is for cooking injera, the staple food. Although it is illegal to manufacture charcoal in

Ethiopia, it is still widely available. These are also the forest resources that are most commonly sold, not only during periods of economic hardship, but also as a routine economic activity (Williams et al 2003). Fuelwood exploitation has been cited as one of the primary reasons for the rapid disappearance of local forests in Tigray (Gebremedhin et al 2000), however, not a single study was found during this review that focused on fuelwood use or availability in the region. FAO (n.d.) reported that most households require an average of .3 ha of forested land to meet their fuelwood needs. It usually cannot be collected from enclosed woodlots and, although it is permitted on restricted grazing land, its extraction is reported to be low. As mentioned above, ironically fuelwood scarcity may have been aggravated by woodlot creation. FAO (n.d.) noted that, although the sale of fuelwood is an important source of income for the poor in Tigray, sales are decreasing and, due to fuelwood scarcity, households are spending a large portion of their time gathering brushwood and cow dung.

Asfaw and Tadesse (2001) estimated that Ethiopia is the site of some 12000 edible species, eight percent of which are currently used for food in Ethiopia. Of this eight percent, ethnobotanists have so far identified 203 wild food species. The type, amount, and use differ according to region, where especially altitude and seasonality condition the amount and species available. It is now estimated that only 15 percent of the identified wild food plant species are used for food in times of famine or food shortage, whereas 85 percent form part of the regular diet. Many studies have shown that wild foods contribute very substantial amounts of both calories and micronutrients to the human diet across rural areas of the developing world (Grivetti and Ogle 2000; Johns and Staphit 2004) and, in areas where food shortages are great, their nutritional contributions are even greater. There is no evidence of social stigma attached to their consumption in Ethiopia (Barnett 2001). It is very likely that wild plant food consumption has decreased in the highlands due to drought, resource degradation, continuing pressure on open access resource areas, and the creation of AE, where the collection of wild foods other than fruit or seeds is prohibited. Decreasing consumption of these plants has certainly negatively affected overall household nutrition.

Compared with wild foods, there is a substantial amount of literature concerning the use of medicinal plants in Ethiopia, the majority of which are considered to be wild species. According to Deffar (1998), some 600 plant species are used as medicine. The same report indicated that over 85 percent of the rural population uses these plants as the primary source of healthcare for humans and animals. Fassil (Ibid) added that “continued reliance on traditional medicines is partly due to economic circumstances, which place modern health facilities, services and pharmaceuticals out of the reach of the majority of the population. However, in many cases, it is also attributable to the widespread belief in the effectiveness of many traditional therapies” (Ibid: 38).

The data presented in Chapter 6 from the study area in Adiarbaetu shows that women are responsible for both traditional lay and specialist healthcare, although most adults in the community have some knowledge of medicinal plants. Medicinal plants are also often reported to be important sources of revenue for traders, who are not necessarily healers. In a few studies that report on marketing of medicinal plants, it was shown that, in major markets in Addis Ababa and in Eastern Ethiopia, the vast majority of such traders are women (see e.g. Teshome-Bahiru 2005; Letchamo and Stork 1991).

Given the dearth of homegardens in the study area, it is likely that the majority of medicinal plants collected are found in common land areas, so that the degradation and disappearance of tree and plant resources that is occurring across much of Tigray must also have a negative effect on medicinal plant availability. There are many other uses made of botanical resources found on common land in the study area that are discussed in-depth later in this report.

## **2.5 Benefit streams, equity and livelihoods in CPR Management**

Two overarching problems have been identified by researchers concerned with issues of CPR management in Tigray: the first is the possibility to halt degradation and sustainably regenerate vegetative resources, and the second is the need to generate livelihood resources that can help to alleviate poverty, food insecurity and continued degradation in the area. Recent studies concur that these two problems are inseparable. CPR have been depleted due to drought and overuse, and they have been overused because of changes in institutional and individual access rights. With the exception of restrictions on certain woody species, most common land across the highlands is de facto open access since rights regimes around them are lacking or ill-defined. On the other hand, the restrictions in place in AE, while increasing the availability of certain resources, generate greater pressure on these open areas. Further, the economic benefit streams that flow from AE are both poorly defined and unequally distributed within and between communities. Berhanu (2004) argued that poor awareness of actual physical boundaries of resource areas, unclear legal ownership, and long-term benefit insecurity contribute to illegal use. Perceptions of benefits, in particular economic benefits, are crucial, giving people incentives to participate in conservation and improvement of CPR. There is consensus in the relevant literature that benefit streams from AE to date are largely environmental. Economic benefits for most people are as yet minimal, but may become substantial in future, particularly as timber stands in woodlots reach maturity. It is rarely clear how these future benefits will be divided, and there are few mechanisms in place or anticipated to ensure popular participation when these decisions are finally made (Chisholm 2000 and 2004; Gebremedhin et al 2000; Jagger et al 2003; Shiterek et al 2001; Shylendra 2002).

Chisholm reported that economic benefits and costs of AE are distributed inequitably. With respect to regulations that restrict access to grazing land, he argued that larger landowners may suffer least, since they “have readier access to [grass] substitutes: for example, they can meet a higher share of feed requirements from the hizati [restricted grazing areas] and from crop residues, and can supply a greater proportion of their fuel needs from animal dung” (2000:17). Some of AE products (especially grass and timber) are sold, but the poor cannot purchase them. Inequities are compounded because, in most AE, all residents are expected to make equal contributions to their establishment and maintenance in labour or cash, for which they are only partially compensated through food-for-work programmes. Nedessa et al (2005) found that richer households benefit triply: from the resources (grass and timber) in AE, from food-for-work, and because there are fewer households with whom benefits have to be shared since the poor cannot use the most valuable AE resources. The reliance of the population on CPR, particularly the poor who cannot produce their own trees nor purchase products that are produced in AE, is unlikely to decrease in future. The collection of culturally and materially essential CPR is therefore now largely confined

to non-enclosed areas, which are effectively open access. Given this resource pressure, these nearly certainly continue to degrade, and continued degradation can only result in even greater pressure and ever greater strains on livelihoods as well as on AE.

Shylendra (2002) studied the impacts of AE on livelihoods in Woeri Leke Woreda, Tigray. It was found that the participation and extent of involvement of women in decision making around CPR management and use was very limited, although a household survey showed that both men and women alike felt the need for women's involvement. The AE is managed by the baito and, in the baitos investigated, only 10 percent of the members were women, despite the significant proportion of FH found in the area (58 percent in one village and 42 percent in the other). Given women's limited representation, their concerns about CPR have a limited chance of being addressed. Nedessa et al (2005) reported that, when women do participate, they are usually passive "for cultural and religious reasons" (Ibid: 27). They also found that

*. . . women's participation in developmental works such as construction of soil and water conservation structures, nursery and afforestation activities is fairly high: around 50 percent in Tigray and 30-40 percent in other regions. Women are getting incentives through participating . . . however, in some cases they are systematically excluded from the benefits . . . Women are responsible for the collection of fuelwood, livestock feed, and water from long distances where these materials are scarce. AEs generate these materials. Women could collect these products from the AEs instead of walking long distances saving them time and labor (Ibid).*

The reasons that they cited for inequity in access to the benefits of AE are particularly applicable to FH and may go far to explain why, in spite of formal equality in access to benefits, FH are likely to systematically receive fewer benefits than most MH, even though they may rely more on AE for secondary products.

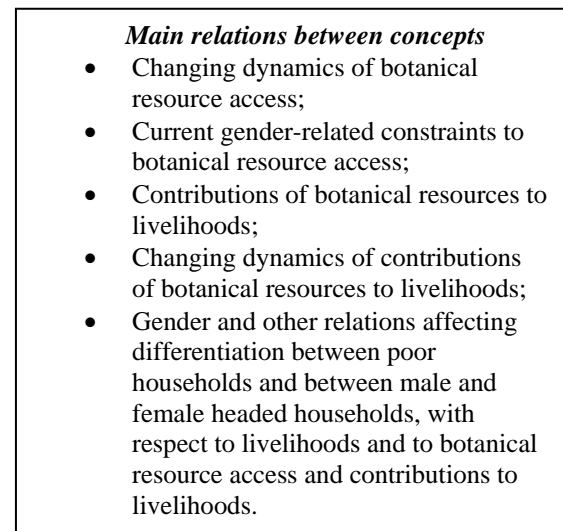
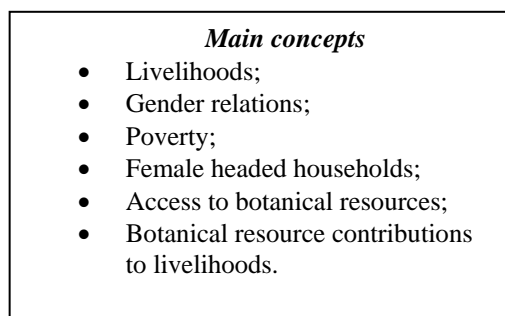


### 3. CONCEPTUAL FRAMEWORK, RESEARCH DESIGN AND METHODS

#### 3.1 Main concepts

The main concepts guiding the research, and their interrelations, are presented below.

##### *Main Research Design Elements*



Livelihoods are comprised of the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by individuals or households (Ellis 2000). Botanical resources are defined as domesticated and wild, purposefully planted and natural, exotic and indigenous plants that are cultivated and/or harvested and used by the population in the study area. The focus, however, was on indigenous and wild botanical resources rather than on traditional staple crops. In the highlands, access to botanical resources must obviously be framed within the larger context of CPR management discussed in Chapter 2, which includes formal property regimes and especially AE and species restrictions. However, such formal property regimes are only part of the picture. The assumption was that there is “a multiplicity of pre-existing indigenous or traditional common property arrangements governing a variety of resources within the same landscapes” (Chisholm 2000), or what others have referred to as “natural resource tenure” (Kundhlande and Luckert 1998). The research design modified the framework for analyzing natural resource tenure developed by Howard and Nabanoga (in press). It was meant to permit the complexity of social conditions that regulate access to and use of natural resources to be captured and, further, to detect incremental changes over time. It (a) acknowledges the existence of different sets of formal and informal rules relating to different natural resources (e.g. to trees, water, land, wild plants) in different landscapes (e.g. enclosed and open woodlands and grazing lands, hillsides, agricultural fields, homesteads), and (b) is intended to analyse how the sets of rules correspond to social structures, that is, how rights and duties are distributed among groups within the community in accordance with their characteristics, e.g. age, sex, wealth, occupation, household size, kinship, livestock ownership, etc.

A major problem for Western scholars is to understand or characterize emic concepts underpinning such social relations as well as the mechanisms through which such rights are defined and sanctioned, since religious, ritualistic, and normative beliefs and traditions often constitute their principle basis of legitimacy. Traditional and indigenous peoples may or may not have concepts of property rights per se, but apparently all do recognize what Ellen (1993a; 1998) refers to as “morals” that are invoked to regulate access to natural resources found in various landscapes, although these may or may not be formalized in customary or formal legal codes. The hypothesis that was pursued in the research was that social rules of access to botanical resources would reflect the following complexity (Howard and Nabanoga, in press):

- Part Z of species A in landscape X can be used by person Y if the use is for B and Y abides by rule M, during season C;
- Patterns were expected to emerge regarding so-called “bundles of rights” for different groups of users.

It was hypothesized that the distribution of powers and obligations that are manifest in traditional “natural resource tenure” regimes would reflect social structure, which determines the importance of particular botanical resources to particular people within it. It was also assumed that universal differences in systems of rights and duties by sex would be reflected in informal rights systems relating to botanical resources, where men’s and women’s material needs and obligations to provide goods and services, as well as the knowledge and abilities (human capital) that each sex requires to carry out these obligations, are distinct (Howard, 2003). The division of obligations, rights and tasks are in turn related to religious and other values and belief systems, which contain concepts of masculinity and femininity and norms about behaviour that are appropriate for each sex. Very importantly for plant and other environmental knowledge, these beliefs and norms extend to men’s and women’s relations to different physical spaces and environments. Not only do men and women use different spaces and specie, they use the same ones differently. If men and women access different spaces and species, it stands to reason that their rights of access also differ since rights represent a means to legitimize and reproduce such relations.

### **3.2 Research components and the levels of analysis**

Table 1 presents information summarizing the research methods which were used to generate data at four levels: community, household, individuals, and plant species. The community was defined as the population residing in a village (kushet) and its land area which is administered by a single village council (baito). A study kushet was recommended by the woreda official based on criteria determined by the researchers. Community level data were generated with key informants such as baito or woreda officials, extension agents (DAs) or user association (e.g. grazing land, woodlot) officials when a formal or official perspective was required, and through three focus groups when community perceptions were of primary interest. All focus group participants were chosen with the help of village officials who are very familiar with the population in the study area, and included eight men and eight women of mixed economic status and ages and, for the women’s group, a mix of female heads and wives. The elder focus group consisted of the three oldest members of the men’s and women’s focus groups, all of whom were over age 50. Focus groups were used when it was desirable to: a) capture several perspectives about the same topic, b) obtain

people's shared understandings of everyday life, or c) capture data generated by the interactions between the participants. The household was defined as a group of people who normally share a common cooking pot, or who otherwise co-reside in a homestead. Data about individuals were collected through the Household Survey, where male heads and wives, when applicable, were interviewed separately. Further, individual data were collected in the Species Access Study in reference to those people who were significantly involved with the species under investigation.

**Table 1 Data Collection Methodologies and Information Generated**

Method	Informants	Information Generated
Village Survey	Key informants	Village economic, social and environmental history; economy, ecology, agricultural patterns and calendar
Community Resource Mapping	Male & female focus groups	Primary landscape niches, land use, spatial distribution of land-based resources, user groups by landscape niche, differentiated by sex
Retrospective Community Resource Mapping	Elderly focus group	Same as above, pre-1975
Botanical Resource Cultural Valuation Study	Male & female focus groups	Species and uses, cultural ranking of importance of each species (economic, cultural, material), species preferences
Retrospective Resource Valuation Study	Elderly focus group	Historically important species no longer available or used, retrospective ranking of importance, landscape areas and reason(s) for changes
Landscape Niche calendars/Resource Distribution Study	Male & female focus groups	Species use per landscape niches per season; other landscape niche uses per season, by sex of users, by destination of use (consumption, sale, both); availability and exploitation of resources across landscape niches
Community Resource Access Study	Key informants; Male & female focus groups	Formal resource tenure, access & use rules, sanctions, decision making mechanisms & participation; informal access rules for different resources (e.g. food, medicinal, grazing), landscape niches and user groups (e.g. children, elderly, women, healers)
Women's Resource Access Histories	Female focus group with 10 participants over age 50	History of women's access to land (common & private) & changes with land reform, villagisation, AE, drought and famine and reasons; changing dependencies on plant resources and reasons for these changes
Species Access Study	Key informants – MH & FH, other men and women	Uses, parts used, destination (i.e. consumption, sale) and the landscape niche where the plant or plant part is collected; planting and access rights and the people and/or organizations responsible for implementing and enforcing access regulations; exceptions to access rules; history and dynamics of species' use
Household Survey	Male & female heads of households and spouses of male heads	Household assets, employment, agriculture, livestock & homegarden production, income from work and production (kind, cash), division of finances, division of labour, marital history, formation and dissolution, intra-household resource access and tenure, use of communal resources, species use and dependencies, food sources and seasonality calendar

Women heads and wives were interviewed qualitatively for their resource access histories. Researchers also spoke with children as often as possible to get an idea of their plant knowledge, and of access rules that might be specific to them, which was

achieved in everyday conversations while researchers lived in the kushet, and through one children's focus group.

The Village Survey complemented the data collected from the FAO baseline survey (FAO 2004a), which focused primarily on nutrition. It was adapted from a survey carried out by the Institute of Development Studies (IDS – UK) and Save the Children in Amhara (Sharp et al 2000), and collected data on: village location (distances to services, markets for different products, etc.), local employment and livelihood activities of men and women, land and water resources, communal land resources and land use, as well as access regimes, crops and agricultural calendars, wild plant use, and agricultural extension services.

Participatory Community Resource Mapping was used to capture villagers' understanding of land use and the spatial distribution of natural resource areas at community level. Focus groups were used to capture definitions/taxonomies of land uses and resources, and the significance of different spaces to different groups of people. Separate men's and women's focus groups plotted the location of areas where they obtain important products or use resources. This led to the identification of different landscape niches and resources such as agricultural land, grazing land, watering holes, woodlots, roadsides, specific tree species, etc. They were then asked, for each landscape niche, what uses are made of the space as well as which groups make such uses. A third focus group consisting of elderly participants was then convoked to construct a single community resource map prior to the year of the great land reform in 1975 (30+ years ago). Elders were, however, unable to create a retrospective community resource map. Plant resource availability had changed so drastically that it was impractical to try to map past resource areas and resources. A participant at one point stated, "If you need to put it on a map then put plants everywhere, large trees everywhere. There was not a place in the kushet that we did not use." Mapping in general was a difficult exercise, especially for people who had never seen maps. Since these maps were used as reference points throughout the research, problems with this method in turn had an influence on several other methods, because it was often difficult to determine the specific landscape areas to which informants were referring.

The Landscape Niche Calendar method was developed for this study to provide data on botanical resources that were out of season at the time of fieldwork. Further, it was meant to reveal seasonality of use, and perceptions about the distribution of botanical resources across landscape niches (existence of the resources) and the distribution of use across the niches (exploitation of the resources), which could then be compared to highlight differences between existence and exploitation, leading to discussions regarding access, gender, etc., which were expected to explain such differences. In implementation, the process of creating landscape calendars was easily understood. However, the second objective, to assess resource distribution and compare this with exploitation, in the end did not work. While participants had no problem ranking landscape niches according to actual use of species, they did have difficulties ranking them according to availability: they were often confused about the distinction. Therefore, more general questions were asked such as: Are there areas where X grows abundantly but where you do not use it? Are there areas where X is collected but it is difficult to find or is not very abundant? Why?

The Botanical Resource Cultural Valuation Study (after Sheil et al 2002; Lykke et al 2004) was used to determine which botanical resources are the most important to the community, why they are important, and how this has changed over the past 30-40 years. Focus group participants were asked to free list the “most important” botanical species that villagers use from common land areas. While participants could easily have listed many more species, they were asked to limit the list to the 25 most important to facilitate the ranking exercise that followed. “Importance” implies that there are specific cultural and material “values” associated with the resources. For each species listed, participants were asked their reasons for importance which generated a long list of uses that could be considered to be emic value categories. The researchers, together with the participants, then generated a “taxonomy” of value categories using local terms. Participants were then asked to distribute pebbles according to the relative importance of each species within each category. Five was the maximum number of species that could be ranked, since participants were illiterate and there was no way to represent the different species, e.g. through specimens or photos. The final exercise asked the elderly focus group participants about botanical species that used to be important to villagers 30-40 years ago and that are either no longer used or are far less important. For each new and unique species named, they were then asked which value category(s) pertain to the species, from which landscape areas it is/was found, and the reason(s) for the change in use or importance.

The Community Resource Access Study focused on formal and informal or customary norms and rules regarding who can use what resource for what purpose and under what conditions. Formal rules of access may or may not determine actual access practices, depending upon (a) the community’s respect for the authority of the institutions that set up the rules and the effectiveness of sanctions against violations; (b) the clarity or vagueness of formal rules with respect to particular landscape niches, uses, or user groups; (c) the absence of formal rules regarding particular landscape niches, particular uses, or user groups; and (d) the existence of alternative, informal rules or behavioural norms. The question guide used in this study is presented in Box 3A. Formal rules, sanctions and violations were discussed with community officials and other key informants pertaining to the institutions that are responsible for creating/enforcing such rules. The informal norms and rules regarding access were investigated through the focus groups.

Women’s Resource Access Histories were based on interviews with 10 female household heads and wives from different wealth groups, all of whom were over the age of 50, to investigate how changes in access rules have affected women specifically over the past thirty years. Participant selection occurred again with the assistance of the village officials.

The botanical resource access “formula” discussed above provided the conceptual framework for the Species Access Study. Individual species users and particular species were investigated to collect information on the uses, parts used, destination of specific products (i.e. on-site consumption, home consumption or sale) and the landscape niches where the plant or plant part is collected, all of which could be cross-tabulated with information about the species users from the Household Survey. Information was also collected on planting and access rights and on the people and/or organizations responsible for implementing and enforcing any access regulations. The

questions considered exceptions that might exist for any access rule (e.g. for children or specialists), or depending on use (e.g. for medicine). Two species were selected based on their importance as well as the contrasts listed in Table 2.

**Table 2 Main Characteristics of the Case Study Species**

<i>Awelie (Olea europea ssp. cuspidata)</i>	<i>Hahote (Rumex nervosus)</i>
Highly valued	Widely used
All parts used	All parts used
Prohibited use	Not restricted
Women and men have different uses	Uses are common to all
Uses: fuelwood, ceremonial, medicine, toothbrushes, construction, tools	Uses: fuelwood, fencing, wild food, medicine
Scarce	Abundant

The Household Survey was used to generate data at household level, which also generated data on the subsets of individuals within households that are the special focus of this study: female and male household heads and their wives. The survey thus permitted comparison between types of households (MH versus FH) and individuals according to factors such as sex, age and educational level. The design was derived in large part from the Ethiopian Rural Household Survey (ERHS) co-implemented by the International Food Policy Research Institute (IFPRI), Addis Ababa University and Oxford University in the UK to provide a longitudinal data set. The 1997 ERHS round emphasized asset ownership and marriage in this context (Fafchamps and Quisumbing 2001). In the current research, modules were developed and administered that dealt with botanical resource use, access to common land resources, homegardens, and other related topics.

The sample of 30 households included 15 FH and 15 MH where it was intended that five of each would be landless, five would have land but no oxen, and five would have one or more oxen. However, FH could not be found that fit into the wealthier category and thus all but one FH selected fell into the lower two wealth categories. The purposive sample limited the generalizability of the results since it introduced bias. It was therefore important to triangulate the study results: that is, to combine the results of the quantitative and the qualitative research to determine the validity or generalizability of the data. Other factors that introduced bias into the survey results, as well as into the results of the other methods employed and into the field research in general, are discussed below, as are factors that are believed to have facilitated the field research and improved or otherwise enriched the results vis a vis other studies that have been conducted in the highlands.

### 3.3 Constraints and opportunities to learn

Agroecological conditions in Tigray are diverse, and this diversity extends to the amount and diversity of plant life. As a result there is a variation in plant use throughout the region. For example, due to its altitude, the use of wild foods in Adiarbaetu is reported to be far less than in lower altitudes. Living conditions are equally diverse. The part of the kushet located closest to the tabia centre is nearly a “town”. Those living in more rural areas of the kushet do not have easy access to resources that are accessible to “town” residents. Because of these differences, it is

likely that more rural residents rely upon and use resources differently, including plant resources. Regardless, the research was concentrated in the central and more “urban” part of the kushet, so the results are not representative of the entire kushet.

Another very important factor in research related to CPR is that there are differences between etic and emic ways of understanding the environment and CPR, including different ways of perceiving and naming landscape niches and botanical resources, and of understanding their importance (valuation). Time did not allow for the exploration of emic environmental and botanical categories, which was very important for this type of research. For example, it was only well into the field research period that researchers became aware of the confusions regarding the use of the terms “forest” and “woodlot”, or “open” and “enclosed”.

Even in an area where botanical resources are severely depleted, dozens or even hundreds of species are used. Due in part to this depletion, many of the species that informants use are not found throughout the kushet, and some are only found beyond its borders. Further, many species were not in season at the time of the research, and time constraints did not permit researchers to collect or photograph all of the species that were in season. It was therefore difficult to identify the species that were referred to in the discussions and in the survey data. While researchers became quite familiar with many of the local names and the plants themselves, voucher specimen collection was needed in order to scientifically identify the species and relate them to their vernacular names. Since it was not possible to collect voucher specimens, researchers took hundreds of photographs of plants and recorded vernacular names, where assistance was provided post facto by the National Herbarium at Addis Ababa University. However, until voucher specimens can be collected, all of the species identifications made in this research must be considered as unverified.

In-depth research demands that researchers live in the communities being studied during the field research period. This is, however, quite unusual in the Ethiopian context and particularly in the highlands, apparently because conditions in these areas are very difficult. It was the fact that the researchers lived in Adiarbaetu for three months that led to some of the most important findings, and that made the research outcomes particularly unique and important. The willingness to live in the community earned the researchers respect and acceptance, and researchers were also able to observe many of the dynamics discussed. It is highly doubtful that female heads of household would have revealed, for example, the fact that they earn their livelihoods from prostitution, or that landless men would have openly discussed their illegal CPR use, if researchers had not gained their trust.

Finally, this research has demonstrated that it is very important to combine community level data with individual level data, but that greater priority must be given to the latter because it provides greater detail and specificity. Focus group discussions were useful for gaining insights into how communities perceive resource dynamics and for a first approximation regarding access and use. However, it was individual level data generated through instruments such as the Household Survey and the Species Study that provided greater detail and certainty about the phenomena under study.

#### **4. SITUATING ADIARBAETU**

Adiarbaetu kushet is located in Bahre Tsaba tabia in Hintalo Wajirat woreda in the south-eastern highlands of Tigray, approximately 64 kilometres from Mekele, the regional capital. The kushet is centrally located within the tabia, with tabia offices located just outside its border. The kushet itself encompasses a mountainous area of approximately 950 hectares. Due to its terrain and size, those portions of the kushet located near the tabia centre have greater access to facilities and infrastructure. Residents in more rural areas of the kushet are more isolated and need to walk long distances to benefit from infrastructure such as water points, markets and schools.

##### **4.1 Social, political, and bureaucratic organization**

The tabia is the lowest administrative unit in Tigray, and each has its own popularly elected baito (council). Tabias are comprised of several villages (kushets) and their surroundings, and kushets have their own baitos. Baitos are responsible for all activities concerning economic development, social services, security and propaganda. There is also a social court (Mahebrawe) that acts as the independent body for justice. The EPRDF politically manages the government in conjunction with the TPLF, down to the kushet level. The Women's Association of Tigray (WAT) is reported to have 400,000 members, and its mission is to empower women to participate in development. It engages in research, capacity building, advocacy and networking, and economic diversification and skills training efforts. WAT is active in Adiarbaetu and village women pay dues, attend meetings, and elect leaders who then represent them vis a vis village officials. However, WAT leaders reported very low participation in Adiarbaetu. The Hintalo Wajirat Woreda Agriculture Department coordinates overall agricultural development and has more than 60 agricultural workers involved in extension, soil and water conservation, forestry, irrigation, home economics and animal and plant disease control. Some 70 percent of these are DAs with day-to-day farmer contact and responsibility for agricultural extension at farm level (Teshome 2003: 46). An important NGO that has been operating in Tigray since the height of the civil war in 1978 providing food and rehabilitation assistance is the Relief Society of Tigray (REST). FAO (n.d.) also reported that, apart from the region's Integrated Food Security Programme (supported by the EU and Irish-Aid) and REST's Dedit micro-credit programme, the woreda receives limited development assistance. The FAO Project itself is implemented through existing Food Security Offices at regional, zonal and woreda levels.

##### **4.2 Demographics, household composition, marriage, and divorce**

Total fertility per woman in the woreda is 6.8 (FAO n.d.), and the estimated total population of the kushet in 2004 was 3075, comprised of 526 households, 28.9 percent of which are FH. Some 48 MH and 58 FH are landless (12.8 percent and 38.2 percent, respectively). The Household Survey was not based on a representative sample of the population, but it permits comparison of the selected households based upon male or female headship. The average number of household members among the FH was 2.87 where only one adult was present in nearly 75 percent. In contrast, MH had an average of 5.3 members; nearly half had three or more adults and none had less

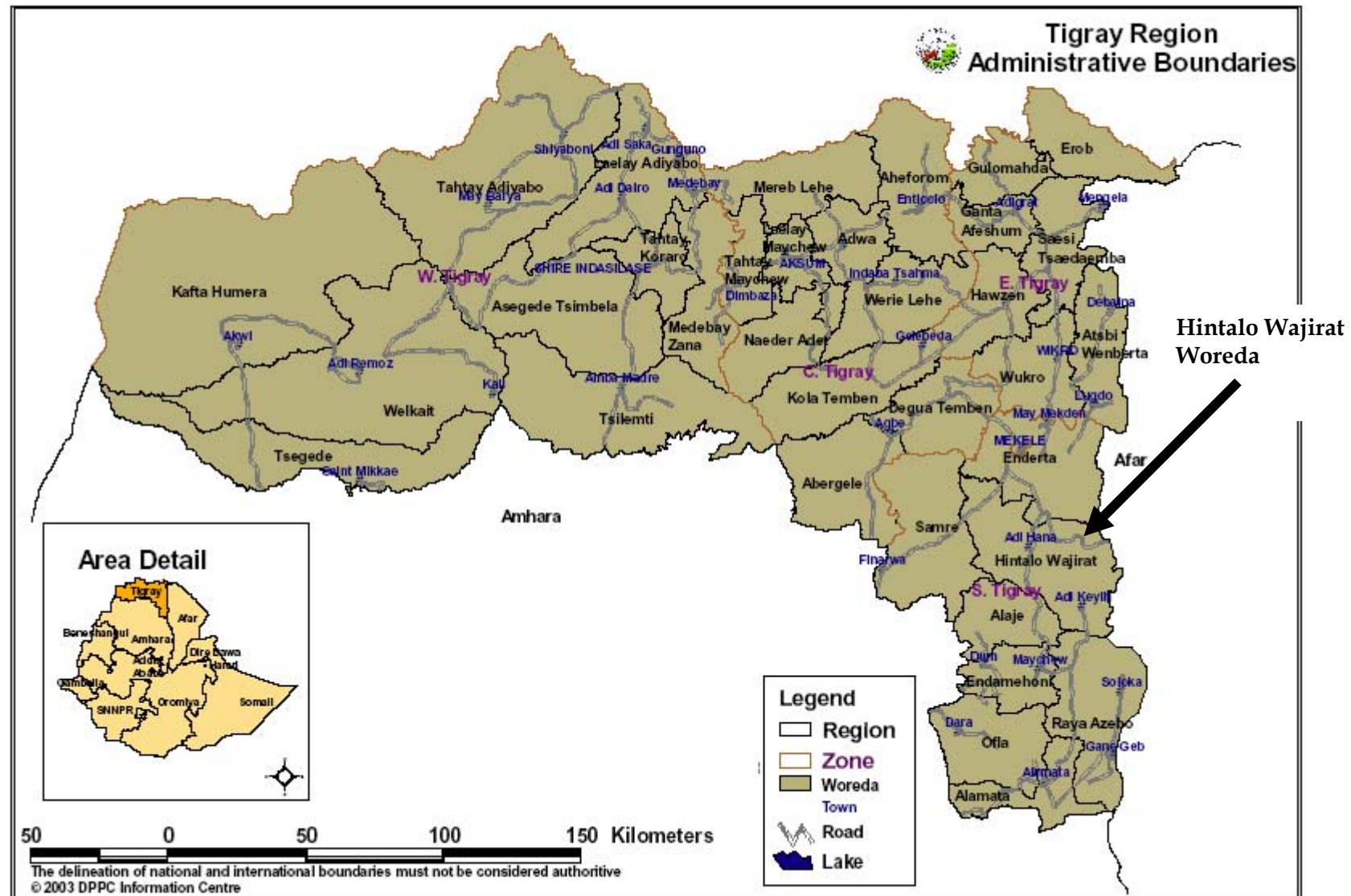


than two. The dependency ratio for all surveyed households was .97, but FH had on average higher dependency ratios, so the greatest burdens fall upon female heads.

All 15 male heads in the study were involved in a union and only one was previously married. Four of the female heads were single, and 13 had a first union that ended. The percentage of heads having own assets prior to marriage in general was low (less than 20 percent for land, 11 percent for a house, and 4 percent for livestock), as was the percentage who received land from their parents upon or after marriage, which was equal for men and women, although heads were more likely to have received livestock, particularly women. This is in line with what Fafchamps and Quisumbing (2004) found, that dowry, bride price and other ritual gifts account for only a small percentage of land transfers, but it does not reflect their conclusion that land and livestock that are inherited after marriage come primarily from the husband's family, or that daughters barely inherit anything from their parents. Interestingly, more female heads reported that they brought land into their marriage in comparison with male heads, although more men reported receiving land when they married their spouses.

One woman said that her union ended because her husband had entered the army and five stated that their last union ended due to death. Nearly 50 percent of the women heads have been married once, slightly more than a quarter had been married twice, and one had been married three times. Informants said that women who marry without a dowry cannot marry formally (with a contract), and their husbands easily abandon them for wealthier women. Keeping a concubine or having children by other women is another common phenomenon that leads to divorce. Upon divorce or widowhood, women interviewed in the study retained custody of all children but few (17 percent) said that they retained any of the household's land. The only divorced male head indicated that he kept the household's land and his wife's livestock. No woman reported that she obtained either the house or the trees belonging to the household, and only one woman said that she kept her husband's livestock; one said that she kept the household's cash savings. However, the data on how FH acquired their land reported in Section 5 show that a total of 53 percent of the plots that women heads possess are owned together with either their (ex) "spouse" or with an "original owner" who would be either a spouse or a parent, while 24 percent were obtained from "another" source, which is also possibly an (ex)spouse. This implies that, even though women are divorced or separated, they "own" land together, reflecting the traditional practice that was described by Hoben when discussing the rist system, where men allocate the use of a field to ex-wives who have children by him, who in turn sharecrop out the land. Or, it may imply that people see this land as "wife's rist", belonging to their husbands as long as they have minor children in common. Alternatively or additionally, it may reflect the contemporary de jure context: an arrangement where ex-spouses have not subjected their holdings to formal separation.

Graph 1 Map of Tigray and the Study Area



### 4.3 Health and education

Life expectancy at birth in the woreda is only 48.5 years. Tuberculosis, meningitis, malaria, diarrhoea, HIV/AIDS, and malnutrition are the leading causes of morbidity and mortality. According to REST, in 1998, 18.2 percent of the children under age five were wasted, 61.7 percent were stunted and 48 percent were underweight (FAO n.d.). In Ethiopia in general, it is estimated that one out of every 14 adults could be infected with HIV/AIDs. Tigray is one of the worst affected regions, partially due to a high number of sex workers.<sup>1</sup> This is particularly of concern given that two of the 15 female heads (13.3 percent) said that they had been sex workers and, given the poverty levels among FH, it is likely that prostitution was still under-reported.

Fewer than half of the surveyed households had latrines, where MH were nearly four times more likely to have one (73 percent) in comparison with FH. A health centre opened in April 2005, offering medical care, family planning, vaccinations, and HIV/AIDS testing for free. The majority of health problems are still treated with traditional medicine, either within the household or through specialized traditional healers. While people are beginning to use the new health centre, residents seem to have little knowledge about it.

One school in a neighbouring kushet provides education through grade eight; the nearest high school is 28 km away, and those wishing to attend must either relocate to the village or walk. Residents in some parts of the kushet have to walk two hours each way to attend the grade school. No fees are paid, but many families find that purchase of school materials is too costly. The survey showed that 80 percent of women heads had no schooling compared to only 27 percent of male heads, and that females have a strong educational disadvantage in comparison with males among all age groups, although the older the female, the higher the percentage that never attended school, which is not the case with males. When comparing educational levels between FH and MH, The study (n=101) showed a phenomenon that is quite striking: 45 percent of the people in MH never attended school in comparison with only 12 percent in FH. This might be due to the difference in age composition: FH have a higher proportion of younger children, and educational rates for all children have been increasing over time. However, primary school attendance in FH is higher both at the lower level (28 percent versus 22 percent) and especially at the upper (40 percent compared with 11 percent), whereas in secondary school, attendance is equivalent, at 20 percent. Especially 5-9 year olds from FH are more than twice as likely to attend in comparison with MH. Section 5 shows that, most FH are very disadvantaged compared to most MH, suggesting a greater propensity among female heads to send children to school.

### 4.4 Livelihoods

Officials reported that 98 percent of woreda residents derive their livelihoods from agriculture and livestock production, most of which is subsistence-oriented. The most important crops grown in the kushet are presented in the table below.

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<sup>1</sup> Relief Society of Tigray (REST), Health Division, October 10, 2000. A strategy for HIV/AIDS related interventions. Online at: <http://www.u-fondet.no/sw209.asp> (accessed 8 June 2006).

**Table 3 Principle Crops Grown and Area**

Crops Grown	Total Area (ha)
Barley ( <i>Hordeum vulgare</i> )	115.0
Wheat ( <i>Triticum vulgare</i> )	86.0
Teff ( <i>Eragrostis tef</i> )	40.3
Horse Bean ( <i>Vicia faba</i> )	25.5
Sorghum ( <i>Sorghum</i> spp.)	25.0
Peas ( <i>Pisum sativum</i> )	15.0
Chick Peas ( <i>Cicer arietinum</i> )	15.0
Flax ( <i>Linum ussitatissimum</i> )	10.0
Maize ( <i>Zea mays</i> )	10.0
Others	9.0

Source: Village officials.

There is a weekly market within the tabia with many vegetables on sale: more people are cultivating them for sale in addition to grain and legume crops, since their value is increasing. Within the kushet, 77 percent of the land is above 2500m. Rainfed cultivated land totals 350 ha, land quality is average, and the degree of erosion is “medium”. There are 61 ha of grazing land, 116 ha of woodlots, and 400.25 ha of land in other uses. River gullies encroach on farmland during the rainy season, leading many farmers to lose most or all of their land. Measures to mitigate this include construction of soil and stone bunds, although these are often washed away.

Until 2005, Adiarbaetu was relatively isolated from urban areas and from Mekele. A seasonal dirt road officially opened in March, connecting the kushet by a daily bus to the town of Adigudam and to Mekele. Before this, the only means of travel was by foot. Few people use animals for personal transport. Bus fare is unaffordable to most so they still walk to Adigudam (28 km) for the weekly market. With the new road, many expressed hopes of finding work and better market access.

The rainy season lasts from late May to September. There was a drought in 2003 and residents also considered 2004 as a drought year. Villagers repeatedly said that lack of water and drought are the primary cause of both food shortages and resource degradation. Several pumps and wells are scattered throughout the kushet and some houses have taps, but most residents use communal wells or purchase water. Those in more remote areas have to travel to retrieve water for themselves and for livestock. Water is a major constraint at higher and rockier locations, where people depend on communal wells, rivers, and rainfall. Water conservation measures have been introduced in more central areas, such as ponds, dams and irrigation. Ponds are hand dug, lined with plastic and covered with rocks to collect rainwater, and while many residents reported that they have made a difference, many appear to be dysfunctional due to a lack of plastic sheeting.

The number and extent of homegardens in the study area are very limited. The FAO project assumed that nutrition could be improved by increasing vegetable consumption and it also sought to promote homegardening as an income-generating activity, particularly as an alternative for those households with very little or no land

(FAO n.d.). However, there are currently only 106 homegardens within the kushet, which means that less than a third of all households have them. However, many of these are very small and cannot produce more than a few vegetables. Villagers cite water shortage and lack of land as the primary reasons for the absence of a homegarden, but other factors cited include poor soil, livestock destruction, and the inability to purchase seed.

Food-for-work has become “a way of life” in Tigray and in the study area, and over half of all households were reported to participate (Teshome 2003). Three kilograms of wheat are paid for work in soil and water conservation activities, and work in woodlots. Food aid recipients are also obliged to participate in cleaning their kushets, constructing public servants’ houses or maintaining rural roads for five days per month, and all community members must contribute twenty days of unpaid labour per year for public works (Teshome 2003; Jagger et al 2003). Some of this work is carried out through WFP and REST, but most is governmental (Teshome 2003).

## 5. HOUSEHOLD HEADSHIP AND LIVELIHOODS

### 5.1 Private land and its use

According to the household survey, landholdings in the kushet are very small and fragmented: households had on average only a third of a hectare which was dispersed across an average of 3.5 plots. Table 2 shows that two were landless, one of which was MH. FH held an average of 0.175 ha whereas MH had an average of 0.46 ha, for a ratio of around 3:1. Land allocation by the baito was supposed to be related to the number of household members. While there was some relation between size of household and total landholdings, this did not appear to be very strong, particularly for the majority of households which had 3-6 members, which may be attributed in part to the over-representation of FH in the sample. Since FH generally had higher dependency ratios, which are positively correlated with destitution, they are at greater risk of poverty and food insecurity.

**Table 4 Total Landholdings by Sex of Household Head**

Size* of Holding	MH		FH		Total	
	No.	%	No.	%	No.	%
Landless	1	6.7	1	6.7	2	6.7
.25 - < 1 Timad	2	13.3	4	26.7	6	20.0
1 to 2 Timads	2	13.3	7	46.7	9	30.0
2.1 to 5 Timads	6	40.0	3	20.0	9	30.0
> 5 Timads	4	26.7	0	0.0	4	13.3
Totals	15	100.0	15	100.0	30	100.0

\*One timad = 1/8 ha

FH in general had access to poorer quality soils: over half of MH plots had “good” quality compared with less than 40 percent of FH plots. More MH held plots with no slope, and only FH had baito allocated plots on steep slopes. More FH plots were within or very close to the home, reflecting the fact that they had fewer total plots and used a larger proportion for their homes.

Nearly two thirds of the plots to which households had access were owned by the head, whereas about 17 percent were rented or sharecropped in (Table below). MH were much more often sole owners: half of the FH owned plots together with the original owners (presumably mainly ex-spouses).

**Table 5 Tenure of Plots by Sex of Household Head**

Tenure of Plots	MH		FH		Total	
	No.	%	No.	%	No.	%
Head owns	47	74.6	13	40.6	60	63.2
Head & spouse own	0	0.0	2	6.2	2	2.1
Head & original owner	0	0.0	15	46.9	15	15.8
Head & tenant	0	0.0	2	6.2	2	2.1
Tenant	16	25.4	0	0.0	16	16.8
Totals	63	100.0	32	99.9	95	100.0

Only MH rented or sharecropped land in, whereas only FH sharecropped out (“head and tenant”). More than two thirds of all plots were allocated by the baito and another 23 percent were sharecropped or rented in, whereas only a small fraction was inherited: although purchases are not legally permitted, 4.3 percent were purchased. Ninety percent of all FH plots were acquired by the head, but these may have been obtained through divorce. Only seven percent of MH plots were acquired by the wife, and only 13 percent of the plots were acquired by the head and his wife through the baito. Male heads alone acquired more than half of all plots, usually either through the baito or by sharecropping. A much larger proportion of FH plots were allocated by the baito, although inheritance was still important.

**Table 6 Reasons for sharecropping land in and out by sex of household head\***

Reasons Given	MH		FH	
	No.	%	No.	%
For sharecropping land in				
To have more land to cultivate	17	100.0	0	0.0
For sharecropping land out				
Women cannot plough	-	-	6	22.2
Does not have oxen	0	0.0	10	37.0
Cannot afford fertilizer	0	0.0	5	18.6
Interferes with off-farm activities	0	0.0	5	18.6
Plot is too distant	0	0.0	1	3.7
Totals	17	100.0	27	100.1

\*Percentage of reasons given; multiple responses accepted.

In summary, women in MH barely reported receiving land from the baito since plots were mostly registered in the name of the male head (77.5 percent of the plots). This supports the conclusion that divorced female heads who reported that they received land from the baito actually received this land from their ex-husbands that had been allocated to him through the baito, which would also explain the high percentage of FH plots that are co-owned. Since the baito does not generally interfere in land allocation upon divorce, land that FH access probably continues to be registered in the names of their ex-husbands.

It could be supposed that the importance of baito allocated land in households’ asset portfolio tends to reinforce egalitarianism in decision making between men and women within the household since, even if land is registered in the head’s name, legally the land pertains to individuals. In MH, irrespective of who acquired the plot, the vast majority of heads said that they and their wives both make decisions about what to cultivate, about giving away a plot of land, and about renting or sharecropping out a plot.

Slightly fewer than half of the MH sharecropped land in (table above) shows that all reported that they did so in order to gain access to more land to cultivate. All had at least 3.5 timads of land and three had more than five. Slightly more than half of the FH sharecropped land out for various reasons, most of which revolved around oxen: either lack of access to oxen, prohibitions against women ploughing, or lack of access to dung (fertiliser) which could be provided by oxen, together with the incapacity to

purchase fertiliser. Several women also reported that cultivation interferes with other non-agricultural activities. Nevertheless, the study showed that the majority of women still participate in cultivation and post-harvest activities when their land is sharecropped out. Of all FH with land, only one FH ploughed and carried out all other agricultural tasks alone. Two thirds depended on male sharecroppers for most labour, while the rest used either hired or “other” males to plough, presumably mainly ex-husbands. Three-quarters of MH sharecropped in land belonging to people who were not kin, while a quarter sharecropped land in from kin, probably their ex-spouses. Most FH entered into relations with non-kin, but 29 percent sharecropped out to kin, also possibly their ex-husbands.

Several women heads provided additional information that illuminates the diversity of their land use strategies even in such a small sample, and shows that these depend on factors such as kinship relations, exchange of resources, and own inventiveness and initiative. One woman said that she sharecrops out to another woman, which indicates that FH that do not have severe resource restrictions try to increase their agricultural production capacity. Another woman sharecropped out one of her plots because it is located three hours away. Of those who do not sharecrop out, one relies on her father to provide her with the necessary services, and she in turn gives him her crop residues. Another woman purchased her house and land. She exchanges crop residues with the man who ploughs her land and hires men to do part of the agricultural work. One woman planted eucalyptus on one plot sharecropped out the others.

**Table 7 Land Use by Sex of Household Head**

Land Use	MH		FH		Total	
	No.	%	No.	%	No.	%
Cultivated	50	78.1	24	75.0	74	77.1
Grazing	1	1.6	0	0.0	1	1.0
Fallow	1	1.6	0	0.0	1	1.0
Permanent	8	12.5	6	18.8	14	14.6
Homegarden	4	6.2	2	6.2	6	6.3
Other	64	100.0	32	100.0	96	100.0

Because FH and MH had different land endowments, and because of the constraints that FH faced in accessing male labour and other farming-related assets, they used land differently. The table above shows that nearly 80 percent of all plots were used for cultivation, followed by permanent crops (mainly eucalyptus). A larger proportion of FH had plots in permanent crops, but two rented their land and were not permitted to use the trees; not counting these households, the proportion of MH and FH plots in permanent crops was equal. Only one MH had any grazing land and only one had land in fallow, which indicates land scarcity.

The use of crop residues for fodder and fuel has a deleterious effect on soils. All households used their harvested crop residue for fodder. Crop residues were harvested from 48 percent of MH plots versus just 28.5 percent of FH plots, which may in part reflect the fact that sharecroppers retained the residue from plots that FH sharecropped out. MH harvested 87 percent and FH only 13 percent of total residues. While all residues harvested by MH were used for fodder, FH used them for fodder or “other uses” (other than fuel or thatch, which were the alternatives), probably exchanging them for ploughing services, where they were then subsequently used as fodder.



Soil conservation measures had been implemented on 70 of the 95 plots, including 84 percent of MH plots (most of which were bunds), and 56 percent of FH plots. Water conservation measures (consisting nearly entirely of ponds) were implemented less frequently, on 68 percent of all plots, including 75 percent of MH plots, versus 56 percent of FH plots. A few women heads said that they had begun to dig ponds but were unable to complete them due to lack of time and strenuousness of the labour. FH also probably implemented soil and water conservation measures less frequently than MH because much FH land was occupied by their homesteads rather than cultivated. In MH, both soil and water conservation measures were implemented mainly by husbands and wives together, whereas FH implemented them alone, so overall women predominated in on-farm conservation efforts.

## 5.2 Crop production and its distribution

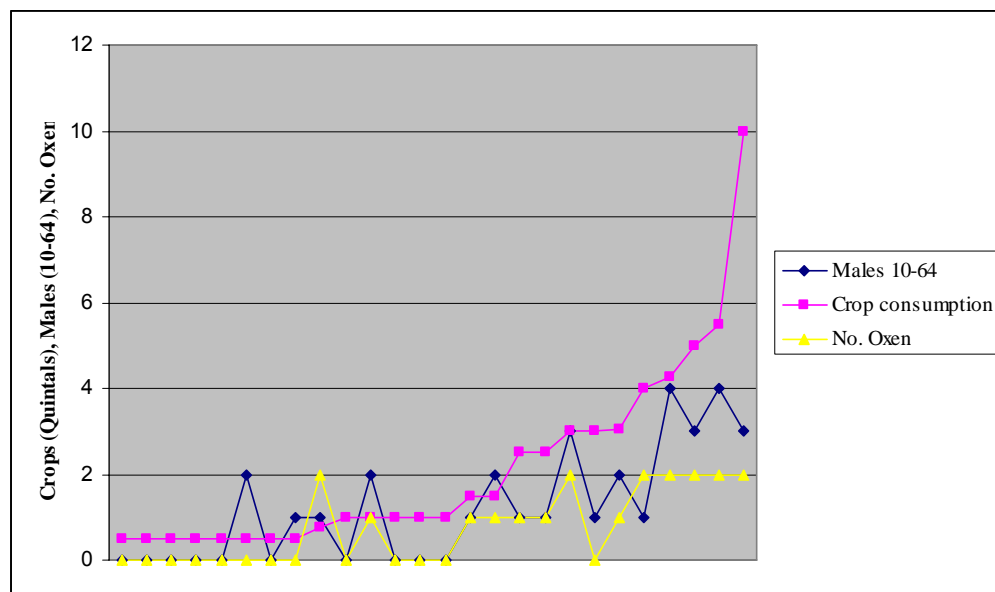
Most surveyed households had access to land and produced crops, although a few only had trees. Crops were produced only in the rainy season (meher). The 28 landed households planted an average of slightly less than 2.5 timads to a maximum of four crops. In the study, more than 75 percent of FH planted 1.5 timads or less, compared with only a fifth of the MH. FH and MH also had very different cropping patterns: FH planted 81 percent of the area to wheat, while MH planted 38 percent, followed in area by barley. Teff, the most preferred staple crop, requires high labour inputs and has low yields. Only one FH planted a small land area to it, whereas 22 percent of MH land was planted to it. While some 58 percent of all MH planted three to four crops (teff, barley, wheat, and sometimes peas), two thirds of FH planted only wheat, and 14 percent planted wheat and barley. The differences in cropping patterns between FH and MH arise because the total land area planted to crops differs: 36 percent of FH produced on 75 percent or less of their total holdings compared with only 7 percent of MH.

The differences in area cropped and crop combinations were also reflected in differences in own crop consumption. Only two households sold crops: one was the woman who had the most land of all FH (3.5 timads), who earned 100 birr (US\$ 11), and one was a MH with less land, who earned 60 birr (US\$ 6.60). All other production was either for own consumption or for sharecroppers. Two thirds of MH consumed more than 1.5 qq compared with only one FH, who also had the most land; more than 90 percent of landed FH consumed 1.5 qq or less, compared with 36 percent of the MH. More than half of the FH consumed .5 qq or less, compared with none of the MH. MH's average wheat and teff consumption was more than two and a half times that of average FH's consumption, and barley consumption was nearly four times as high. Consumption levels were also cross-tabulated with dependency ratios. Those with the highest consumption (> 3 qq) had ratios of 1.0 or less, while, of those with a ratio above 2.0 (where the number of minor children is much higher than the number of working age adults), nearly 60 percent consumed one qq or less.

Factors that may explain the distribution of crop consumption is the amount of male labour in the household (in this case, between 10 and 64 years old), and the number of oxen owned by the household. Graph 2 shows, on the basis of this very small sample, greater access to male labour was not strictly related to household crop consumption, but neither was oxen ownership: such relations appear to hold only at the highest and

lowest levels of consumption and, at these extremes, they appear to be of equal importance. It appears that there is a positive relationship between the amount of male labour, number of oxen owned and crop consumption, but sharecropping among FH means that neither are absolutely necessary, since oxen and male labour can be hired in. For example, the lack of oxen did not prohibit landowners from consuming own crops, but all households that consumed the least (50 kg) owned no oxen, as did more than two thirds of those who consumed only 75-100 kg. However, owning oxen does not mean that crop consumption is always high: 33 percent of households with two oxen consumed between 75 and 300 kg of own crops.

**Graph 2 Crop Consumption by Male Labour Availability and Oxen Ownership**



FH consumed far less both due to the lower amount of land that they cultivated and the lower proportion of land that they used for crop production, as well as their lower overall access to male labour and lack of access to oxen that are discussed elsewhere in this report. The table below shows that half gave up 50 percent of their crop to sharecroppers, including more than 80 percent of those who consumed one qq and all of those who consumed two. Of the seven FH that did not sharecrop out, three consumed only half of a qq. The sharecropping relationship is obviously necessary for many FH who have neither male labour nor oxen, but it is certainly not advantageous.

**Table 8 Total Crop Harvest of Female Headed Households and Share of Harvest for Tenants (n=14)**

Total Share for Tenant/ Total Harvest	None		.5 qq		1 qq	
	No.	%	No.	%	No.	%
.5 qq	3	42.9	0	0.0	0	0.0
1.0 qq	1	14.3	5	83.3	0	0.0
1.5 qq	1	14.3	1	16.7	0	0.0
2.0 qq	0	0.0	0	0.0	2	100.0
3.0 qq	1	14.3	0	0.0	0	0.0
Totals	7	46.7	6	40.0	2	13.3

### 5.3 Livestock production and its distribution

Apart from oxen ownership, livestock provide milk, meat, eggs and other products for own consumption as well as income, and a financial buffer in times of stress. Livestock ownership entails many risks, and livestock morbidity and mortality are reported to be high. The lack of feed is the most serious constraint. In the study sample, large livestock, oxen and donkeys were by far the most prevalent (27 percent and 21 percent, respectively) although all other types of cattle together (calves, bulls, heifers, cows) represented 31 percent. Small ruminants represented 21 percent, and goats were more prevalent than sheep. Of MH, 20 percent owned no oxen, a third owned one ox, and 47 percent owned two. MH had on average 1.2 oxen; across the 30 households, the average was .66. The differences between MH and FH were very strong and correspond to that found across other highland areas (Sharp et al 2001): not considering chickens, MH owned a total of 71 head versus FH's total of four head. MH even owned four times as many chickens.

When it comes to the distribution of Tropical Livestock Units (TLU), two thirds of all FH in the study sample had less than .5 TLUs compared to none of the MH. Feed requirements are related to TLUs, so it can be seen that only half of MH had quite significant needs for feed, whereas only one FH had such a need. There was no clear relation between farm size and TLUs. For those with >5 timads, two had only 1-2 TLUs, one had 2.1 to 5 TLUs, and one had more than 5 TLUs. For those with .25 - <1 timad, two had 1-2 TLUs. Farm size does not determine the number of larger livestock held because animals are not grazed on farmland although, with larger farm size, more crop residues can be produced and more cash is available to purchase and maintain livestock.

**Table 9 Distribution of TLUs by Sex of Household Head**

TLUs	MH		FH		Total	
	No.	%	No.	%	No.	%
.01 to .5	0	0.0	2	66.7	2	11.1
1 to 2	7	46.7	0	0.0	7	38.9
2.1 to 5	4	26.7	1	33.3	5	27.8
> 5	4	26.7	0	0.0	4	22.2
Totals	15	100.0	3	100.0	18	100.0

**Table 10 Sales, Income and Consumption of Animal Products**

Livestock Product	MH		FH		Consumed	
	No. HHs	Total Income	No. HHs	Total Income	No.	% HHs
Milk/cream	1	20.0	-	-	5	16.7
Cheese/yoghurt	1	526.0	-	-	1	3.3
Hide/skins	5	103.5	-	-	-	-
Meat/offal	0	-	1	66.0	10	33.3
Dung cakes	0	-	0	-	-	-
Eggs	5	98.0	1	20.0	8	33.3
Wool	0	-	0	-	-	-
Hiring out oxen	2	100.0	-	-	-	-
Totals	14	847.50	2	86.0	24	-

Questions were posed regarding intra-household control over livestock in MH. Heads generally reported that decisions about larger livestock are taken jointly, even in the case of oxen, particularly in relation to who can sell or give away larger livestock and who can keep any offspring. But, when live animal sales are considered, the picture changes significantly: in the case of oxen, calves, heifers, cows, goats and donkeys, two thirds to 100% of all male heads said that they would be the sole recipients of the proceeds. As long as larger livestock belong to the household they are seen as joint property but, when they are sold, benefit streams go to the head, who considers himself to be largely responsible for these animals. Women's predominance is in chicken-raising alone.

The majority of livestock purchased and sold over the previous 12 months were oxen and goats, with oxen representing nearly 50 percent of sales and goats 60 percent of purchases. Cow and sheep sales were the next most important market transactions. Goats were obviously purchased for consumption, and represented 83 percent of all larger livestock consumed. Sheep were much less frequently sold or consumed. FH were responsible for a tiny fraction (7 percent) of all larger livestock purchases: only one FH purchased an ox. The inequality in consumption of live animals is also striking: only MH consumed or and sheep. Table 10 (above) shows that, of animal product sales and consumption, eggs represented 11 percent of the total income from livestock products, where only one FH sold eggs, and one sold chicken meat.

Only MH sold milk, products, and one alone earned 59 percent of all income earned by all households for these products. Hides and skins, and hiring out oxen, represented 27 percent of the total sales and were exclusively sold by men in MH. The data clearly ratify FH's disadvantages with respect to livestock ownership and the consumption and income benefits that are derived, but even relatively few MH earned much income from livestock products.

#### **5.4 Trees and homegardens**

Many households appear to be planting as many trees and other useful perennials as possible on whatever land they own. In the study sample, more than 80 percent of all households had trees, although nearly a quarter had five or fewer. Slightly more than 20 percent had 26 or more, and three had what may be termed "plantations", in excess of 50 trees. Two MH had planted all of their land to trees. Eucalyptus spp. clearly predominated, particularly a red gum variety. Other species were cypress (*chihidi* - *Juniperus procera*?; *Cupressus* spp.?) and *achachea* (*Acacia* spp.), *tebele* (unknown), *hahote* and *kokola* (*Euphorbia abyssinica*?), all of which were self-sown rather than planted. The most common use of these trees was for construction (70 percent) and fuel (51 percent), followed by medicine (39 percent).

There is no clear positive relationship between the amount of land owned and the number of trees. For example, one household with less than one timad planted all of it to trees, as did one household with less than two timads, which had a total of 500 trees. Two thirds of all trees were planted on farms of less than two timads. More limited land access may encourage tree planting since this may be the only way to earn sufficient income from such limited land resources, but it is not clear how these households subsist while waiting for these plantations to mature. In the study sample

MH were far more likely both to own trees and to have a higher number of trees than FH. A third of FH had none and nearly 90 percent had fewer than six, compared to only 20 percent of the MH found in these two categories. Only two FH had more than six trees and the maximum was 25, compared to eight MH with more than 25 trees each. Moreover, some FH reported that they did not own the trees since they rent land, and could not use them other than for medicine. All MH owned the trees found in the homestead.

**Table 11 Number of Trees by Sex of Household Head (n = 30)**

Total Trees	MH		FH		Total	
	No.	%	No.	%	No.	%
None	2	13.3	5	33.3	7	23.3
1-5	1	6.7	8	53.3	9	30.0
6-10	2	13.3	1	6.7	3	10.0
11-25	2	13.3	1	6.7	3	10.0
26-50	5	33.3	0	0.0	5	16.7
51-100	1	6.7	0	0.0	1	3.3
101-500	2	13.3	0	0.0	2	6.7
Totals	15	100.0	15	100.0	30	100.0

Within MH, tree ownership is perceived to be joint. This may be related to the fact that nearly a third had recently planted their trees, which do not yet yield products. As with livestock, it may be that men consider their wives to be joint owners but will keep the proceeds from sales themselves once these become significant. Nevertheless, the concept of joint land ownership appears to extend to trees growing on that land. In all MH where it was reported, both husband and wife together decided to plant the trees. This is extraordinary with respect to Sub-Saharan Africa, where tree planting is usually a male privilege related to land ownership.

Turning now to homegardens, elders reported that they were not prevalent in the past because the area was too dry but, where households had better access to water and, during the rainy season, women managed gardens in their backyards. Particularly cabbage, lettuce, carrots, fenugreek, and *sasug* (*Ocimum basilicum*?) were grown solely for home consumption because the plots were small, although, if there was a surplus, this might have been sold. Other focus group participants said that, prior to the FAO project (around five years ago), those with land near rivers began to grow vegetables for the market. The number of homegardens has since increased. They said that men's involvement has risen considerably since irrigation pumps and important marketable crops have been introduced, and some of the new homegardens are ploughed by oxen instead of prepared by hand. However, as gardens have increased in size and number, men are said to be taking a large and, in many cases, dominant role in their management, because high value products are now produced. Researchers observed men working in homegardens far more often than women. However, the data reported in the Household Survey do not support these impressions.

Only 43 percent of the households had homegardens of any size, all but one of which pertained to MH (92 percent). Eight female heads said that they do not have a homegarden because of insufficient land access. Two others said that soils are too poor, and two reported water as the limiting factor. Several indicated a strong desire to have a homegarden. One woman told her story, which is worth recounting. Fifteen

years ago, Teresa (pseudonym) planted eleven eucalyptus trees for fuel, construction materials and medicine. Food-for-work officials told her to dig a well, which she could not finish because the work was too hard. They told her that she could not get the seed she wanted for her homegarden because she did not finish the well. In any case, her soil is too poor and, without the well, she Does not have enough water even for her domestic needs. She planted *gesho* (African dogwood - *Rhamnus prinoides* L'Herit) in her yard but the livestock ate it; she sold the livestock to send her children to school. She grows *ba-erir* (unknown) that she transplants from the wild, using it against the evil eye and as a fumigant.

Only one male head reported that he does not have sufficient land for a garden, although he also said that he had planted 35 eucalyptus trees. Some heads access a cooperative garden and another rents land for his wife's homegarden. One said that he and his wife earned 1500 birr (US \$165) from homegarden produce last year, but there was as yet no production this year since the rainy season had not started. Nevertheless, he and other households reported that all of the crops harvested in the past 12 months were consumed. Only a few species were grown in the surveyed households: the maximum in any one garden was eight. Two households grew only one species, whereas three reported growing six or more: the bulk (62 percent) produced two to five. No physical surveys of homegardens were carried out, which would have yielded higher species diversity since respondents underreported native, wild or spontaneously growing species. Onions, cabbage and garlic were the most common, whereas lettuce, tomatoes, potatoes, carrots, cumin, green pepper and beetroots were less common. All were exotics except *gesho*.

As regards the gender and age division of labour in homegardening in the study sample, results are for MH only, since only one FH had a garden where she performed all asks together with her son. Women or girls participated in all homegarden tasks, although men were more involved in seed procurement and may have done this alone, whereas wives and daughters were more likely to cultivate and harvest alone. The assertions that homegardens are a predominantly male domain due to increasing commodification does not hold among the surveyed households, since not only were homegarden tasks generally shared, few or no households sold homegarden produce.

## 5.5 Off-farm employment and livelihoods

In the study sample, nearly two thirds of male heads reported own-account farming as a primary occupation while another 20 percent reported it as a secondary occupation; for another 13 percent, paid farm labour was the primary occupation. Nearly half of male heads had either trade or food-for-work as secondary occupations, while another third had other secondary occupations and 20 percent reported no secondary occupation. In sharp contrast, only 13 percent of female heads reported farming as a primary occupation, whereas none reported it as a secondary occupation, and none reported paid farm labour as an occupation. Women heads were more diversely occupied: aside from the four that reported either own-account farming or housewife as primary occupations, 40 percent had unique primary occupations, where 33 percent sold *tela* (a fermented drink made from grains such as wheat, barley, sorghum and *gesho*). One woman reported that she works as a prostitute, and another said that she did so until recently. Regarding secondary occupations, grain milling was reported by a third of all women heads, and 20 percent reported food-for-work. Wives were quite

different: they reported that their primary occupation was either housewife or “domestic servant”, where the latter may be taken quite literally to mean paid servants within their own households (depending upon their marital contracts), or it may mean simply that this is how they see their function. They reported a more diverse set of secondary occupations: 43 percent are farmers or family farm workers, followed by food-for-work (29 percent) and selling tela (14 percent). Children and other household members did not engage in any own-account or off-farm income generating activities. Men’s participation rate in off-farm activities was higher than women’s (62 percent versus 57 percent, respectively). Women in the study sample performed 73 percent of the total of 51 activities, which is high partly because FH were over- represented in the sample. Wives generated cash in only 60 percent of the MH, whereas female heads generated cash in 80 percent of the cases.

**Table 12 Income Generating Activities by Sex**

Activity	Female		Male	
	No.	%	No.	%
Production & sale of garden produce	1	2.7	0	0.0
Trade in grains & pulses	1	2.7	3	21.4
Transport by pack animal	0	0.0	1	7.1
Trade in livestock	1	2.7	2	14.3
Spice and aromatic collection & trade	1	2.7	0	0.0
Preparation and sales of drinks	11	29.7	0	0.0
Food or tea preparation and sales	1	2.7	0	0.0
Basket making	1	2.7		
Prostitution	2	5.4	0	0.0
Domestic work	1	2.7	0	0.0
Nursery work	0	0.0	2	14.3
Food-for-work	17	45.9	6	42.9
Totals	37	100.0	14	100.0

All but one household (headed by a disabled woman) generated off-farm income. Women principally earned income by using their domestic skills and capital, where home-garden production, food and drink preparation and sales, domestic work, and prostitution constituted 43 percent of the activities, while food-for-work constituted another 46 percent. Trade represented eight percent of women’s activities and 36 percent of all male activities. For men, food-for-work was as important a source of income as it was for women, particularly when it is considered that nursery work is also a type of food-for-work, since it is paid in food.

With a few exceptions, the study reported that income earned was generally low. Only 18 percent earned 20 birr per day or more. Nearly half (46 percent) earned the equivalent of 15 percent or less of the socially accepted minimum daily wage for unskilled workers, of which 77 percent were women. Of all working women, 72 percent earned 10 birr per day or less (30 percent or less of the minimum wage), compared with only half of male workers. Women constituted three-quarters of those who earned only .01 to 5 birr per day, and 40 percent of those who earned 20-60 birr. The preparation and sales of “other drinks” (mainly tela) provided a substantial amount for a few women: while two earned less than 5 birr/day, and most earned 6-10, some earned above 20 birr, although this may actually be related to the

commercial sex trade, since such services are often provided when men come to women's homes for tela.

The use of wild plants in income generation was reported in at least two activities (collection and trade of spices and aromatics and basket making), representing 5.4 percent of all of women's activities. However, in another part of the survey, another woman head reported that she retails *kofkaf* (unknown) and *ba-erir* once per week year-round for five birr per week, and she sells *medaf talien* (a seed from *Argemone mexicana*? which is made into an oil used to smooth injera stove tops) for two birr per week during the dry season. The woman head who reported basket making as an income generating activity specializes in it, working 80 days in the past four months to generate 400 birr in total (five birr per day). Another woman head trades in spices and aromatics which is probably based on wild plants, but this generates only a small amount of income (less than 5 birr/day). Yet another woman reported that she specializes in an aromatic plant, ba-erir, which she transplants from the wild. Thus, at least four women generated a substantial portion of their income from wild plant resources.

Tela production and sales was by far the most prominent income earning activity for female heads. Its prominence is not due to its income earning potential, since most women reported earning little more than a few birr per week. Rather, it is one of the only income earning activities that can be done entirely at home, which is crucial for FH who have small children. While a few women openly discussed prostitution with researchers, its prevalence is probably far greater than what was revealed. As one woman head, who is also a leader of the women's association, stated:

*We know that (and the government says it too) women should not have relations with men [prostitution] because of AIDS. But we don't have any income and they don't give us any alternatives so what are we to do? If they don't want us to do this, they need to give us an alternative that will work for us to support ourselves.*

## 5.6 Community work (including Food-for-work)

The Ethiopian government sponsors food-for-work programmes in vulnerable drought and famine-prone woredas. Several national and international agencies also sponsor community work programmes that are remunerated mainly in food. Two thirds of the surveyed households participated in such work programmes over the twelve months prior to the survey. A total of 2087 days were invested, for an average of 104 per household, or the equivalent of 0.33 of a full-time job per household. However, this varied from a minimum of six days, or 0.02 fte, to a maximum of 270 days, or 0.9 fte. Men worked almost exclusively in the official government food-for-work programme whereas a total of four women worked in activities sponsored by other programmes, all of whom were female heads of household. Women participated less in tree planting and nursery work, and more in road building and maintenance and irrigation activities.

What recipients did with their in kind earnings differed little: 75 percent of MH consumed it, as did 82 percent of FH, indicating that the need for cash was not higher than the need for food in either type of household. The total number of days worked



in MH was 1523 compared to 567 for FH, for a ratio of nearly 3:1, with an average of 101.5 days for MH and 40.5 days for FH. When disaggregating by sex, the study showed that more women (about a third) worked 30 days or less, compared to only 10 percent of men. Women in MH performed 50 percent of the total work days in food-for-work and averaged 69.8 days in comparison with men's average of 75.5 days. Women in MH worked fewer days than women in FH, who worked on average 51.5 days. The greater labour power available in MH not only permitted substantially more time investment in food-for-work overall, but as well a greater investment on the part of women.

## 5.7 The gender of livelihoods

FH had on average far less land than MH and can be considered to be seriously land deprived. The quality of FH's land also tended to be lower. Given lower land access, a greater proportion of FH's land was occupied by the homestead. The data tends to support the conclusion that the land that FH reported as baito-allocated was actually allocated to them during their marriage and registered in the husbands' names: upon divorce, the households' baito land was unequally divided, and women obtained the worst. More than half of FH sharecropped land out, mostly for reasons that revolve around oxen. While FH were much more dependent on non-household male labour to produce, most still performed agricultural work, both in cultivation and in post-harvest activities. It seems that many FH sharecrop land out to their ex-spouses. Thus, achieving greater equality in land access for FH would mean that baitos must register land in women's names and must become involved in divorce settlements to ensure equality of land division.

The benefits of agricultural production were therefore on average much lower for FH. FH had higher dependency ratios on average so they are at greater risk of poverty and food insecurity. Of those households with dependency ratios above two, 60 percent consumed less than one qq of their own crops whereas those with ratios of one or lower consumed three times as much. FH owned only a very small fraction of the livestock that MH owned. Livestock consumption was correspondingly highly unequal. Lack of land access and secure tenure also limit FH's ownership of trees and the benefits derived. More than 90 percent of all homegardens likewise pertained to MH: FH were unable to maintain homegardens due to lack of access to land and water, and poor quality soils.

Unsurprisingly, only 13 percent of FH reported farming as a primary occupation and none reported it as a secondary occupation. FH earn most of their living from tela production and sales, prostitution, grain milling and food-for-work: 80 percent of all female heads reported off-farm income generation activities of this ilk. Without viable alternatives, women heads become commercial sex workers and it is likely that the incidence of this activity was under-reported. The greater labour power of MH not only permitted substantially greater time investment in food-for-work. Nor did FH report receiving in kind or in cash contributions that would appear to be alimony or child support: only one FH received a government pension. FH strategize to survive and improve their livelihoods by making maximum use of the resources at their disposal. More often than MH, they invest in the future by sending their children to school, and elsewhere (Howard and Smith 2006) it is reported that they are also more likely to save and are equally as likely to take out loans and repay them. They try to

avoid sharecropping out land by exchanging crop residues and hiring labour, and to best utilize the land that they do not sharecrop out, e.g. by planting trees. Lacking formal education, and being largely unable to access formal labour markets, they mobilize their domestic skills to add value to what they produce, e.g. processed food and drinks. They procure as much food as they are able through food-for-work, and as much income as possible using wild plant resources. But, as indicated above and elsewhere in this report, their constraints are nearly overwhelming, and their situation is often very precarious.

The position of FH has its roots in the position of women more generally in highland culture, reflected not only in inequalities of asset division upon divorce and widowhood, but also within marriage. Wives barely acquired land from the baito in their own names. While production decisions appear to be relatively egalitarian, men appear to control the lion's share of income generated from joint assets. Wives consider themselves as housewives or "domestic servants", and only half reported farming as a secondary occupation, which reflects their status in the household as servants and farm helpers. While 60 percent of wives did generate income, they usually earned less than five birr per day. Wives barely received credit, which was largely a male prerogative, and male heads were the only ones who had any savings (Ibid.). Wives are better off than their FH counterparts in terms of overall access to assets and labour and to the benefit streams that derive from these, but their access obviously depends on their husbands, and marriage is a fragile institution indeed in Tigray.

## 6. COMMON PROPERTY RESOURCES, HOUSEHOLD HEADSHIP, AND LIVELIHOODS

### 6.1 Common land areas in Adiarbaetu

Adiarbaetu has eight communal land enclosures (AE), three of which are enclosed year-round, and five of which are seasonally enclosed. Many common land areas do not appear in the table below because they are open year-round or are used by the tabia as a whole. Permanent AE, such as the Arara forest area, were created for environmental protection and regeneration. The two tables following (13 and 14) show that most tabia AE are associated with cattle grazing and only limit livestock access and grass collection. Most seasonal AE are managed at the tabia level, and most permanent AE are managed by outside Organizations, such as REST. The community elects all guards. Volunteer guards are paid in grass, and paid guards are paid out of fines. The community is consulted before new areas are enclosed and there have been times when an area was proposed for enclosure and was left open after the majority opposed. In general, the community supports AE even though they make their access to certain resources more difficult. The environmental benefits of AE are clearly and fairly quickly visible, and this is what is highly appreciated: as one woman said, “If there were no enclosures, the environment will increasingly deteriorate, and this will affect us more.”

**Table 13 Area Enclosures in Adiarbaetu**

Common Land Area	Type of Area	Area (ha)	Enclosed	Date of Enclosure	Managed By	Grazing Status
Mutmak	Grazing, hillside, forest	15	All Year	2004	WFP	None
Mihiradha'a	Grazing	39	Seasonal	Before Derg	Tabia	Seasonal
Gerib Ede	Grazing	36	Seasonal	Before Derg	Tabia	Cut & carry
Kisadmahla	Hillside/ grazing, woodlots	63	Seasonal, All year (woodlots)	2003	Tabia, REST (woodlots)	Seasonal, cut & carry (woodlots)
Gomata	Woodlot	5	All year	2005	Tabia	None
Amhareto	Hillside	105	All year	Before Derg	Tabia	Cut & carry
Arara	Hillside forests, woodlots	61	Seasonal, All year (woodlots)	Before Derg, 2005 (woodlots)	Tabia, WFP (woodlots)	Seasonal, cut & carry (woodlots)
Baharat	Hillside, Forests	105	Seasonal	Before Derg	Tabia	Seasonal

In addition to the AE, restrictions that apply only to woody species have been created at regional level and are also effective in Adiarbaetu. They were developed about ten years ago and have become more strict and numerous over time. Species restrictions apply to all common land areas, regardless of whether they are open or enclosed, but not to private property. There are two categories of restriction: species that cannot be cut for any reason and those that can be cut only with permission. In general, species

restrictions are enforced by local DAs assigned to checkpoints. However, as is the case with AE, the community at large enforces many of the regulations. Violations can result in heavy fines or imprisonment. Nevertheless, many residents are disgruntled about the species restrictions. They did not have a say in their creation and, while many can see the environmental benefits, they also emphasize the negative effects for their livelihoods and well-being.

### *Grazing lands and grass*

In Adiarbaetu, grazing lands are used to feed livestock both through direct grazing and through grass cutting. Grass provides thatch for roofing and basket making, and for the culturally important coffee ceremony. According to one resident, in the past “This kushet was full of grass up to our thighs and we had many marshy areas. It was so thick in places we would often struggle to walk through it. Now these grasslands have changed into settlement areas.” Five of the eight AE are closed from July to October to allow grass to regenerate. Besides these, there are a few other grassy areas that are used primarily for grazing (“open grazing land”), but most other common land areas are also used. Some of the permanent AE are used to collect grass at certain times of the year through a cut and carry system. Officials said that grazing and illegal grass cutting are the most frequent violations in the kushet and occur particularly in areas that are seasonally enclosed. Grasses used for basket making and thatch require longer growth periods, so they are difficult to find in open areas and are mainly harvested from AE. Certain AE are opened on specific days before being opened for grazing to permit grass cutting for baskets and thatch.

**Table 14 Permissible Uses of Area Enclosures**

Common Area	Permanent Enclosures	Seasonal Enclosures	
		Open	Enclosed
Grazing Land	Medicinals Aromatics Wild Food Fuelwood	Grass Medicinals Aromatics Wild Food Fuelwood	Medicinals Aromatics Wild Food Fuelwood
Woodlots	Medicinals Aromatics Wild Food Bee Hives	N/A	N/A
Forests	Medicinals Aromatics Wild Food Bee Hives	Grass Medicinals Aromatics Wild Food Bee Hives	Medicinals Aromatics Wild Food Bee Hives
Hillsides	Medicinals Aromatics Wild Food	Grass Medicinals Aromatics Wild Food Fuelwood	Medicinals Aromatics Wild Food
Churches	Medicine Wild Food	N/A	N/A

In the study sample, only 40 percent of the surveyed households used restricted grazing land for any purpose in the 12 months prior to the survey, two thirds of which were FH. Only 17 percent of the households reported that they used the areas for grazing.<sup>2</sup> The majority of other uses were grass-related, so grass constituted 87 percent of all uses. They were also occasionally used to collect a few medicinal and wild food species, but they were not used for construction or fuelwood since they contain few woody species. More women (59 percent) than men (41 percent) used these areas. One household reported using restricted grazing land the equivalent of every other day of the year, whereas another reported using it only one day per year; the average of all days reported divided by all households reporting use was 58 days per year.

A much larger percentage of households (more than half) used “open” grazing land, but here FH represented only 37 percent. Female users still outnumbered male users by 2.5:1. Open grazing lands were used quite differently than restricted grazing lands, and they are used far more frequently, which is not surprising given that they are open year-round and many more hectares are involved.

Grass was collected for coffee ceremonies but not for thatch because it is cut before it can grow to sufficient heights; grass-related uses made up only 42 percent of the total. Unrestricted grazing lands are, more than restricted grazing lands, a source of medicinals and some wild food and fuelwood species. FH have equal access to grazing land and they use open grazing areas a great deal more (71 percent of FH versus 29 percent of MH). Since most FH have no livestock, they use grazing land to collect grass for coffee ceremonies and baskets, and to collect medicinals, fuelwood, and wild foods.

### *Unenclosed hillsides*

Unlike the case of AE, where use is largely restricted to particular kushets, unenclosed hillsides are used by all kushets within a tabia. They are by far the most frequently used common land area in Adiarbaetu: 97 percent of the surveyed households used them. These areas are only controlled by species restrictions which are monitored via a limited number of checkpoints spread over a large area, so violations are frequent. The study showed that a total of 61 uses were reported for an average of just over two per household. Hillsides were most used to collect wild plant foods (43 percent) and fuelwood (33 percent): out of all common land areas, it is principally in these areas that these important resources are collected. Medicinals constituted another 10 percent, and grass for coffee ceremonies and aromatics were minor uses.

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<sup>2</sup> Difficulties were encountered when interpreting survey data especially in relation to the use of grazing land for grazing. This was barely reported, even though all MH owned livestock. This could have in been due to the fact that women were the respondents for the CPR module and may have under-reported some adult male use of CPR. However, only two types of grazing land (restricted and unrestricted) were included as options in the module. Grazing was only reported five times: three times on restricted and twice on unrestricted grazing land. Table 32A was adjusted using the results of the survey’s Livestock Module regarding sources of livestock feed, where ‘other grazing lands’ (presumably referring to seasonally enclosed grazing lands) was an option.

The study found that two thirds of a total of 41 species were collected from unenclosed hillsides, which was the highest for any area. Use of these species was mentioned 136 times, which represents 41 percent of the total reported uses for all areas and all species. Beles (*Opuntia ficus-indica*), which has now naturalized on hillsides, was the most frequently used species and was collected principally for human food and, to a much lesser extent, for fodder. It was followed by *hahote* and *tabub* (*Becium grandiflorum?*), used principally for fuelwood, which are among the few woody species whose use is not restricted; as well, households often reported collecting *kirshem*, or miscellaneous small branches and twigs. *Beles*, *hahote*, and *tabub* alone represented just over half of all unenclosed hillside uses. Because hillsides cover such large areas, species density also varies greatly; residents in the more densely populated area often must walk far to collect certain species. In the study sample, women outnumbered men as users by 3:1. FH and MH were equally represented and used them more or less equally. The number of days of use reported in total was around 3,000, by far the highest for any type of common land area, for an average of 28 days per year per household.

### ***Woodlots and forests***

Although elders reported that the kushet used to be “covered with forest”, there is very little natural forest left today. Adiarbaetu has two types of woodlots and forested areas: those that are enclosed year-round and those that are enclosed only seasonally. Enclosed woodlots are generally only opened at particular times: a few days per year for grass sales and a few days every four years for timber sales. They consist of either single species (*Eucalyptus* spp.) or mixed species plantations. Wood is most commonly used for construction and ploughing tools, whereas grass is sold for fodder, thatch, and baskets. They are used by a limited population, at limited times, and for limited uses. The collection of medicinal species and grass were the most commonly reported (28.6 percent each), followed by fuelwood and construction materials (14.3 percent each) and, finally, by aromatics (7.1 percent). 30 percent of the households surveyed used enclosed woodlots, 80 percent of which were FH. Collectors therefore were mainly female (69 percent). Women used these areas primarily for non-wood products, but FH are limited with respect to access to woody species. Women informants reported that, although they are often the primary caretakers of woodlots (planting and watering the trees as food-for-work activities), the majority of FH do not benefit from timber or fodder grass since they cannot afford to purchase the wood and do not have livestock that require grass. As one female head put it, “No one prevents us from using the woodlots. The problem is that we do not have the money to buy anything that is sold. We just take care of the trees.” Ten households reported a total of 340 days of use, for an average of 34 days, or the second lowest of all common land areas.

“Unenclosed” forested land and woodlots are actually seasonally closed to livestock to allow for grass regeneration. When they are open, grazing is allowed and grass may be collected using the cut and carry system. The use of trees is forbidden. Since they are the only areas outside of enclosed woodlots that contain large trees, men hang beehives in them. In the study sample, the collection of medicinals alone accounted for 50 percent of the total reported uses, followed by fuelwood (25 percent). Grass collection occurred less than in enclosed woodlots since unenclosed forests and woodlots are either seasonally closed to grass use or are subject to grazing. This was the only significant difference in use categories between enclosed and unenclosed

forest and woodlot areas. Compared with enclosed woodlots, slightly more households used unenclosed forests or woodlots, of which somewhat more than half were FH. Collectors were even more predominantly female (86 percent). The only instance where an adult male was reported to have used these areas was to collect materials to make tools. Unenclosed areas were used more often than enclosed woodlots, with 535 days of total use and an average of 59 days per household.

In the study sample, respondents reported that two thirds of all species were collected from forest and woodlot areas, where use was reported 49 times, representing 16 percent of the total use reports across all areas. The number of times these species were reported was also almost equal between enclosed and unenclosed areas. The use category with the highest number of species collected (nine) was medicinals, followed by fuelwood (seven).

### ***Other community enclosures***

In the survey, a catch-all category was included to permit respondents to report use of enclosed land areas that were not captured by the terms “enclosed woodlots” and “restricted grazing lands”. This was due both to the fact that some of the literature reviewed initially was ambiguous about the types of AE that were created and because of the concern that respondents might not share common concepts regarding the terms used. Without additional research, however, it is impossible to know to which common land areas these data refer, and the principal interest in them here is to ensure complete recording of CPR use. In the study sample, nearly two thirds of all uses were for grazing, followed by fuelwood collection (18 percent), and then medicinals and aromatics (4.5 percent each). Excluding grazing, which pertained exclusively to MH, some 90 percent of the other uses made of other community enclosures pertained to FH. Still excluding grazing, three-quarters of the users were female but, even when grazing is excluded, more males were reported to be users in comparison with any of the other AE. Of a total of 41 species that were reported, nearly half were collected from these areas, which was the second highest of all areas after open hillsides. Use of these species was mentioned a total of 59 times, representing 19 percent of total species use.

### ***Riversides and other borderlands***

Riversides, roadsides and other borderland areas may be important sources of botanical resources and, in Adiarbaetu, this is especially true for FH. Some riversides are enclosed to allow for the regeneration of reeds and other species used for housing and fencing, and cannot be used for any other purpose: most are fenced off. Some residents also have farmland or homegardens near or next to rivers. While the exact rules of access to these areas are unknown and may very possibly be undefined, residents appear to believe that the riversides adjoining these farms and homegardens can be used only by the landholders. Many riverside areas, however, are understood to be open access and are used for multiple purposes. Often, they are closer than other common land areas used for the same resources, and are used to supplement other common land use. Throughout the year, riversides are areas of lushness and moisture that are scarce in this arid region, so many species that were once abundant are now only found growing along them. Some species that are found only during the rainy season throughout the rest of the kushet can be found growing year-round along some riversides. As a result, both men and women from both MH and FH considered that

these areas are underexploited, and about a third indicated that they would like to use them more for homegardens or would like to see the community plant more trees in them.

The study found that riversides and borderlands were used to collect medicinals and wild foods (one-third each of all uses) and grass for coffee ceremonies (25 percent). The only other use reported was for fodder. While grazing was not reported, researchers observed animals grazing along riversides, roadsides and pathways. Many roads are lined with *beles*, which provides wild food and fodder, and *ereh talien* (*Agave* spp.), which is sometimes used for fibre. In the study sample, 30 percent of the households reported using these areas, all of which were FH. Females thus outnumbered male collectors by 7:1. The total number of days of use reported was 171, for an average of 19 per household. The survey also showed that it was female heads who were most concerned about the depletion of resources in these areas, which are largely ignored by the tabia administration. While some even suggested that they be officially enclosed, others recognized that “You cannot enclose everything. In the end, drought is also a problem, not just people.”

Of a total of 41 species, only seven (17 percent) were collected from these areas, which was as low as that reported for restricted grazing land. Use was mentioned a total of only 15 times, representing scarcely 5 percent of the total species use. *Beles*, *hama shiro* and grass were most frequently used. There is a disjuncture between the supposed species richness and diversity of some of these areas and the reported use, both in terms of the number of species used and in the frequency of use. This, plus the fact that only FH reported using these areas and that people felt that they were under-exploited, indicates that the fuzziness of access rules, or the de facto privatisation of these common land areas, may mean that the only users who are tolerated or dare to use them are poor FH.

### ***Churchyards (sacred groves)***

There is a clear visual demarcation between churchyards and most other common land areas since the difference in vegetation density and diversity is much greater in the former. While the survey did not capture churchyard use, qualitative research revealed a surprising amount of use, particularly among women. It is forbidden on religious grounds for the community to take fuelwood, grass or construction materials from churchyards. No trees may be cut and no grazing is allowed, but medicinals and wild foods may be collected. Women said that they often use these areas to collect medicinals but, while men were clearly aware of them and of the species available therein, they did not report using churchyards at all. Residents appear to have much higher regard for the Church in comparison with other institutions. The very idea of violating these restrictions was incredulous to them. Cultural and religious restrictions are more authoritative than legal restrictions, which results in crucial pockets of conservation with high richness and diversity of indigenous species as well as high density.

### ***Private property and CPR***

Several wild botanicals found on private property are considered to be common resources. Children are often seen in neighbours' fields at ploughing time, searching

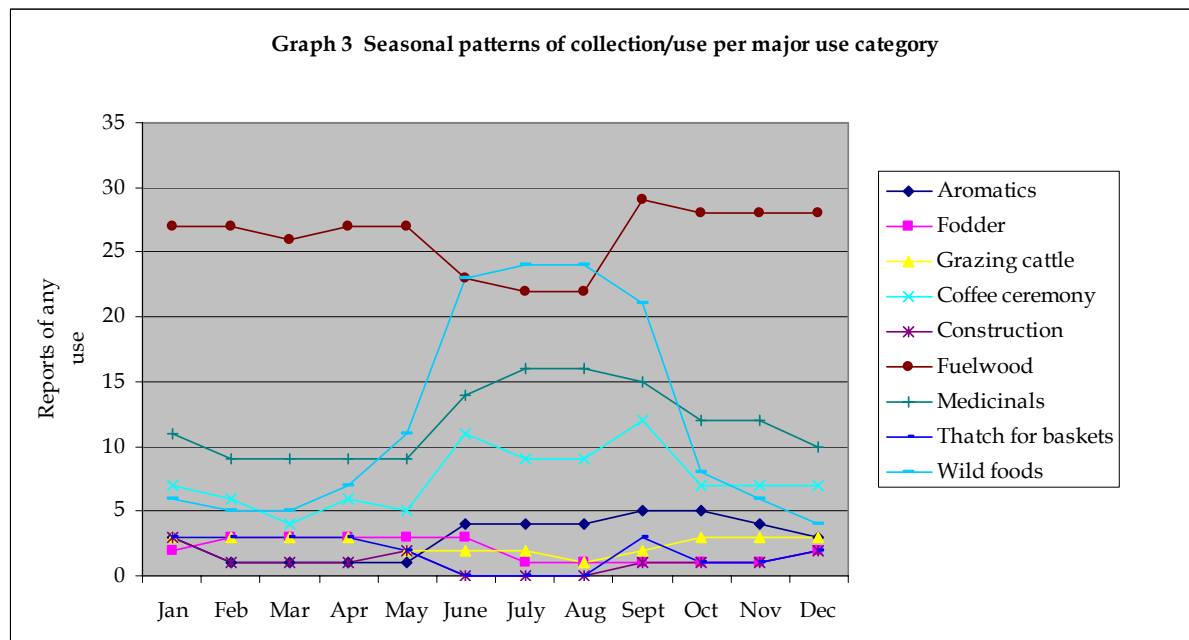


for *kuenti* (*Cyperus bulbosus*?), a small root that is roasted and eaten. An edible wild green (*hamli talien*<sup>3</sup>) can also be collected, and an invasive species (*echote talien*) is found in abundance on farmland, where the seeds (*medafe talien*) are collected and ground into an oil which is used on the grill-like stove top that is used to make injera, to prevent the dough from sticking. Such species are harvested from private farmland without having to seek permission.

Many people surround their homes and line paths leading to their homes with living fences consisting primarily of, but not limited to, *baharzew*, *kokola*, *beles* and *ere talien* (*Agave* spp.?), which provide them with valuable resources for construction, food, fodder and medicine, as well as privacy and protection from livestock and wild animals. All of these resources are the owners' property and generally are used solely by their households. If theft occurs, it is up to the owners to prosecute those responsible. However, violations are reportedly rare and do not seem to be a source of conflict. Children and others sometimes take *beles* fruit and eat them on the spot. Medicinals may be taken from any area, whether private or not.

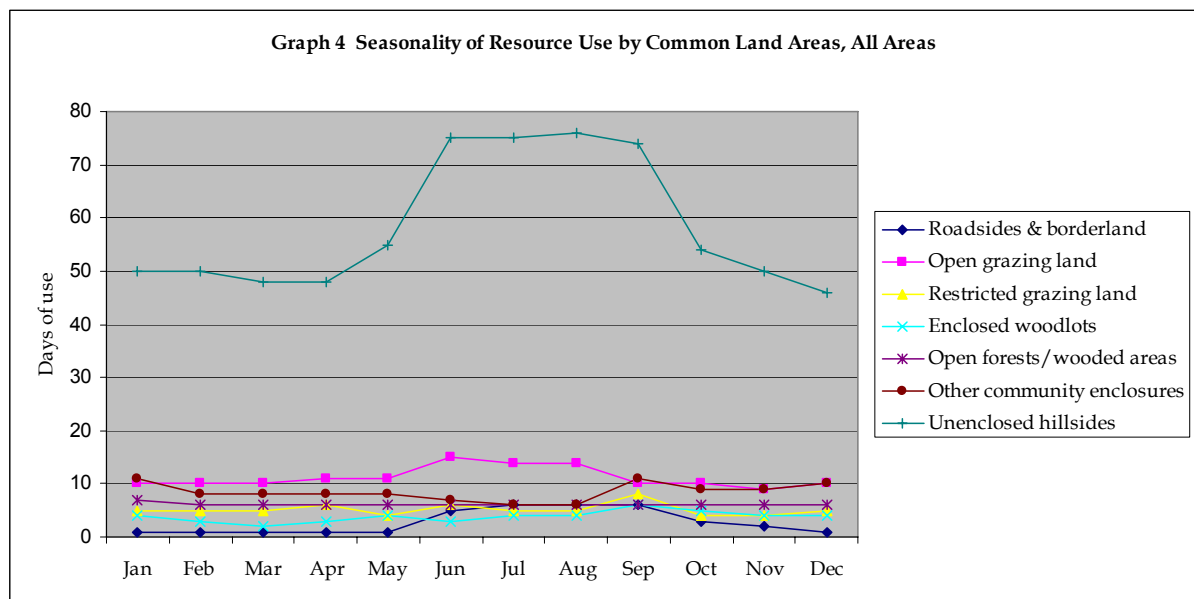
## 6.2 Seasonality and “intensity” of CPR use

Seasonality is a very important factor in access rules and in determining the contribution of CPR to livelihoods. Survey respondents were asked to report the number of days that a particular use was made of a particular common land area according to calendar months. What led to under-estimates is the fact that many botanicals are collected only sporadically, e.g. on “religious holidays”, resulting in a relatively high number of missing cases. These data therefore provide only a rough proxy for intensity of use, but it is a good indicator of seasonality. Seasonal patterns are presented in graphs 3 and 4.



<sup>3</sup> Fodder collection is not included since most households reported that they collect *beles* and not grass for fodder from open grazing lands, which is not the case with restricted grazing lands.

Looking at seasonality of use by major use category (Graph 3), little variation is apparent in uses that are restricted (construction materials that rely on timber, cattle grazing and grass collection). Livestock must be fed year-round. The slight decrease in grazing from May-September is due to AE: restricted grazing areas are enclosed during much of this period to permit grass regeneration. Fuelwood collection also must occur throughout the year, but during the rainy period (June-August), woody species are greener, making useable fuelwood less accessible. Conversely, the collection of wild food and medicinal species shows marked seasonal variation with peaks occurring during these same months, when such species are most available. Since the coffee ceremony is an integral part of Ethiopian culture and is performed on a daily basis year-round, collection of fresh grass is also year-round, although it is more abundant in the rainy season.



With regard to seasonality of use of common land areas, Graph 4 shows that unenclosed hillsides not only have the greatest amount of use overall, but as well the greatest use during the rainy season, reflecting the seasonality of wild food and medicinal plant collection. The use of riversides and other boundary lands also exhibits this seasonal pattern, for similar reasons. Grazing lands are used somewhat more frequently in April and again in June, most likely due to the increased collection of *medafe talien* seeds which occurs in April and other wild foods which occurs in June. Unenclosed forests and woodlots show fairly continuous use, whereas enclosed woodlots show strong fluctuations, reflecting the fact that these latter areas are opened briefly for grass collection. The seasonal availability of plant species is again markedly from June to September, coinciding with the rains.

### 6.3 Informal CPR access: the case of *Awelie*

In Adiarbaetu, at least two layers of rules regarding CPR access are constantly interacting. Informal rules affect how formal rules are understood and implemented. In addition, in the absence of formal rules, for example around non-restricted species in open hillsides, or to wild species on private farmland, customary rules or “morals” may still apply. Customs, religious proscriptions, social networks and considerations

relating to equity and social justice can all create or influence these informal rules (see chapter 2). Formal and informal rules might contradict and hence displace one another, or they may work together to form an interlocking network of access rules, as a type of legal pluralism. In Adiarbaetu, informal rules are often understood as the “need for exceptions” to the formal rules. Their existence at first made it difficult to understand access issues since these exceptions were not mentioned in discussions with officials and villagers. For example, while grazing is forbidden in enclosed woodlots, cattle were occasionally observed grazing there. When asked about this, officials said that the rule was “occasionally” overlooked in the case of “younger cattle”. Underlying this apparent contradiction, there is an acute understanding of the importance of CPR both to livelihoods and to particular people.

The case of *awelie* (olive; *Olea europaea* spp. *Cuspidate*), which is on the “no use” list, illustrates well the “need for exceptions” and its normative underpinnings. The prohibition against *awelie* use was reported to be most strictly enforced since it is locally very valuable as well as endangered. It is very important for medicinal and cultural uses such as *etan*; it is a favourite fuel, and provides excellent wood for ploughs, tools, and construction. Although focus group discussants acknowledged that its use is completely prohibited, they mentioned “one exception”: they are allowed to collect small amounts of leaves and twigs for medicinal use, but they must get permission from guards and checkpoint officials, who do grant it. Researchers were therefore surprised to find that *awelie* wood products can be readily found throughout the kushet. They were observed being sold in the markets and in piles in yards awaiting use, as well as on women’s backs (together with other restricted species) in large bundles of sticks used for fuel. When directly questioned about this, informants explained that, when restrictions were first introduced, residents complained about them and argued that some access to *awelie* was required since they had no alternative, so an agreement was reached with officials that any wood that has reached the boundaries of the kushet centre can be used or sold. However, if caught with *awelie* beyond these borders, confiscation and fines would result. Wood that has been confiscated is auctioned off to villagers. Therefore, while collection is ostensibly forbidden, use is not.

**Table 15 Use of *Awelie* and Areas where Collection was Reported**

Uses	No.	%
Fuelwood	13	30.2
Medicinal	9	20.9
Fodder	3	7.0
Fumigation	6	14.0
Construction	9	21.0
Aromatic	1	2.3
Boundaries	1	2.3
Other	1	2.3
Total	43	100.0
Common Areas	No.	%
Enclosed woodlots	5	22.7
Unenclosed forests & woodlots	1	4.5
Other community enclosures	9	40.9
Unenclosed hillsides	7	31.8
Total	22	99.9

Further, residents have their own concepts of morality that affect their willingness to report violators. One of the residents is renowned for *awelie* use. He admitted that he used to illegally collect and sell *awelie*, but insisted that he no longer does so. But, according to officials and residents, he is one of the most important sellers of illegally collected *awelie* in the kushet, but he is not reported. When discussing this with another resident, she explained that he is an exception: “He’s one of the poorest and needs the income . . . in the end, we benefit from this sale as well since we have a source of *awelie*. But the same does not apply to others. If I see anyone else taking *awelie* that does not have permission I will report them.” Nonetheless, the survey showed that residents commonly collect *awelie* and were not hesitant to report this use to researchers, adding yet another dimension to the issue of access, since these residents obviously did not feel that they were seriously in danger of being reported and, then, fined or imprisoned. The most frequent use of *awelie* was for fuelwood followed by construction, for which woody parts are required, but it is not known whether these uses implied cutting any part of the trees. Use for medicinals, fumigation and other aromatic purposes does involve cutting and constituted 37 percent of uses. Most *awelie* came from well-guarded AE, which were the source 64 percent of the times it was collected. If *awelie* is formally so heavily restricted and yet “exceptions” are so prevalent, then it is important to know which informal rules and exploitation patterns apply to other restricted species as well as to the AE, and what implications these have for CPR conservation and livelihoods. The case of *awelie* alone makes it clear that wild and indigenous botanical resources play a crucial role in Adiarbaetu: the de facto use of this restricted species provides needed income for poor households and allows others access to a limited amount of a locally important resource.

The “need for exceptions” tacitly acknowledges that formal access rules discriminate against disadvantaged community members and uphold the precept that everyone has a right to meet their subsistence needs, which has often been found to underlie customary resource tenure regimes. Ultimately, residents and officials alike in Adiarbaetu are struggling to negotiate a “fragile balance” between the need to use and conserve CPR.

#### **6.4 Women, female heads, and common lands**

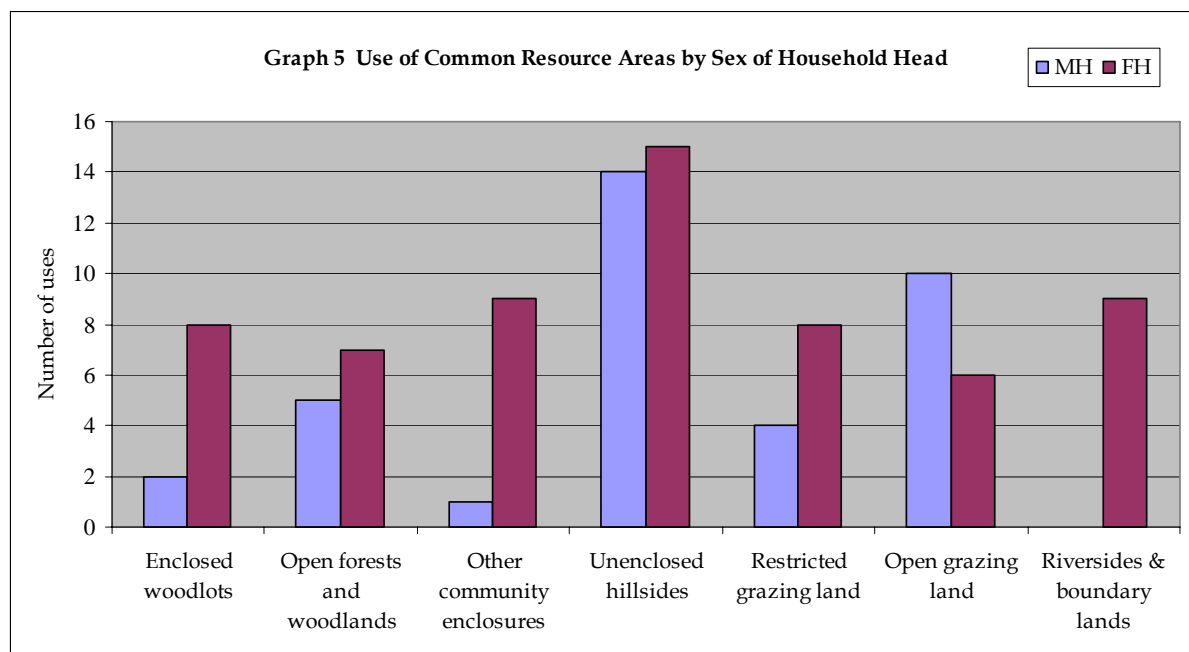
Research in Adiarbaetu shows that the use of common lands is more extensive than previously reported in the AE literature: more areas are used by more people and for more purposes. FH made greater use of all areas with the exception of unenclosed grazing lands and unenclosed hillsides. Graph 5 shows that FH were the vast majority of users of enclosed woodlots (80 percent), other community enclosures (90 percent), restricted grazing land (67 percent), and roadsides and boundary areas (100 percent). They were also a slight majority among the users of unenclosed forests and woodlots (58 percent), and of unenclosed hillsides (52 percent), where the last category was used by 29 out of the 30 households surveyed. Open grazing lands were the only areas that were most used by MH, at 63 percent versus 38 percent.

FH in the study sample also predominated in particular use categories: aromatics (75 percent), grass for coffee ceremonies (62 percent), medicinals (69 percent), wild foods (56 percent), and even fuelwood (57 percent). This reflects the fact that FH generally use common lands more. The lower half of the table shows within household

distribution, which is more similar between FH and MH: a higher percent of FH uses were of medicinals (24 percent versus 15 percent), grass for coffee ceremonies (20 percent versus 16 percent), and aromatics (6.5 percent versus 3 percent), whereas uses that figured more prominently in MH were cattle grazing (6 percent versus 1 percent), construction, and fodder (4 percent versus 1 percent), but these differences are not as great as those found in frequency of use.

Females predominate in all use categories in the study, even in collection of construction materials and fodder, and for grazing livestock. It is therefore useful to focus on males. Males participated most strongly (30 percent+ of the users) in grazing livestock and collecting grass for coffee ceremonies; somewhat (20-30 percent) in collecting fuelwood, medicinals and wild foods, and little (<20 percent) in the collection of aromatics and fodder. Children played only a minor role, mostly in fuelwood collection. Only one male child collected aromatics and only one grazed livestock. Women respondents did report adult male uses (all of which were from MH), but these were fewer than their own uses in all categories.

The qualitative research results presented below shows that men have a more varied and extensive use of CPR than what is suggested by the survey. FH's greater use of CPR is generally explained by their lack of financial capacity to obtain these resources by other means. Many of the CPR that FH collect can be purchased at weekly markets. MH are more likely to have the means to purchase CPR to supplement those they collect, particularly since collection costs a great deal of time due to resource scarcity. With less land access than MH, FH do not have as much grass and must use common land to procure it. Since FH often make tela and prepare coffee to earn income, they use grass for ceremonial purposes more than MH and need more fuelwood. FH also use wild foods over longer periods to supplement their very limited food sources. At such extreme poverty levels, they have few options other than to exploit CPR.



FH and women in general confront no formal obstacles to the use of restricted grazing lands and in fact use them more than MH. However, in focus group discussions, women heads complained that there used to be areas where basket grass grew that were “for women only”: women harvested jointly and shared the grass equally.

Now, one woman reported, “The tabia controls it and the men collect it at night. When the areas are open for cutting there is nothing left to collect.” Women cannot go out at night unaccompanied by men due to fear of rape. Since grass for basket making is difficult to find, it is now sold at the weekly market. However, the poorest households, many of which are FH, cannot afford to purchase these materials, and are therefore dependent on AE. Further, FH are not benefiting from those primary resources (grass and timber) that researchers and officials consider to be the most important to livelihoods. FH’s greater use of common land areas is for secondary resources. Timber and grass are high-value and are used and purchased mainly by men: timber is used primarily for construction and to make ploughing tools, and to make use of it requires access to male labour as well as to cash.

## **6.5 Botanical resources: species and their uses**

It is important to examine more closely the importance of botanical resources to residents, particularly for major livelihood uses. Specific species are also very important to social identity, and are imbued with multiple cultural values. Capturing and using emic perspectives on resource categories and their importance is critical both to quantifying CPR use and to managing CPR in ways that respond to people’s needs. The importance of CPR, however, clearly varies according to socio-economic characteristics and identities of different groups within the community.

Given the degree of devegetation in Tigray, it would appear to be an unlikely place to find much use of non-cultivated plants. However, in Adiarbaetu alone, the study respondents reported using what may be<sup>4</sup> 138 distinct species.<sup>5</sup> It was often said that, depending on one’s knowledge, “every plant is a medicinal”. If medicinals had been researched specifically, the list might have expanded considerably. Since resource availability has significantly decreased over time, the amount, frequency and even type of use has in some instances changed, but their importance apparently has not. Men and women were asked to free-list the most important species and the reasons for their importance (emic values). It is clear that gender relations have great influence on both value categories and species’ importance. Some species are used more or less exclusively by either sex and, of those used by both sexes, the uses made are often different.

### ***Fuelwood***

All indicators show that, in addition to grass, fuelwood is the most important botanical resource use in the study area. All surveyed households used fuelwood for

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<sup>4</sup> This is a common term in the area for different wild greens. It is usually reported in the literature as *Brassica rapa*, but the plants that were observed were not *Brassica* spp. Another possibility is *Amaranthus graecizans* which, in the Famine Field Guide is also called *hamle tilian* in Amargna.

<sup>5</sup> Without botanical voucher collections and scientific identification of the plants mentioned, it is not possible to know whether they are distinct species or distinct varieties of the same species, or the same species and varieties with different vernacular names.

cooking, whereas half used charcoal (which is formally illegal). More than 90 percent used dung, which is a strong indicator of fuelwood shortage. FAO (n.d.) reported that an average of .3 ha of forested land to meet household fuel needs. With over 350 households, a total of 105 ha, or around a ninth of the total area of the kushet, would be required to supply fuelwood needs sustainably. Many traditional fuelwood species (*awelie* and other hardwoods such as *sarow* [*Acacia etbaica*?] and *chihidi*<sup>6</sup>) are slow growing and do not regenerate well, but they burn long and hot, and generate little smoke. They are often collected although their use is illegal. Since women are the main collectors, they run the most risk of fines or imprisonment. However, because of deforestation and species restrictions, most fuelwood consists of smaller and softer wood from species such as *hahote* and *tabub*, which are small woody shrubs that regenerate quickly, and their wood is easy to cut and carry. These two species constituted nearly 50 percent of the total species collected for fuelwood in the past 12 months. Miscellaneous small dried branches and twigs (*kirshem*) are also used, but collection is very time consuming, they do not burn hot, cannot be made into charcoal, and produce a great deal of smoke, which is harmful to health.

Slightly more than half of the households in the survey purchased as well as collected fuelwood (nearly two thirds of MH, compared with 40 percent of FH), and nearly a third only collected it, 70 percent of which were FH. Ninety percent collected only off-farm, indicating that tree plantations had not yet matured enough to supply fuel. The two households that only purchased were FH, one of which was headed by a disabled woman. Fuelwood collection is primarily a female task (79 percent of the reports). In only a quarter of the cases did men collect with their wives; in another quarter, women collected with their children. In 10 percent, only sons or daughters collected, but in no instance did only men or men and children collect. Villagers said that, in the past, men collected larger and heavier pieces while grazing livestock or travelling, since strength was needed to cut and carry it. It was not difficult to find and relatively little time was involved. But, since the use of hardwood species is no longer permitted and they are difficult to find, collection has become very labour-intensive and women are now the primary collectors.

Collection is frequent and requires long distance travel by foot. In the study sample, the average number of collection days per household per year was 49.5 (about once per week). Two households spent more than 100 days and four spent 50-100; the minimum was 24. The amount of time spent collecting per event is alarming: only 10 percent of households collected it within an hour's walk and nearly a third walked six hours or more. Only seven percent of MH walked six hours or more, compared with 61 percent of FH. Most MH supplemented collection with purchases, and MH also have greater access to dung, reducing the time spent collecting fuelwood. FH also probably need more fuelwood given that their livelihood activities (e.g. tela production) require substantial amounts of fuel.

Fuelwood sales are no longer an important source of income for the poor: while permission may be obtained to collect dried pieces of restricted species on the "with permission only" list, only four people in the tabia have obtained it. Permission is not

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<sup>6</sup> There are various species called *chihidi*, both native and introduced. Introduced species, or at least those seen as such from villagers' perspective, are given the suffix *talien* ("Italian") since it is believed that Italians introduced them. Therefore, there are trees called *chihidi* and others called *chihidi talien*.

readily granted, the process is bureaucratic and time-consuming, and there is social stigma attached, since it is only granted to the “poorest of the poor”. Further, few FH have applied because collecting fuelwood for sale implies travelling long distances and carrying heavy loads. Women usually do not travel alone for fear of rape. However, two female heads indicated that they collected and sold fuelwood illegally, but they had recently stopped because the risk was too high and the distances too great. Both were caught many times, but were never fined since the amount taken was small in comparison to what men take.

### ***Wild food plants***

Wild plant food was an important value category for both men and women: women in the survey mentioned four species used for food, whereas men mentioned ten. Women collect, purchase, and prepare wild foods to consume as part of their households’ regular meals. Men, on the other hand, often travel long distances and depend on wild foods found along the way for sustenance. While they eat most of this food on-the-spot, occasionally they bring some to their families. The wild foods that women mentioned tend to be found within the kushet or are readily available at the market, and women usually procure them while collecting or purchasing fuelwood and medicinals. Like men, children often eat wild foods on-the-spot while herding or carrying out other tasks for their parents, and occasionally they bring them home. Despite the decrease in availability and use, children still seem to have much knowledge about wild foods. Residents said that wild plant consumption is not clearly associated with famine or extreme food shortage, and none of the species consumed are used solely as famine foods. However, during period of food shortage, wild foods make up a larger portion of the diet. The amount that people normally consume depends on personal preference. All residents, regardless of wealth status, eat wild foods.

A total of 30 species were reported used as wild food in the survey. The survey contained a Food Frequency Module (FFM) that captured some wild food consumption, although the list of wild foods in that module was based on a previous study and not on reconnaissance work in Adiarbaetu. Of the wild food plants on the list, the most frequently consumed by those interviewed was beles fruit, which all households eat, although nearly half consumed it “only rarely”. Most (37 percent) consumed it 20-50 times during the rainy season when fruits are available and food shortages tend to be acute, although it is also consumed in large amounts because people enjoy the taste. *Opuntia ficus-indica* is a rich natural source of edible polyunsaturated oil containing essential fatty acids (Ennouri et al 2006). The second most commonly consumed was *mekmoko* (*Rumex abyssinicus*?), the shoots and leaves of which are consumed as a vegetable. Wild greens known as *hamli talien* (probably *Amaranthus* spp.) are also said to be widely eaten during the rainy season, although the survey captured only one household which consumed it once per week. The Ethiopia Famine Field Guide<sup>7</sup> reports that the leaves are high in vitamin A and protein (27.8 percent); the fresh leaves contain higher quantities of both calcium and phosphorus than cabbage. As the above examples indicate, in addition to being eaten regularly, wild foods have an important routine nutritional role as well as a critical role during periods of food shortage.

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<sup>7</sup> See Guinand and Lemessa, under websites in the references.



Several households reported that they collected wild food species in the CPR module, but did not report that consuming them in the FFM. The survey collected information on all uses of all species that were reported in the CPR module, as well as total number of uses per use category. Wild food species collection was reported 35 times, for around 10 percent of all uses of all species. This is lower than what was captured in the FFM, but several of the species reported in the FFM were purchased at local markets rather than collected. Only two of the species reported in the FFM were found in the CPR data set (*beles* and *hamli talien*). Further, it is almost certain that the CPR and the FFM did not include consumption on-the-spot: such consumption is notoriously under-reported, yet appears to be frequent in Adiarbaetu. Wild foods were collected by nearly two thirds of all households, slightly over half of which were FH. Females were the main collectors (83 percent). Wild foods were collected with considerable frequency, for an average of 79 days per household per year.

While the vast majority of households in Adiarbaetu experience food shortages every year, FH are often hardest hit, and local officials in the project area have reported that their household members make up about 80 percent of all malnutrition cases in the area.<sup>8</sup> However, environmental degradation, as well as drought, have led to a decrease in wild plant consumption. Informants reported that many of the wild species consumed in the past are now difficult to find. Those that were available year-round are now only found seasonally and in fewer numbers. Men said that their use of wild foods during travel has changed significantly: “We used to eat a great deal of wild food, even in our mother’s time. Lots of *aagam lahami*, *hama shiro*, and *aagam*. We collected a lot when we were children. Our mothers used to serve these as their main meal, particularly during *etan*. They wouldn’t eat anything else”.

### **Medicinals**

People in Adiarbaetu rely mainly on traditional medicine for their health care due to cultural preference as well as lack of formal medical services, so access to medicinal plant species is paramount. While residents are beginning to use the new health facilities, traditional medicine is the first line treatment for almost all health problems (FAO n.d.). Medicinal species were consistently in the top three of all botanical resource use categories for all common land areas.

The gendered division of labour and knowledge with respect to CPR was most pronounced in relation to medicinals. Women are both the lay health practitioners who treat common illnesses among household members, as well as traditional health care practitioners to whom people turn when lay knowledge is insufficient. During freelisting exercises, men mentioned no plant used for medicine, whereas almost all of the species that women listed had medicinal uses, and many were solely for this purpose. Women classified medicinal plants into several categories: for women’s health, children’s health, and general use, whereas men used a single category: “medicine”. All of the species that women mentioned as “important” to them that were not also mentioned by men were medicinals. Men do have knowledge of medicinal species: when asked directly, they could list many and discuss their applications. “Everyone knows at least a little” about herbal medicine.

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<sup>8</sup> Reported in one of the PRA exercises carried out in the FAO Project area under project auspices.

Such knowledge and use of medicinal species means that women use more common land areas year-round. Residents consistently reported that use of a species for medicinal purposes is permitted at any time and from any location. When collecting from AE, guards must be asked for permission, but there is no limit to the amount that can be taken and, de facto, no species restrictions apply. Therefore, while men often do not use AE when they are enclosed, women use them to collect medicinals. However, the survey showed that unenclosed areas are used much more for medicinal plant collection: only 23 percent of the use events were reported in AEs. While churchyard enclosures were not included in the survey, informants said that women frequently use them to collect medicinals. In the survey there were 75 reports of medicinal species use involving 16 species, constituting 20 percent of all species uses. The survey respondents listed 35 medicinal plants during the entire research period.

The majority of all medicinal plant collection is for personal use. Medicinal species can be found in the weekly market, but the species sold are usually not found in the kushet. Devegetation has affected the diversity and populations of medicinal species. When asked if the sale of medicinal species was a viable income generating activity, women heads said that it requires too much time to collect large enough quantities.

#### ***Other material uses: fodder, construction and tools***

Fodder of all kinds, and especially grass, is exceptionally important to livelihoods. Grass is the preferred fodder for all types of livestock, but grass meets only a small proportion of feed requirements, so many other types of fodder are used, especially during the rainy season when most grazing areas are enclosed. Supplemental fodders include crop residues (see Section 5), *beles* pads, and *hatela*, the remnants from *tela* production. Men also said they use leaves from *awelie*, *hahote*, *tehatsets* (*Dodonea angustifolia*?) and *dander* (*Echinops* spp., *Carduus* spp.). Knowledge of fodder species is gender-differentiated: nearly 45 percent of the species that men mentioned during the freelisting exercise are used for fodder, whereas women mentioned none. When asked directly, women were able to list some fodder species, such as *beles* and grass, and they also mentioned *hatela* since it is they who produce *tela* and give *hatela* or sell it to men or exchange it for ploughing services. Men's knowledge is more diverse: they listed more species and mentioned some that are eaten only by certain animals, such as camels and donkeys. While only four households reported collecting fodder in the CPR module, it is likely that it was under-reported. Fodder species are also often used on-the-spot rather than collected, which leads to under-reporting. Since many households grow *beles* on their property, there is also less need to collect it from the wild. Grass that is collected from woodlots on a cut-and-carry basis was also probably not reported: it Does not appear that respondents reported the use of any resource for which they had to pay.

Another type of fodder that is important in the kushet is bee forage. Tigray is renowned for its flavourful honey and, while most men keep hives for household consumption, beekeeping is also a relatively lucrative income generation activity: one kg sells for around 25 birr, and more can be earned for those flavoured by specific bee forage species. *Tedj* is an alcoholic beverage made from honey that is both widely consumed and sold. Bee forage is therefore considered to be very important, and it was an important value category for men that women did not mention. Beekeeping is

traditionally a male task: hives are heavy and are hung from tall trees, so men said that it is difficult for women to hang them and to extract honey. Men have excellent knowledge of bee forage species, where criteria include bee preferences, taste, clarity, and health benefits. Beehives are hung in trees in homesteads as well as in communal forests and woodlots. The decline in plant resources has also led to a decline in honey production and quality, and to price increases. While bees use many species, the most important are *girbia* (*Montheceium glandosum?*), *tabub*, *shua arni* (*Leucas abyssinica?*), *acachea* (*Acacia* spp.?), and *tahoge* (*Cynodon dactylon?*). One species is used to make hives (*agee-era*). While men in focus group discussions often discussed their use of bee forage, it was not reported in the survey CPR module due both to the fact that women were the respondents, and because respondents tended not to report non-extractive uses.

Most building materials in Adiarbaetu come from botanicals. While stone use is increasing, particularly for fencing, it is not used for building construction. This has contributed to deforestation, but species restrictions now curb tree felling and timber now comes from AE, mainly from eucalyptus. Some residents use their own trees, but most must purchase timber from enclosed woodlots. The importance of eucalyptus is due to its availability. Men mentioned many more native species, such as *awelie* and *chenedoge* (*Otostegia integrifolia?*), which they prefer for their strength and durability, but these species can no longer be used for construction since it involves harvesting entire trees. The use of common land areas as sources of construction material other than thatching grass was barely reported, but this does not mean that use does not occur on large scale: few people reported purchasing timber from AE either because sales have not occurred in the past year or because they did not consider that purchases constitute “uses” of common lands. Construction is primarily a male task, although both men and women mentioned species used for construction (six and ten, respectively). While in theory FH have equal access to construction materials, women heads often said that they cannot afford to purchase timber.

Crucial to the plough-based farming system is wood that is appropriate for plough-making, since the efficacy of ploughing affects labour time and crop yields. It was not surprising that only men mentioned species used to make ploughs (a total of eight). Changes in the use of botanical resources for making ploughs and other tools provide insights into how resource degradation and access restrictions directly affect men. *Awelie* is by far the most preferred wood for ploughshares. Other species mentioned, such as *kan'cha* (unknown) and *roweh* (*Grewia bicolor?*), are important for particular (often smaller) plough parts. However since species restrictions and resource depletion have nearly eliminated the use of *awelie*, men now rely on other species which they say do not serve well. Eucalyptus is most commonly used, but it is lighter and not as durable. Because it is light wood, ploughshares made from it cannot dig deep enough. Where ploughshares made from *awelie* might plough a field in only one round, those made with eucalyptus require two to three rounds, and the blade must be repeatedly sharpened. Eucalyptus ploughshares must be replaced more often, and most of the wood must be purchased.

Women mentioned several species used to make household tools, such as mortars and pestles. Smaller mortars are used to pound coffee, whereas larger mortars and pestles, often carved directly out of tree trunks in the yard, are made to grind berbere and other spices. Species listed for household tool-making included *agee-era* (*Agave*

*Americana?*), *ashu-ena* (*Phoenix reclinata?*), eucalyptus, *daro* (*Ficus vasta?*), *shemfa* (*Ficus sur?*), *tabub*, *tambuk* (*Croton macrostachyus* Hochst. ex Del.?) and *thehetses*.

### ***Religious and other cultural uses***

The use of plants for religious, ritualistic, and other cultural purposes is an integral part of everyday life in Ethiopia, and in Adiarbaetu. The strong associations with religious observances and piety, hospitality and neighbourliness, purity, cleanliness, and general well-being, means that their use is both culturally obliged and a strong marker of identity and social status. Both sexes are very aware of the importance of botanical species for these purposes, and value them highly. Both mentioned six categories of cultural and religious importance. Men mentioned sixteen plant species (65 percent of the 25 considered most important), whereas women mentioned twenty (80 percent of the most important). The value categories included: ceremonial, *etan*, religious, evil eye, staff or walking sticks, and cosmetics. A few are discussed below as illustrations.

#### **The Coffee Ceremony**

Coffee (*Coffea arabica*), locally known as *buna*, is an essential part of Ethiopian social and cultural life. While it is possible to get Italian style macchiato in the larger cities of Addis Ababa and Mekele, coffee is still primarily consumed throughout Ethiopia in a traditional coffee ceremony. The ceremony is considered to be a symbol of friendship and respect. Taking place three times a day, the ceremony includes cleaning, roasting, and pounding coffee as well as brewing it in a traditional ceramic pot. The brewing area is decorated with aromatic grasses and other species and incense is burned. Each person is given three servings of coffee, each of which is slightly weaker than the one before, and the third is considered as a blessing. A snack of kola accompanies the coffee (traditionally roasted grain or legumes, but today popcorn is also served). The ceremony is traditionally preformed by women, however occasionally men (especially single men) perform the ceremony. Coffee ceremonies are an important social event within the family and the kushet: a time to discuss family and community affairs, politics, and to gossip.

Coffee and other ceremonies, such as feasts and weddings, require the use of botanicals as decorations and as aromatics. While coffee and wedding ceremonies are the most common, such species are used for any celebration to cover the floor and frame doorways as decoration. Grass, *toko berbere* (*Schinus molle?*), Eucalyptus, and *chihidi* are most commonly used, although any green plant can be used, especially if it is fragrant. Coffee ceremonies are a culturally necessary part of everyday life, and much energy is expended in its collection. Grass covers the floor where coffee is made. Aromatics are burned throughout the ceremony. Some of these species are found locally, while others are brought to the kushet by family or friends, or are purchased at the market. Grass collection for coffee ceremonies constituted 14 percent of all uses made of common lands. People also purchase grass and occasionally other greenery if they have the resources to do so, especially for important ceremonies. As a

result, grass sales can provide some additional income, particularly for people who have access to it on their property.

Another of the most important cultural uses of plants is for *etan*, which is both a ritual and the name of the group of plants that are used in it. *Etan*<sup>9</sup> is still important despite reported restrictions that have arisen that limit or prohibit its practice. Informants reported that “it is now forbidden” for young women to perform *etan*, and therefore the traditional rite of passage described in the box below is apparently no longer practiced. However, older women’s practice and use of *etan* is “still allowed”. While some women said that it is even forbidden for married and older women to use *etan*, the prevalence and openness of its use leads one to question whether there really are formal restrictions. Further research is needed to determine whether these prohibitions and exceptions are formal or informal, and whether they come from the Church or the State. No literature on the use of *etan* was found, but it was reported on the internet that its use is prohibited by the Ethiopian Orthodox Church because it is seen as “magical” and hence pagan. Due to the perceived restrictions, fewer women now use *etan*, particularly younger women, and many older women expressed a fear that the tradition would be lost. Men said that since the use of *etan* has diminished, “The complexion of older women is better [they are more beautiful] because they had more rest and used *etan* as much as they wanted. The youngsters today are forced to toil. They are not allowed to use *etan*, so they are not as beautiful and healthy as before”. In the Household Survey, while collection of aromatics was reported, this was infrequent (five percent of all use events). However, due to the perceptions about restrictions and limited availability of the species used, *etan* are also purchased from the weekly market. Therefore, overall the practice appears to be strong, at least among the older generation.

#### The Importance of *Etan*

The *etan* ritual consists of fumigating the body with smoke generated by burning aromatics. While its primary purpose is vaginal purification, women sit over the burning species enclosed in blankets, and as a result the entire body is fumigated. *Etan* is used both for health and beauty. Women and men said that fumigation makes their skin “brighter” and keeps the body clean and smelling nice. As a vaginal fumigant, *etan*’s most important function is for reproductive health and it is considered to be particularly important during pregnancy and after childbirth. Traditionally, young girls began *etan* at menses. As a rite of passage, they were expected to fumigate themselves for six to nine months. A girl was not allowed to leave the house during this period, and would sit and fumigates herself twice a day. All of her female neighbours would keep her company, “so she is not bored”. Girls who did not follow this ritual were considered to be dirty and an insult and embarrassment to their families. After this period was completed, the “women” who emerged could perform *etan* as desired, except during fasting periods. During fasting, it is prohibited to perform *etan* and to use cosmetics such as *sasula* (*Impatiens tinctoria*), which is used to tattoo hands and feet in a manner similar to henna (*Lawsonia inermis*).

<sup>9</sup> *Etan* is also a common name in Amharic for frankincense (*Boswellia* spp.), but in this part of Tigray it is the general term used for fumigants and for the ritual described in the box above.

The species used for *etan* have reportedly changed. Where *awelie* was and still is preferred, resource restrictions forbid its use unless it is grown on private property. In the past it was used alone or with other species chosen for their aromatic and medicinal properties, such as *kulio* (*Euclea divinorum?*) and *cher'ncha* (*Calpurnia aurea?*). However, now any aromatic species is used with the exception of *Eucalyptus* spp. and *Schinus molle*. One of the most popular is *b'harer* (unknown), which is also burned at coffee ceremonies. It is an aromatic plant found at lower elevations that is sold almost exclusively by women in the weekly market. It is either collected from the wild or cultivated in homegardens. While *etan* is the most prevalent use of fumigants, they also have other uses. Women named some that are used in food and drink preparation, particularly to disinfect and flavour tela pots before brewing. Fumigants, such as *sheila-en* (*Cadia purpurea?*), are used to disinfect milk containers and to preserve milk. Women also use *sar'saro* (*Silene macrosolen?*) as a fumigant to ward off snakes and spiders. However, women in Adiarbaetu do not sell it because the distance that one has to travel to collect it is too great.

## **6.6 Wild botanical resources and livelihoods**

Wild botanical resources are clearly a very important constituent of livelihoods, providing fuel, timber, food for humans and livestock, medicines, and a multitude of other resources that are considered by residents to be essential to physical and spiritual well-being. Understanding how these resources are used, their contributions to livelihoods, how conservation measures affect different groups of people, and how residents strategize to maintain the “fragile balance” between exploitation and conservation, are crucial to ensuring stronger links between livelihoods and CPR management, so that both become sustainable.

The need for such links is exemplified by the introduction of exotic species that are meant to substitute restricted indigenous species. If substitution is to be successful, exotic species must fulfil the most important material, cultural and ecological functions of the species they are meant to substitute. Using *Eucalyptus* spp. as a source of wood for ploughs is a case in point: it is far inferior to *awelie* and also cannot fulfil the many other roles that *O. europaea* spp. *cuspidata* plays materially and culturally, such as for fuel and *etan*. As a result, illegal use of this severely threatened species abounds, and informal access rules have emerged that represent a negotiated local strategy to permit both use and conservation. However, it is not known to what extent such a combination of informal and formal access rules endanger or protect the species, nor for how long such arrangements can persist.

Botanical resources are both threatened and protected in part according to their importance to the populations that use and manage them. Policies have been formulated on the basis of assumptions about the importance of certain species and resources to all rural people. The “importance” of different botanical resources is, however, relative, subjective, multidimensional, variable over time and across social groups, difficult to quantify, and often locally determined. While the amount of use of a particular species is an indicator of its importance, factors such as the type of use (such as religious and cultural, for own consumption or for sale) and the sex and economic status of the user, also influence importance. This research has attempted to determine importance using both types of indicators, and the results can be used to

determine local priorities that help to achieve a more effective and equitable balance between CPR conservation and exploitation.

Grass and grasslands, and timber and woodlots, represent only a fraction of the CPR resources that are vital to livelihoods, and yet the remaining CPR have barely been considered by policy makers or researchers. Quantitatively, according to the Household Survey, the five most important botanical resources in Adiarbaetu are *hahote*, grass (various species), *tabub*, *beles*, and *baharzew* (Eucalyptus) and, although its use was ranked in sixth place, considering that it is a species on the “no use” list, *awelie* must be included. The importance of these species is not surprising since, together, they alone span all of the major emic value categories: fuelwood, fodder, food, construction materials, and ceremonial and cultural. Many are multi-purpose and fulfil several of these needs simultaneously. While they are obviously very important species, the use of at least four of them is greater than that of other important species primarily because of their availability: people prefer to use other species but cannot. Several of the most used species are exotics that were introduced because they are fast growing, drought resistant, and multipurpose, but not because they are ideal substitutes for those species that people most valued and used. When assessing importance from a qualitative perspective, many more “most important” species come to light. If these species are not used more, it is because their scarcity or restrictions prohibits it. Two such species can be found on the restricted list. It can be supposed that, if use of the other species on this list was reported by even one household in the CPR module, then the species is used by a far greater number of people.

The table below (16) provides the consensus about the most important species that was reached in the Cultural Valuation exercise carried out with men’s and women’s focus groups. The items in the table are listed in the same order in which the participants set them forth, so it also gives an indication of the salience of these species. A few species appear that are not in the table above (species reported as used in the survey), but at least eight adults agreed that they were the most important species. When it comes to their needs, it is the residents of Adiarbaetu who have the greatest knowledge about the appropriateness and efficacy of these species, but villagers have never been consulted about which species should be protected or introduced into AE. This table also illustrates the importance of emic value categories when considering conservation priorities, the “need for exceptions”, and the possible means to strike balances between livelihoods and environmental objectives.

It has been shown that gender relations nearly always significantly influence the importance and use of botanical resources, so conservation measures have specific implications for each sex. Further, access to assets combines with household formation and dissolution dynamics that are strongly influenced by gender relations to create specific groups of individuals and households that can be structurally characterized as excluded, and that are materially destitute. For these households, not only are CPR in general vital, but certain species in particular are vital. Survey results showed that almost all wild botanical resources are used more by FH with the exception of grass and timber.

**Table 16 Important Species According to the Cultural Valuation Study**

Men		Women	
Species	Uses	Species	Uses
<i>Baharzef</i>	Construction, tools, fuelwood	<i>Awelie</i>	Etan, fuelwood, construction, medicine
<i>Awelie</i>	Construction, tools, bee forage, fuelwood, fodder, <i>etan</i> , toothbrush	<i>Tambuk</i>	Medicine, abortifacient, pestles
<i>Chenedoge</i>	Construction, fuelwood, charcoal, tools, fencing	<i>Atush</i>	Medicine – children, yogurt preparation
<i>Toko berbere</i>	Pestles, bee forage, construction, tools, fuelwood	<i>Unguleh</i>	Medicine, evil eye
<i>Aagam</i>	Bee forage, wild food, fencing, firewood	<i>Rambo-rambo</i>	Evil Eye, medicine
<i>Moondaha</i>	Wild food	<i>Itmeskel</i>	Medicine – skin and syphilis
<i>Tabub</i>	Bee forage, brooms, fuelwood, terracing	<i>Tahatses</i>	Cosmetic, fuelwood, construction, fencing, food preparation
<i>Hahote</i>	Fodder, wild food, fencing	<i>Sheila-en</i>	Fencing, construction, fumigant –milk pots
<i>Dander</i>	Donkey/camel fodder, bee forage	<i>Hahote</i>	Fuelwood, <i>etan</i> , wild food
<i>Ar-aro</i>	Food (steamed bread)	<i>Tabub</i>	Fuelwood, bee forage, medicine

The patterns of FH use illustrates the fact that use and importance of particular species are not only determined by preferences, availability and formal access rules. Three important principles can be discerned:

1. Not all users meet the preconditions for use (that make use feasible or rational), where preconditions in the region include access to sufficient labour, land, livestock or cash. FH structurally lack most of the preconditions that make the use of grass and timber resources possible or rational.
2. Because of these same conditions, poor and land-deprived households are forced to seek CPR substitutes for essential resources that better-off households are able to at least partially produce or purchase.
3. Finally, in comparison with better-off households, FH and other poor attempt to generate more added value from the CPR and the labour that they do access.

In Tigray, access problems of the type addressed above are compounded by AE that are meant to produce or protect resources that are mainly useless (unusable) to the landless and FH, and by restrictions on species that are very useful to them. This obviously has implications for existing species use patterns. Preferred hardwood species have reached their current rate of degradation because they are the most important and most used botanical resources, and many are also slow to regenerate. There is no simple response to the constant threat of local extinction. However, knowledge which species are important and why must be clearly considered in efforts to regenerate trees and other plant resources, and when determining who can exploit them, to promote both equity and sustainable use.

While it is clear that botanical resources are very important to subsistence in Adiarbaetu, there is less indication that they contribute much cash income. Rather, their cash contribution appears to have declined over time as a result of resource



degradation, AE and species restrictions. However, ease of market access has led to major problems in enforcing AE restrictions in nearby Enderta Woreda, where:

*. . . protection of the government owned forests . . . has been a problem . . . because the people living in the area harvest trees illegally and sell them in Mekele town. The government has . . . increased forest guards to protect the forest, but to no avail. Socio-economic conditions . . . are such that the people have less alternative opportunities and are thus compelled to sell wood from the government owned forest . . . These factors indicate that it is important to see the AEs in relation to people's broader livelihood strategies (Nedessa et al 2005:17)*

Adiarbaetu is certainly not better off, but until 2005 it did not have easy market access. Villagers remember that fuelwood and charcoal sales were once a good source of income, and it is probably only a question of time before the problems experienced in Enderta Woreda emerge in Adiarbaetu. Many people repeatedly stated that the most important negative effect of resource restrictions for livelihoods is related to fuelwood. While restrictions impact consumption, fuelwood sales were the principle source of income for the landless. The price of fuelwood has increased as sources have decreased, which is also stimulating landowners to plant eucalyptus. Others, who before might have been able to pay, are now forced to collect. Because of price increases and problems entailed in gaining permission for legal collection, illegal collection and sales predominate. Few of the households that most need the income, such as FH, are benefiting from fuelwood sales.

Other wild and indigenous species that are often sold as raw materials include *beherere* (unknown) and *gesho*, which are used in the production of *tela* and *tedj*. However, *beherere* is found only at lower altitudes, so residents must purchase it. While *gesho* sells for a relatively high price, it is cultivated, and land and water access limit the ability of the poor to cultivate it. Women reported that wild foods such as *aagam lahami* (*Carissa spinarum*) are sold but, since they are increasingly difficult to find, they are only occasionally available in the market. Beles fruit is the most commonly sold wild food, and it is both collected in common land areas and produced on private land. Wild fruit sales are successful because of the time and labour savings that this represents for the purchaser. Many older or disabled people are not able to collect, and therefore purchase wild foods.

In households struggling with drought and environmental degradation, reduced access to land, water, and common lands have diminished their ability to generate cash from wild and indigenous botanicals. Despite these difficulties, residents tend to agree with the present restrictions. This does not mean that they do not also feel strongly about the loss of these essential resources, and they clearly understand and exercise the "need for exceptions". They would like to be more involved in the decision making process and feel that rules are imposed upon them. Their initial reactions to the species restrictions were unfavourable and, while they now acknowledge that there is a need for them, most expressed their continued frustration at not having had real input.

## **7. LEAVING TWO-THIRDS OUT OF DEVELOPMENT: A POINT OF ARRIVAL**

### **7.1 Leaving out a third of the population: the consequences**

The means by which men were and are able to gain access to additional land that were discussed in the literature and encountered in Adiarbaetu are rooted in the rist system, and continue to be reproduced through cultural norms regarding gendered rights and obligations. Men divorce their wives when they are able to marry other women with more assets. Given that, upon divorce, marital assets are generally unequally divided, with men retaining the lion's share, it is rational for them to divorce, as long as they remarry. With remarriage, men stand to gain more than they stand to lose if their new wife has at least as many assets as men must relinquish to their ex-spouses. First, it was found in Adiarbaetu that much of the land that FH held that they reported had been obtained from the baito was probably still registered in their ex-husband's names, since land allocated to the household is usually registered in the name of male heads and the baito no longer intervenes in the event of divorce or inheritance. Second, FH apparently often sharecropped their land out to their ex-husbands, or otherwise traded their resources (e.g. crop residues) with them for ploughing services or other labour. Third, FH did not appear to receive any other contributions from their ex-husbands in the form of labour, income, or food. Thus, it appears that a common way for men to continue to access land pertaining to their ex-wives is to sharecrop their land in. This is land that men would have had to plough and work had they remained married so that, upon divorce, in effect all they are giving up is half of the harvest, which would have been destined anyway to feed their wives and children had they not been divorced. Since FH do not receive enough food in this manner to provide even a substantial fraction of what they require, this "contribution" probably costs men less than it would have had they remained married. Men are thus free to only partially "support" their ex-wives and children, and to remarry women who have assets, thus expanding their total assets. Men can no longer obtain land through the baito. Young men must obtain land to establish farm and homestead through their own and their wives' parents, but the amount obtained in this way for most is minimal, since there are many heirs and little land. The only other way to gain land, therefore, appears to be through divorce, remarriage, and sharecropping. The lion's share of land that is offered for sharecropping pertains to FH. Men who cannot access land in this way are likely to remain poor. In addition, while such cases were not encountered among the 30 surveyed households, it was reported in the literature that older children usually remain with the male head after divorce, while women receive custody of young children. Men therefore retain access to much of the household's labour force, while women must care for small children who can contribute only little, if anything, to subsistence. Clearly men have rid themselves of such a disadvantage through divorce, while nevertheless potentially maintaining ties (formerly, rist rights) to their ex-wives' land through these children.

What may be a rational course of action for men nevertheless leads to diminishing landholdings and increasing land fragmentation overall. If, upon divorce, women receive a lower share of land than what they brought into their marriages, and if household baito land is also unequally divided, then, over time, divorced women have

less land, if any, to bring into subsequent marriages. Further, even if women sharecrop their land out to their ex-husbands, they still require land for a separate homestead, although some rent their houses. Since there are more divorces than remarriages, the proportion of FH should rise, although a number of female heads are war widows and there is no longer civil war, so overall the proportion may decrease for some time. It was reported in the literature and also in Adiarbaetu that men are not inclined to marry women who have minor children because of the economic burden of offspring that are not their own, and divorced women most likely bring few or no assets into a marriage. Overall, the amount of the land that men gain by remarrying should also be diminishing, since women hold a decreasing proportion of all land, which would increase men's reliance on sharecropping land of their ex-wives. This could eventually lead to a disincentive to divorce, which would then decrease the proportion of FH. However, as Amare (1999) indicated, men are also less likely to marry women who have no property and, as landholdings diminish, parents are unlikely to bequeath or give their land to daughters. The proportion of young women who remain single therefore is also likely to increase. Quite possibly, many of these young women will end up maintaining children born out of wedlock, or engage in prostitution.

There is obviously a good deal of speculation in the above, and little statistical evidence to support the analysis. But what the data from Adiarbaetu do suggest is that (a) it was very possibly not bias in baito land allocation that led to lower FH holdings; (b) FH appear to have relations with ex-spouses through sharecropping that are based upon unequal exchange; (c) FH have full responsibility for minor children and little, if any, access to adult male labour other than through such relations of unequal exchange; (d) men have little means to gain access to additional land other than by marriage, divorce, remarriage and sharecropping; and (e) landholding fragmentation and diminution increase with marital instability. Women are in a sense "highjacked" into such a disadvantaged position because of deeply held beliefs about the incompatibility of certain agricultural tasks, such as ploughing, with concepts of femininity; about men as farmers and hence as breadwinners; and about the social "uselessness" of women without husbands. Divorce, on the other hand, is seen as a natural and indeed even inevitable outcome of women's lack of bargaining power vis a vis men in the form of marriage assets, and a lack of competitive ability vis a vis other, wealthier women. As was often reported in the literature, while remarriage is an option for women, it is a necessity for men. However, the number and structural poverty of FH is determined not only by marriage, divorce, and access to agricultural assets.

Informants in Adiarbaetu often reported that female heads are seen as "useless". These women constantly contend with this subtle, yet ever-present assumption, which is held not only by the community at large, but as well by women heads themselves. As a result, the phenomena that give rise to their existence, their particular struggles, and those of their dependents, are relatively invisible to them and to the community as a whole, making them for officials and other development agents the social equivalent of welfare recipients. This negative appraisal is strong and influences nearly all of the actions taken to alleviate poverty and improve food security. Such a social valuation is likely to be a reflection of women's general inferior status vis a vis men, which is compounded by female heads' problematic status as single women or single mothers. However, it is also strongly related to the economic status of most FH, which have

very limited productive assets and access to labour markets, and few prospects of acquiring these outside of (re)marriage. Most landed FH households in Adiarbaetu live in part by providing their limited assets to others. When they do produce on their own land, it is of lower quality and hence yield, a greater proportion is dedicated to the homestead and thus a lower proportion is planted to crops, fewer crops are planted, and less is consumed. They lack access to adult male labour with which to carry out many essential agricultural tasks. Almost none can sustain livestock (and thus have no access to dung), or consume or sell livestock products. Almost none have homegardens, and few have their own trees. Some, who have sufficient assets and who are able bodied, do farm themselves and find means to improve their holdings, e.g. through tree planting, soil and water conservation measures, and purchase of oxen. But these are very few.

Unlike men, female heads are unable to travel long distances to find work, and other than food-for-work, there is little paid work for them within the kushet. The same constraints limit their abilities to access and market more valuable CPR, such as fuelwood, medicinals, and wild food plants. Thus, they mainly use their domestic skills and tools to produce exchange value (e.g. by producing tela), but in conditions of extreme competition, not only with other female heads, but as well with women from MH. If a “profit” (in this case, a wage higher than the implicit, for example, in food-for-work activities) were to be realized, then other women would quickly enter into production, since every woman in principle has all of the skills and assets that are required. “Profits” would be eliminated, and implicit wages would be driven down to the point where they are now, far below the minimum. The only sector where female heads can probably use their capacities to generate a higher implicit wage is in prostitution, since not all women are able or willing to become commercial sex workers. The risks entailed in prostitution are, nevertheless, very high in terms of social ostracism, unwanted pregnancy, and disease, where HIV/AIDs not only presents the threat that such women will pay with their own and their children’s lives, but that they will increasingly become focal points of risk for their neighbours.

Food-for-work should, therefore, represent the one means by which female heads can access subsistence goods without confronting stigma, inequity, and undue risk: it is intended that such programmes benefit those who are most in need. In fact, FH average fewer days of food-for-work than MH due to lower labour availability, and their participation also comes at higher costs in terms of physical effort, where they are expected to perform the same work that men perform, while consuming less than what women minimally require. The opportunity cost of their labour, and of the time spent travelling to and from food-for-work activities, is also higher than in comparable MH, given that most have minor children and lack access to childcare.

The majority of all FH cannot produce, or generate sufficient income to purchase, the wide range of botanical resources that are required for daily life, including fuelwood, food (including those containing vitamins and other micro-elements, such as fruit and vegetables), medicine, aromatics, grass (for basket making and thatching), construction materials, and materials for making tools. They are unable to purchase the grass and timber that are sold from AE, and have no use for AE to graze livestock. Their only option is to glean those subsistence resources that they cannot survive without from common land areas. On the one hand, they glean from land where vegetation is sufficient, but where they are not allowed to use the resources that they

most urgently require. On the other hand, they glean those resources that they most urgently require from land where vegetation is largely depleted. Across both of these areas, those CPR that are the most valuable to them are also the most restricted, and yet it is they who most often cannot desist from their use, so they also run the greatest risk of punishment. The particular form that CPR management has taken post-reform has largely deprived FH of access to botanical resources that are vital to their welfare and livelihoods, forcing them, as well as other households, to over-exploit open access resource areas. Again, the position of FH is structural rather than incidental, and exploring this position reveals a great deal about the sustainability of, and threats to, current CPR management regimes.

## **7.2 Leaving out a third of the (natural) capital: the consequences**

As was ratified in this study of Adiarbaetu in south-eastern Tigray, common lands and CPR are essential to livelihoods, even in heavily degraded and drought-stricken regions. CPR access regimes have also changed repeatedly, with inevitable effects on livelihoods. Development dynamics have led to the fragmentation and diminution of individual farm holdings. Drought, the conversion of common lands for agriculture, and increasing livestock populations have led to the reduction and degradation of grazing lands. Traditional control over forest and tree resources eroded: forests and woodlots were often converted to farmland, and deforestation of remaining areas proceeded apace. The development of a policy of enclosure to permit regeneration and environmental recovery has led to environmental enhancement, but has not been informed by a vision that promote linkages between environmental sustainability and livelihoods, or that recognizes that local populations are heavily dependent upon primary and secondary resources other than grass and timber. Although there are instances where particularly disadvantaged groups, such as the landless and FH, have been specifically permitted to benefit economically from enclosed areas, in general it appears that economic benefit streams from these enclosures have been either unequally distributed, in the case of restricted grazing lands, or minimal or negative, in the case of woodlots.

Most CPR that local populations glean from common lands remain invisible to policy makers and other officials, who repeatedly told the research team that plant resources are in such short supply in Tigray that they cannot constitute an important component of livelihoods. Nevertheless, it is difficult to explain why, for example, the clearly recognized need for fuelwood and its acute shortage has been barely considered when developing policy around the use of enclosed areas. Is this possibly related to gender bias? Given that women are generally responsible for fuelwood collection and that they are far less represented in the local councils and committees that are responsible for decision making about resource exploitation within AE, this is a very strong possibility. However, it can be argued that men's needs for CPR are also barely fulfilled through AE, but it is clear that the uses that AE do fulfil are much more closely related to their needs in comparison to women's, or to the needs of those population groups that own few or no livestock and have little or no cash income.

Research relating to AE in Tigray is increasingly focused on the relation between conservation, livelihoods, and participation, including possibilities for greater devolution of decision making at local level, including privatisation. These issues have emerged particularly since the benefit streams relating to AE do not appear to be

supporting local livelihoods. While perceptions of environmental benefits clearly favour AE, the perception that residents have of economic benefits is also crucial in resource management, providing people with incentives to participate in conservation. Further, “the manner in which the community allocates the benefits among themselves can affect collective effort of the group negatively or positively depending on the degree of “fairness” of the allocation” (Berhanu 2004: 34).

To begin with, in most cases, it appears that communities had their own management regimes long before the State or other outside organizations introduced AE. In Adiarbaetu, restrictions on grazing land and forested areas existed long before the Derg Regime. It was due to this long local tradition of enclosures and resource management that was largely overturned during the Derg Regime, that the majority of residents supported the AE introduced since 1991. Although little is known about traditional resource management regimes, these must have been effective, since CPR were abundant enough to allow for the successive and repeated conversion of common lands into private holdings, at least until civil war and drought took their terrible tolls. The early reforms imposed a new style of top-down CPR management which communities rejected, and which also disorganized existing CPR regimes and made much community land *de facto* open access.

There has been much more community participation and support for the current AE regime. Residents participate in the decision to designate areas as AE and have at times rejected proposals to enclose certain areas. Most seem to think that AE are an absolutely necessary part of the solution to the severe resource degradation that affects their communities. The short- and long-term environmental benefits are clear and are widely appreciated, and therefore AE are strongly supported. In the Household Survey, the main causes of degradation that male and female respondents gave were drought, overuse of resources, and population increase, in that order. While some perceived that AE contribute to their lack of resources and poverty, the majority said that they are an important part of the solution.

In addition to the types of environmental benefits mentioned in chapter 2, AE and species restrictions allow important native species to regenerate. Research in Adiarbaetu found that residents favour planting a variety of tree species, including many important indigenous species which are slow growing: while they acknowledged the need for fast growing species, they thought that the majority should be indigenous. In the Household Survey, most respondents said that they would like to see an increase in tree planting outside of AE. Most also said that there should be more efforts to regenerate resources in other open access areas, such as open hillsides, riversides and borderlands, but stopped short of insisting that these areas should be enclosed.

There is, however, greater ambiguity and complexity entailed in the perceptions and assessments of short and long-term livelihood benefits from AE and species restrictions. The economic benefits that have been realized in the relatively short-term include grass for grazing, basket making and thatch and, to a lesser extent, wood for construction. Woodlot enclosures have also led to the regeneration of other herbaceous and woody species which residents access, providing that species restrictions do not also apply. But there have been few short-term economic benefits from AE with respect to a multitude of resources other than timber and grass, and

access to some resources, such as fuelwood, has decreased, both since little can be extracted from AE, and because reliance and hence pressure on open access areas has necessarily increased with AE and species restrictions. In this respect, species restrictions have been difficult for the entire community, and there is much tension around them. Most believe that they are necessary and important. Dissatisfaction is not related to the existence of restrictions, but rather to their scope. Although the long-term benefits are understood, they are not reconciled with immediate needs, so much illegal use continues.

In Adiarbaetu, it is clear that FH, particularly those without livestock, do not gain short-term economic benefits from timber and benefit only little from grass. However, they are the principle users of other “minor” AE resources to which they would otherwise probably not have access. Their more intensive use of certain CPR is both a reflection and cause of their poverty. Greater reliance on CPR means, to them, more time and energy spent procuring subsistence resources that other people do not have to procure by this means. FH’s lower reliance on timber and grass from AE is also both a reflection and cause of their poverty: they do not meet the preconditions for their use and therefore cannot benefit. There is also a perception in Adiarbaetu of inequality in the use of common land areas. The poorest households, especially FH and the landless, often expressed their frustration at not being able to use common lands more for income generation, for example through fuelwood collection and sales, which was prevalent in the past but is nearly impossible today. Others suggested that some common lands should be redistributed to the poorest, particularly the landless, for use as farmland or homegardens.

Researchers have especially expressed concern about expectations for long-term economic benefits from AE and about how these benefits, if realized, will be distributed. The total value of timber stands in AE in Adiarbaetu appears to be quite high, but it is unclear whether they will be sold, or how the revenues from such sales would be distributed. In this sense, no one has clearly defined property rights. Community members appear to have few expectations that AE will directly contribute to livelihoods in the long-term, probably because, as is the case with other communities across Ethiopia, they have no idea what types of long-term (or even short-term) revenues might be generated, and these issues have not been open to discussion. For some, there is the hope that the increase in woody species will eventually permit them to sell fuelwood and charcoal. It appears that, in general, people do not need to be assured that they will obtain economic benefits in the long-term, since environmental improvements and short-term benefits (e.g. access to grass) are enough to gain their support. But attitudes about both short- and long-term benefits appear to be fairly closely related to the economic status of those who express them.

Initiatives to resolve botanical resource scarcity in the area have not been aimed at common lands alone. Private tree planting has been encouraged particularly for fuelwood production for own consumption and sale. Those residents who have some land, but not much, appear to be the most likely to plant trees. But it is often years before these trees can be used for fuelwood or timber. The poor seedling survival rate is also a concern. Since water is limited (compounded by livestock damage), many seedlings that are purchased do not survive. Other major issues that have been raised with regard to private tree planting as a possible solution for resource shortages relate

to their apparent detrimental effect on biodiversity (private landholders generally plant only species that provide short-term returns, such as eucalyptus) and their implications for equity (Jagger et al 2004).

Officials and residents of Adiarbaetu clearly are attempting to maintain a “fragile balance” between resource conservation and exploitation, particularly through informal access rules that are best referred to as the “need for exceptions”, which also seem to be meant to redress some of the inequities in access to AE and other assets, such as land. Local informal rules of access were pervasive in the research area, and yet rarely acknowledged in the CPR literature on Tigray. They are based on principles related to equity, age and need, including deeply culturally embedded notions about the importance of particular CPR to spiritual and physical well-being, and to the obligation that different groups (e.g. women) have to use certain CPR. It includes customary norms of access to resources such as wild food and medicinal species, even on private land. There is tacit acknowledgement on the part of both officials and residents that formal rules discriminate against disadvantaged community members. Informal rules uphold the precept that everyone has a right to meet their subsistence needs, which has often been found to underlie customary resource tenure regimes. Formal and informal rules appear to contradict one another, yet they actually work together as a form of legal pluralism. It is highly questionable, however, whether the existing situation provides anything other than a short-term palliative.

What can be asserted is that State intervention that is not complimentary to such local attempts to balance conservation and use, only increase the difficulties confronted. Chisholm (2004) argued that external factors, such as the replacement of traditional management practices with State imposed management, has led to less direct community involvement and therefore less concern for resource management. In Adiarbaetu, residents spoke proudly of their traditional community enclosures and clearly respect churchyards. It appears that fewer violations occur in these areas than in those established by the State and other entities. While state involvement is important for establishing guidelines and resources for the management of common land areas and resources, these should clearly compliment traditional management practices and not usurp local attempts to maintain a balance between resource use and conservation.

Beyond the recognition and encouragement of traditional management practices, community involvement includes consulting all community members regarding AE and species restrictions. As research in Adiarbaetu illustrates, different households have different needs for and uses of common land areas and botanical resources. Therefore, all user groups need to be included in decisions regarding their management, especially FH and the landless. While the entire community is allowed to vote on an enclosure before plans are finalised, there are few opportunities for community involvement prior to or after this event. Women heads reported frustration that their attempts to raise their concerns, particularly regarding fuelwood, have been largely ignored. Overall, these women support AE and see them as necessary and beneficial, but they also realize that they, more than others, bear the costs both because they provide much of the labour for their establishment and maintenance, and they are often more dependant on those resources whose use has been restricted.



While research and policy-making has focused on AE and on particular botanical resources, there is a much greater diversity of common land areas and of botanical resources that are affected both by policies and by degradation, and yet that are nearly entirely neglected in conservation schemes. All common land areas and all uses are entailed in and affected by resource degradation, and all must also be considered in resource management. For any resource management regime to be sustainable, it must be based on an understanding of the importance of resources to local populations. With such understanding, access regimes can be established that create links between exploitation and conservation; without it, such links are nearly impossible to ensure. Blanket policy approaches to CPR, it can be asserted, lead to solutions that suffocate local communities.

In summary, the results of the research presented in this report show that, in Adiarbaetu, CPR cannot be managed solely on an area basis. People seek specific botanical resources that are important to them no matter where they occur in the landscape. If restrictions are created in one area, then demand shifts to another. Species restrictions provide a partial response to this: it is only by restricting or preventing use of the most threatened species anywhere they can be found that their disappearance can be prevented. But, it is also clear that formally declaring an activity as illegal does not prevent it from occurring. These are some of the most important issues that both the policies and the research on CPR use in Tigray have largely failed to address. If “open access” areas and use of restricted species are not adequately dealt with, then these areas are likely to become deserts, with AE dotting the landscape like tiny oases. If the resources that are produced in AE continue to largely fail to meet the most pressing needs of the population, their destiny can only be likewise to disappear. These neglected resources and common land areas constitute the forgotten third of development in the region and their neglect threatens to undermine the other two thirds: farming and AE.

The second set of issues that is crucial to address in CPR management in Adiarbaetu and all other villages in the highlands is that of destitution and social equity. Highland political culture has, for centuries, upheld principles of equitable distribution of key livelihood assets, and has both formally and to a degree in practice recognized women’s entitlements. However, many cultural and economic factors have combined to generate very high levels of poverty, especially among particular types of households: those headed by divorced or widowed women and those that are young. It can be demonstrated empirically that these households rely more on CPR and are the major users of the “minor”, if not “major”, CPR resources. There are no rules limiting FH access to resource areas or resources in particular. In fact, it was found that the conceptual approach to assessing rights to botanical resources presented in chapter 2 was sufficient to establish patterns of access, but it did not offer explanations for the patterns encountered in Adiarbaetu. What was missing was a crucial substrate of information that refers to the preconditions for use of CPR, that is, the material conditions without which rights of access are unusable, which of course lies at the base of debates about social inequality. Equal rights are not equivalent to equal opportunities: equality of opportunity supposes the fulfilment of preconditions for access, such as assets, predisposition to seek opportunities, and lack of effective discrimination.

Both FH and the plant resources that are essential to them have been largely neglected in development efforts: this “third” of the population, and this “third” of the livelihood resource base, have gone unrecognized, been culturally defined as useless, and neglected. FH are often forced into destitution due to higher dependency ratios, unequal division of household assets, and unequal opportunities to farm and to participate in civil life. FH are more dependent on CPR, but AE in general are not governed with their resource requirements in mind. Areas that remain open are under increasing pressure precisely because they are relatively free access and increasing numbers of people depend upon them for bare subsistence. The unintended but very real marginalization and neglect of these households, both in terms of access to private assets and of access to “major” CPR benefits, can only result in an increasing environmental and human toll, as well as increasing inequality, in an area that already suffers from some of the worst human and environmental degradation on the planet.

### **7.3 Entry points for local action**

Officials in Adiarbaetu admitted that, until recently, they “never paid much attention” to FH, which reflects the situation in Tigray more generally (see Meehan 2004). It is only within the past two years, with initiation of the FAO project, that they have begun to pay more attention. In the end, it is the neglect of their circumstances, alarming numbers, and the relations that generate these households that ensures that they become and remain destitute. The success of any endeavour to reduce poverty, address food insecurity, and even to promote resource conservation and environmental rehabilitation, is dependent largely on understanding and addressing these issues, as well as adjusting to the day-to-day realities of female heads. Below, several entry points for positive action are proposed and discussed.

1. Fuelwood should be the first priority of any programme oriented toward supporting the livelihoods of the poor or toward environmental conservation. Together with grass, fuelwood is by far the most important use made of botanical resources found on common land. Women, and especially female heads, spend much of their time collecting fuelwood, which entails opportunity costs as well as caloric expenditure. The species currently used for fuel produce a great deal of smoke, so that alternative fuel sources that produce less smoke would also result in improved health. Three potential sources of fuelwood are: enclosed woodlots, unenclosed common land, and private farms. Within enclosed woodlots, more species must be introduced that can fulfil multiple livelihood needs, including the need for fuel. However, if fuelwood produced in enclosures is sold, FH and the very poor will still not have access. Further, the eucalyptus that predominates in these plantations does not seem to be a viable source of fuel: in spite of its availability, residents barely reported using it for this purpose. A study that examines the possibilities and constraints of eucalyptus as a viable fuelwood source is imperative, since devolution of plantations to farm level (through private plantations) may not be a viable solution, insofar as households appear to be planting only eucalyptus, and as well FH may lack the labour required as well as the ability to withstand the risks associated with high seedling losses. Alternatives to household-level devolution include the development of cooperative plantations on non-enclosed common land areas, where cooperatives could be managed by the landless and by poor FH, which could provide not only for production for own consumption, but as well for sales. Cooperative plantations would overcome some of the constraints that FH confront in terms of limited access to

labour, and would serve to pool risks. Other alternatives, such as fuel-efficient stoves, should certainly be considered, but should be seen as complementary to, and not substitutes for, fuelwood production. To be effective, fuel-efficient stoves must be available to every household. Experiences with ponds in the area indicate that households often do not receive all of the inputs that are required in order to make them completely functional. In any case, while fuel efficient stoves may reduce the need for fuelwood, they do not eliminate it, and households will continue to seek preferred sources of fuel such as *awelie* from open access areas.

Environmental conservation would be enhanced both directly and indirectly through the measures proposed above. With an increased number of multiple-purpose, multi-species plantations, the positive environmental effects attributable to enclosed woodlots would be extended both within the woodlots themselves and outside. Threats of extinction of preferred species on the restricted list would not only be reduced, but potentially reversed, if these species are purposefully planted and if use is regulated through, e.g. cooperatives. If sufficient fuelwood can be produced, dung can again be applied to soils; although it was not reported in the household survey that crop residues are used for fuel, their use for this purpose has been reported elsewhere, and increasing the supply of fuelwood would reduce this possibility. Further, multiple purpose plantations could also increase the production of tree fodder, and certain grass species could also be produced, albeit on a more limited scale, as they are currently in enclosed woodlots. A study that seriously considers the viability of multi-species, multiple purpose plantations that are designed with the participation of local residents after conducting research such as that presented here, is a necessary precursor.

2. Organization and representation of FH is a sine qua non to improvements in their social position and livelihoods. One of the primary opportunities for women to have a political voice within the community is through the WAT. Women pay dues, attend meetings, and elect leaders who then have representation among the village officials. However, WAT leaders reported that, although women pay dues, participation is very low, especially in meetings. It is only relatively recently that women have begun to speak out. Women leaders said that they constantly battled the perception, particularly when they first took up their positions, that they were “trouble makers” and not “real women”. Women are generally soft-spoken and reluctant to discuss their problems and ideas. Men’s organizations not only have more power within the village, but also are given more respect and support by outside governmental and non-governmental agencies. Women leaders said that male leaders are often asked to attend meetings in Mekele and even Addis Ababa, with all travel expenses paid. They also receive financial support from the government. As yet, women leaders have not been asked to attend meetings outside of the tabia and do not receive money from the government.

In spite of the fact that FH are recognized as the poorest and most food insecure households in the region, and that they are singled out by some development programmes and projects for support, they have no associations or institutions through which they can organise themselves, nor are they adequately represented in political bodies or decision making organisms. While some female heads belong to WAT, compared to women in MH, they have different problems and needs, and require an own association to permit collective political, economic, and social action. An

association would provide them not only with a collective voice vis a vis tabia and kushet officials, development Organizations, NGOs, the WAT, etc., but would also provide an opportunity for them to offer each other support. In focus group discussions, female heads said that they work constantly and rarely have time to discuss among themselves. The sessions provided them with such an opportunity for the first time: "I have learned so much from them. It has been helpful to have the time to interact with other women and discuss the issues affecting us." Awareness-raising is a first step, and women heads need the opportunity to learn that their concerns and needs are similar and have similar determinants, which can be changed. Such an association could be an adjunct to the WAT.

Better integration of FH and women in general within existing Organizations is also imperative. While many FH belong to the PA or baito, this involvement is largely passive and the policies that are formulated, as is demonstrated throughout this study, obviously do not take their needs into consideration. When wives participate it is highly likely that they simply add their own votes to their husbands'. Affirmative action is required, and this can only be achieved through political will and through an own Organization that agitates for such action. WAT leaders in the kushet said that it is a constant battle to get women involved; they see little to no benefit from the time invested in these associations. As long as their participation is ineffective, they will continue to be apathetic. Respect for their association, and political will to help them to overcome the constraints they confront when participating, must be forthcoming at all levels.

3. Improving women's access to agricultural assets can be achieved by once again involving the baito in the division of household land upon divorce and death, but such intervention must recognise that the welfare of female heads and their minor children are of paramount interest. Upon death, the primary consideration of the baito should be the ability of female heads to support themselves and their children. In divorce settlements, equality in the division of assets should not be the primary goal: rather, it should be to ensure the welfare of children, and to meet the subsistence needs of all parties involved, which might entail an unequal division of assets in favour of female heads, or an equal division of assets favouring the male head but coupled with ongoing alimony or child support through cash, food, or labour contributions (e.g. for ploughing), depending upon the specific situation of each household. It is only by ensuring that men's responsibilities to their ex-spouses and children are met on a continual basis that divorce, childbearing out-of-wedlock, and irresponsible paternity can be deterred. If baitos are able to enforce AE and species restrictions through fines or imprisonment, and if they regulate access to food-for-work and administer communal work programmes, then they are certainly able to enforce child support and alimony obligations of divorced heads.

Further, greater benefits from agricultural production for FH do not have to depend upon the elimination of cultural restrictions on ploughing or other agricultural work, which may still be a long time in coming. Nor does it necessarily depend upon increasing FH's access to land or to other production assets in the short term. Despite not being able to plough, women perform most other agricultural work, and hold all of the knowledge and skills that are necessary to engage in own-account agriculture. As discussed in Chapter 5, agricultural cooperatives can provide a means for female heads to use their land productivity without giving up half of their crops. In order to

receive any kind of support, agricultural cooperatives should be obliged to have a minimum percentage of FH members, which should correspond to the percentage of FH in the kushet.

4. Off-farm income generation of FH can be improved. The research on the use of botanical resources and common lands showed that there are various activities and resources that might prove to be viable sources of income for FH and the landless, if certain conditions are met. Several of these bear further investigation, which would entail researching (a) marketing possibilities and margins; (b) viability of transplanting or cultivating wild species or, alternatively, studies of availability and harvesting pressure on wild species to determine to what extent higher levels of exploitation are possible; (c) production requirements in terms of land, labour, production space, inputs, equipment, and capital and the facilities that different types of FH and poor households have for these; and (d) possibilities for cooperative production and marketing. Cooperative efforts could help to resolve constraints related to labour, childcare needs, land, equipment, and infrastructure access, as well as credit access. The main complaints that female heads have with regard to current business schemes is that they are not suited to their specific conditions. Therefore, it is very important that these women be involved in the process from the beginning. Aside from fuelwood, which has the potential to be a viable income generating activity if plantations are established, other examples of potential income generating activities are discussed below.

**Honey:** Due to the weight and height of beehives, men have been responsible for bee keeping. However, with the introduction of modern box hives, this would be a viable business for FH. Honey is quite valuable and could provide a substantial income, and production could be done through cooperatives or individually. However, it would prove to be difficult for those who do not have any place to hang the hives since, while it is possible to hang them in trees on common lands, men who do so said that they are constantly concerned about thieves, even though the structure and height of traditional hives makes this more difficult. Research is required to determine whether and how this activity could be made accessible and economically viable for FH and the landless.

**Gesho:** *Gesho* (dogwood - *Rhamnus prinoides*) is a small shrub or tree used in the production of *tela* and *tedj*, the favoured local alcoholic beverages. Demand for it is high, and it is said to have high market value. However, it appears that very few women sell it. It is possible that its production, whether cooperative or individual, could provide good revenues for FH. *Gesho* can be easily grown from seed. It is reported to grow well in most soils, and that it is tough. It is, however, slow growing, and it also requires space. With the new road, more income could be obtained if women could find a way to access larger markets, such as those in Adigudam and Mekele.

**Other wild plants:** Several are used frequently in the kushet and are often purchased at the local market, so they potentially offer income sources for FH, but only if they become available on a larger scale and closer to home, since the time currently spent in their collection is great. Some of these botanicals could be incorporated into multi-purpose woodlots, as are proposed above in relation to fuelwood.

5. Food-for-work activities are often difficult for women to carry out and can be harmful to those who are undernourished, pregnant or ill. These programmes need to be re-evaluated to ensure that the work is suitable, and working hours should be revised to allow FH to accomplish other necessary tasks, such as caring for their children. Food-for-work could possibly be offered to women for child care services, if these women can be trained for this purpose. If possible, work should be more widely spread throughout the kushet.

6. Improvements in sexual and reproductive health are essential, and must be promoted through education and awareness programmes, as well as by providing contraceptives and prophylactics free to the local population and specifically to FH. Although there is now a health centre offering HIV/AIDS tests and contraceptives, few women (and most likely fewer men) are aware of these services or of their benefits. While informational meetings on health and sanitation were observed, it appeared that women rarely attended. To reach women, it is important to work with the WAT, perhaps even having classes during some of the scheduled meetings.

It is urgent that female heads engaged in prostitution be identified and targeted not only for HIV/AIDs testing and education, but as well to ensure that they have economic alternatives to prostitution. Such women generally do not wish to be commercial sex workers, but as long as they are unable to support themselves and their families in any other way, this will continue and they will therefore constitute focal points of risk. This is especially important given that men's mobility will increase with the opening of the new access road to Mekele, which is one of the major sites of AIDs transmission in the region. Female heads who engage in prostitution are otherwise destitute; thus they should be the first to be targeted for the types of assistance discussed above.

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## Further information about the LSP

The Livelihood Support Programme (LSP) works through the following sub-programmes:

### **Improving people's access to natural resources**

Access of the poor to natural assets is essential for sustainable poverty reduction. The livelihoods of rural people with limited or no access to natural resources are vulnerable because they have difficulty in obtaining food, accumulating assets, and recuperating after shocks or misfortunes.

### **Participation, Policy and Local Governance**

Local people, especially the poor, often have weak or indirect influence on policies that affect their livelihoods. Policies developed at the central level are often not responsive to local needs and may not enable access of the rural poor to needed assets and services.

### **Livelihoods diversification and enterprise development**

Diversification can assist households to insulate themselves from environmental and economic shocks, trends and seasonality – in effect, to be less vulnerable. Livelihoods diversification is complex, and strategies can include enterprise development.

### **Natural resource conflict management**

Resource conflicts are often about access to and control over natural assets that are fundamental to the livelihoods of many poor people. Therefore, the shocks caused by these conflicts can increase the vulnerability of the poor.

### **Institutional learning**

The institutional learning sub-programme has been set up to ensure that lessons learned from cross-departmental, cross-sectoral team work, and the application of sustainable livelihoods approaches, are identified, analysed and evaluated for feedback into the programme.

### **Capacity building**

The capacity building sub-programme functions as a service-provider to the overall programme, by building a training programme that responds to the emerging needs and priorities identified through the work of the other sub-programmes.

### **People-centred approaches in different cultural contexts**

A critical review and comparison of different recent development approaches used in different development contexts is being conducted, drawing on experience at the strategic and field levels in different sectors and regions.

### **Mainstreaming sustainable livelihoods approaches in the field**

FAO designs resource management projects worth more than US\$1.5 billion per year. Since smallholder agriculture continues to be the main livelihood source for most of the world's poor, if some of these projects could be improved, the potential impact could be substantial.

### **Sustainable Livelihoods Referral and Response Facility**

A Referral and Response Facility has been established to respond to the increasing number of requests from within FAO for assistance on integrating sustainable livelihood and people-centred approaches into both new and existing programmes and activities.

For further information on the Livelihood Support Programme,  
contact the programme coordinator:  
Email: [LSP@fao.org](mailto:LSP@fao.org)

## **LSP WORKING PAPERS to December 2006**

- Baumann P., (July 2002) **Improving Access to Natural Resources for the Rural Poor: A critical analysis of central concepts and emerging trends from a sustainable livelihoods perspective.** FAO, LSP WP 1, Access to Natural Resources Sub-Programme.
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