

Environmental Policy Update 2013:  
Missing Players in Environmental Governance

## **Chapter 5. Women and the Environment in Rural Ethiopia: Impacts and Responses to Land Degradation and Deforestation**

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Environmental Policy Update 2013: Women and the Environment in Rural Ethiopia: Impacts and Responses to Land Degradation and Deforestation.

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- Women are heavily dependent on forest resources in rural areas worldwide.
- This chapter examines the impacts of land degradation and deforestation on the welfare of women as well as the changes that women effect on the natural landscape in rural Ethiopia.
- Forest cover in rural Ethiopia continues to decline, while demand for forest resources - in particular, firewood and charcoal - remains high.
- Women are one of the most significant drivers of forest degradation, but also the immediate and severe victims of environmental degradation.
- Access to education, community-based decision making, credit and land tenure are critical in order to lessen the immense daily workload and improve the general welfare of rural women in Ethiopia.
- Recent successes in women’s empowerment initiatives, including programs increasing women’s access to financial and natural resources through micro-gardening and woodlot establishments highlight the key roles that that women can play in mitigating environmental degradation.

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## Chapter 5. Women and the Environment in Rural Ethiopia: Impacts and Responses to Land Degradation and Deforestation

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### EXECUTIVE SUMMARY

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Worldwide, the rural poor face a multitude of threats to their welfare and livelihoods. Access to land and basic resources like water, fuel wood and food can be challenging to attain for rural households. Women, however, bear a disproportionate share of this burden and suffer severely from natural resource scarcity. With little access to alternative sources of income, women often rely on forests to sustain themselves and their families. Fuel wood is especially critical for rural women; approximately 2.5 billion people in the developing world cook with biomass, a number predicted to increase despite steady decreases in total forest cover.

This research explores the complex relationships between women and the environment in rural Ethiopia. In Ethiopia, forest income accounts for 32.6% of rural household incomes. As a result, changes to the availability of these resources affect the economic welfare, health, and safety of rural Ethiopian women. The central question guiding this research is: *How are Ethiopian women affected by, and responding to, changes in the environment including land degradation and deforestation?*

Literature reviews on land degradation, forest policy, fuel wood and women's empowerment provided a foundation for this research. We focus on firewood as a key link between natural resource scarcity and women's workloads in rural Ethiopia. Data from the 2009 Ethiopian Rural Household Survey (ERHS) shed additional light on connections between Ethiopian women and the environment. We also interview Ethiopian scholars and women's rights advocates to better understand how deforestation and natural resource depletion affect women. Interviews focused on policies and traditions advancing or hindering women's access to crucial natural resources.

Findings suggest that rural Ethiopian women remain highly dependent on forest products for subsistence and incomes; as the rate of forest depletion increases, the livelihoods of rural women are threatened. This study further suggests that rural Ethiopian women suffer unsustainable dependence on forest resources because they have few alternative sources of income, a status that has numerous negative health implications—including the physical strain of collecting wood as well as diseases such as emphysema and asthma caused by wood smoke. Interviews with Ethiopian scholars and women's rights advocates suggest that as the distance traveled to collect wood increases women are even more at risk of being abducted or sexually harassed. Further, as deforestation and land degradation increase, women who used to rely on forest products as a source of income migrate to urban areas, sometimes pursuing prostitution.

Women in rural Ethiopia often lack the resources needed to compensate for declining natural resource availability, making them both drivers and victims of forest degradation. Access to land tenure, credit, education, community-based decision-making, and improved technologies such as clean cook stoves might all improve the health and welfare of women in rural Ethiopia. The conclusions highlight recent successes in women's empowerment initiatives, including programs to increase women's access to critical financial and natural resources through initiatives such as micro-gardening, selling poultry, and developing woodlot establishments. In order to be effective, communities, government, and non-governmental actors must consider the achievability, time-sensitivity, and cost-effectiveness of such initiatives, and recognize that women can be key actors in mitigating environmental degradation.

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### 1. INTRODUCTION

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For many centuries, rural communities in eastern Africa subsisted by raising livestock on grazing lands, harvesting small agricultural plots, and collecting resources from nearby forests and surrounding areas (Coppock, Desta, Tezera, & Gebru, 2011). Today, as a result of population growth, increasing resource scarcity, and urbanization such rural lifestyles are difficult to maintain: poverty and hunger plague many pastoral areas as deforestation converts natural land cover to marginal farmland and access to critical natural resources, such as fuel wood and building materials, declines (Global Forest Resources Assessment, 2010). Changing landscapes and subsequent displacement of rural households and communities affect the economic welfare, health, and safety of marginalized populations in Ethiopia (Wan, Colfer, & Powell, 2011).

Women worldwide face particularly severe challenges that imperil their welfare and livelihoods (Wan et al., 2011). Mekonnen and Kohlin (2009) estimate that approximately 2.5 billion people in the developing world cook with biomass fuels, a number predicted to increase in the coming decades. This is despite the steady decrease in total forest cover (FAOSTAT, 2013; Mekonnen & Kohlin, 2009). Ethiopian women in rural areas are no exception. Some of the most daunting challenges facing Ethiopia today are food insecurity (Hammond, 2008) and poverty, problems that despite decades of domestic and international efforts, still plague most of Ethiopia (Hammond, 2008). Fundamental and basic resources, such as land and water, can also be hard to attain. Women, however, bear a disproportionate share of this burden in rural areas. With little access to alternative sources of income, women often rely on forest resources, especially fuel wood, to survive and feed their families (Mamo, Sjaastad & Vedeld, 2007).

As Ethiopia experiences increased desertification and land degradation, forest products and other ecosystem services—such as clean water—become even more difficult to procure, putting women at risk of poverty, hunger, and displacement. Many women are forced to walk incredibly long distances to collect sought-after materials, particularly firewood, on a daily basis (Shimekach, 2013). This mirrors patterns observed in other countries in the past: a 1990 study by Kitts and Roberts (1996) showed that prior to deforestation, women in India had to walk one or two kilometers to obtain wood fuel, but eight years later the walk had extended to over eight kilometers. More time spent collecting firewood leaves less time for women to concentrate on education, childcare, and other important chores and tasks (Shimekach, Tizezew; Pers. corr.; November 2013; Wan et al., 2011). Research also shows that burning biomass fuels for cooking purposes causes indoor pollution, which leads to major health problems; the victims of this pollution are typically women due to the constant exposure during food preparation (Bolaji, 2012). According to the World Health Organization (2011), indoor air pollution from the burning of fuel wood accounts for approximately 2 million premature deaths worldwide.

Despite these health implications, fuel wood consumption is an instrumental part of life in rural Ethiopia. Some of the most fuel wood intensive practices are baking injera, a staple Ethiopian bread, and brewing *talla*, a popular home-brewed beer (World Health Organization, 2004), both of which have deeply-rooted historical and traditional significance in Ethiopian culture.

Though rural women in Ethiopia at times have a negative impact on the environment, they also suffer disproportionately due to changes in forest cover because of their dependence on environmental resources such as firewood. In order to explore the complex relationship between women and the environment in rural Ethiopia, the following question guides our research: *How are rural Ethiopian women being affected by, and responding to, changes in the environment including land degradation and deforestation?*

This study employs literature reviews, interviews, and household survey data. It examines the historical and institutional context in which rural women in Ethiopia live, women's access to important natural resources, changes in settlement patterns, and innovative initiatives to help rural Ethiopian women gain financial stability.

## **2. BACKGROUND**

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### **2.1. History and Context: Women and Forest Resources in Ethiopia**

Ethiopia's varied governmental regimes have shaped forest policies and their impacts on rural women over the course of Ethiopian history. These policies and institutions have profoundly affected women's access to forest resources (Flintan, 2010). Focusing events such as the 1985 famine greatly influenced policies that govern natural resources, such as forests, and sometimes fostered greater inclusion of women, whilst other times, they further excluded women from important legislation (Hoben, 1995).

During the Imperial Era (1941-1974), forest protection was within the jurisdiction of governmental forestry professionals, and political power was in the hands of the emperor and elite nobility. Forest law concentrated on exploitation and modernization, but ultimately failed to account for women and their dependence on forest resources. The Land Reform Policy was created during an era of government decentralization from 1975 to 1985, which placed natural resources, including forests, under state ownership (Ottoway, 2013).

In 1986, power shifted to an authoritative centralized government under the Derg regime. Even though this government sparked discourse surrounding forest policies, it did not value the opinions of rural Ethiopian women (Ayana, Arts & Wiersum, 2013). The famine of 1985 sparked a series of large-scale environmental reclamation projects backed by the government, donors, and non-governmental organizations that included hillside terrace landscaping, fostering the regeneration of native plant species, and planting new trees for firewood, timber, and erosion control (Hoben, 1995). Unfortunately, a significant reduction in agricultural production followed these efforts. Additionally, the concerns of rural citizens were not solicited in the

planning process, leading some to argue that top-down governance excluded marginalized populations from decision-making (Hoben, 1995).

In 1989, the Ethiopian government launched the Conservation Strategy of Ethiopia (CSE) in response to the devastating impact of the famine; the CSE sought to assess environmental priorities and to develop policies aligning development goals with environmental sustainability goals. In addition, the CSE recognized that environmental and economic policies had gender implications, and aimed to ensure that the disenfranchised actors, in particular local communities including women, were fully involved in the development and management of natural resources such as forests (Conservation Strategy of Ethiopia, 1997). At this point, women were still largely disenfranchised by forest policy.

The Ethiopian People's Revolutionary Democratic Front (EPRDF), a decentralized democratic system that focuses on increasing the role of non-state actors, was established in 1991 and is the current ruling political group in Ethiopia (Ayana, Arts, & Wiersum, 2013).

## **2.2. Formal and Informal Institutions Affecting Rural Ethiopian Women**

Today, one of the most defining governmental institutions for Ethiopian women is the 1994 constitution, which included a clause that guaranteed gender equality and promoted women's access to important resources such as forest products, land, and water (Ethiopia EPA, 2004). There are also other institutions, such as the Ministry of Agriculture and the Ethiopian Orthodox Church, that have played a critical role in forest policy and on-the-ground forest management, directly affecting rural Ethiopian women.

The Ministry of Agriculture has made an effort to implement policies and programs that are intended to provide support and aid to the 'acutely poor,' a subcategory that usually includes rural women (Hammond, 2008). In 2003, the Ethiopian government developed a National Food Security Strategy to address poor populations that required additional governmental help. In addition to asset protection and rebuilding, the main goal of the strategy was a "Volunteer Resettlement Programme." This program aimed to move poor, landless people from food-insecure regions of the country, primarily in central and eastern states, to the western lowlands in the hopes that they would gain access to resources and prosperity (Hammond, 2008). However, these changes in settlement currently present severe welfare issues for Ethiopia's rural women. Forced to survive on few resources, Ethiopian women have even less access to education, credit, production assets, and land. Issues that formerly existed in their original communities become amplified, and social tensions often arise between relocated people and local communities. With a shortage in basic resources, already marginalized groups, like poor, rural women, are made more vulnerable to conflict and resource insecurity (Hammond, 2008).

Traditional cultural practices and institutions also influence women's experience and interaction with the environment in rural Ethiopia. The Orthodox Church occupies a unique niche in the allocation and accessibility of forest resources to rural women, particularly in northern Ethiopia where the landscape is heavily degraded and Orthodox Christianity is the

dominant religion. Only about 5% of northern Ethiopia's original forests are still intact - these areas of forest are largely governed by the Christian Orthodox Church (Cardelús, Baimas-George, Lowman & Wassie, 2013). These churches conserve an immense and impressive portion of natural forest, and in turn, a substantial amount of forest resources and biodiversity. While church forests serve as an incredible example of forest preservation, they cannot serve as a resource for rural women as only the church can exploit church forest products (Wassie, Teketay & Bongers, 2009).

Furthermore, traditional cultural practices can also impose additional social burdens on women and further solidify women's roles as propagators of environmental degradation in rural Ethiopia. In many areas, child marriage is a common practice and has proved to be harmful to young girls and women. Child marriage is defined as marriage of anyone under the age of 18, and Ethiopia has one of the highest rates of child marriage in the world, despite its illegality (Erulkar & Muthengi, 2009). In the Amhara region specifically, 50% of girls are married by the age of fifteen, and 80% are married by the age of eighteen (Erulkar et al., 2009). Traditionally, men desire virgin wives, and in an effort to ensure virginity, many men seek extremely young women for brides. Many girls, starting from the age of seven, are married off to much older men, forgoing childhood and critical years of education in order to take care of their new husbands. When men need women to occupy traditional female roles, they turn to young wives to collect firewood and water to survive (IRC Ethiopia, 2013; Shimekach, Tizezew; Pers. corr.; November 2013).

This is both a social and environmental problem on a number of levels. Since married girls often do not complete their education, they have decreased opportunity to earn their own income, becoming entirely financially dependent on their husbands. Often, girls do not give consent to these marriages. A 2009 study on Ethiopian child marriage in Amhara found that a mere 15% of women had consented to their marriage; younger brides were less likely to give consent than older brides. Additionally, 81% of married Ethiopian girls between the ages of ten and nineteen stated that their first sexual intercourse was also non-consensual (Erulkar et al., 2009). Early pregnancy can lead to debilitating conditions, including fistula and birth defects. Another health and safety issue surrounding early child marriage is directly linked to the collection of firewood and water. Sometimes, while fetching water or firewood, a girl is raped by an abductor or abductors, after which she and her family feel that her marriageability is compromised and potential worth as a bride significantly decreased. Further, the victim may be forced to marry her rapist or an associate of her rapist (Erulkar, 2013; IRC Ethiopia, 2011). Deforestation encourages girls to walk long distances, during which time they are increasingly vulnerable to these predators seeking young wives (IRC Ethiopia, 2011).

### **3. METHODS**

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This study begins with a comprehensive literature review on the interconnected relationship between rural women in Ethiopia and the environment, as well as the history and institutions that govern rural women, forest management, and land settlement patterns. Journal articles



collected from Google Scholar and Environment Complete regarding land degradation, fuel wood consumption, migration, and women’s empowerment in Ethiopia guided our research. Literature reviews also provided information regarding the health concerns that women face within the household, particularly from burning fuel wood to cook indoors.

Additionally, interviews with on-the-ground women’s rights workers, including Tizezew Shimekach Sisay, an Ethiopian environmental researcher and women’s rights advocate, further informed the research. We also contacted other Ethiopian scholars and conducted interviews addressing women’s issues and the environment in rural regions.

Finally, this study utilized data from the Ethiopian Rural Household Survey (ERHS). The ERHS is a survey that was administered every five years beginning in 1989 in multiple villages across four regional states. The survey sample includes 1,477 households, which were chosen randomly within each village (Figure 1). Although the ERHS does not sample households from the entire country, it is “considered broadly representative of households in non-pastoralist farming systems as of 1994” (Dercon & Krishnan, 2011). In order to assess the accessibility of forest resources to rural women in Ethiopia, we analyzed the ERHS data to examine the amount of time rural women spend collecting fuel wood.

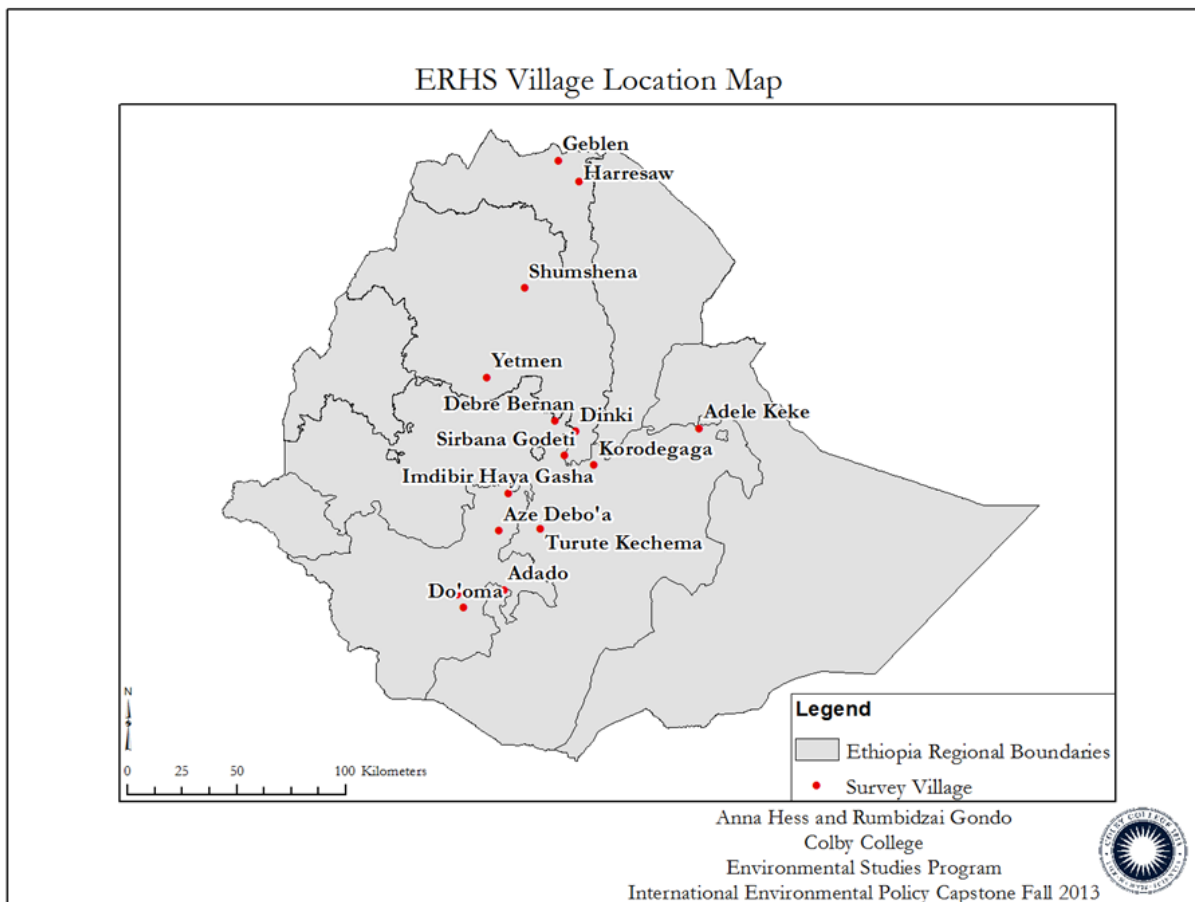


Figure 1. Map of ERHS study communities (ERHS, 2009).

## 4. RESULTS AND DISCUSSION

### 4.1. Analysis of Change in Forest Cover

Forest income accounts for a significant 32.6% of total household income in Ethiopia (Asfaw et al., 2013). According to a widely cited 2007 FAO estimate, forest cover in Ethiopia decreased by as much as 141,000 hectares per year over the past two decades; an important statistic because of its implications for rural Ethiopian women who are dependent on forest resources. Forest area, as shown in Table 1, continues to decrease as a result of the exploitation of wood fuel and other forest resources for personal consumption, as well as for income generation.

Table 1. Change over time in population, forest and woodland area, wood fuel removal and government revenue from wood products and non-timber forest products (NTFPs).

Variable of Change	1990	2000	2005	2010
Population (mil)	48,333	65,578	74,264	82,950
Forest Area (1000 ha)	15,114	13,705	13,000	12,296
Other Woodland Area (1000 ha)	44,650	44,650	44,650	44,650
Wood fuel removal (1000 m3)	---	88,800	94,700	102,200
Government revenue from timber licenses/royalties/penalties (USD)	---	739,600	6,132,300	3,135,300
Government revenue from NTFP licenses/royalties/penalties (USD)	---	3,416,400	5,910,600	12,700,000

Sources: Princeton University, African Forest Forum Working Paper Series 2011; Global Forest Resources Assessment 2010.

Table 1 also shows that through government revenues from licenses, royalties, and penalties from both wood products and non-wood forest products, forest resources are a significant source of income in Ethiopia. The increase in government revenue from 2000 to 2010 is an indication of the increase in the number of people who sought licenses and were involved in the exploitation of forest products. As the population continues to grow, forest area and resources will continue to depreciate. Ethiopia is the second fastest growing country in Africa, and with an approximate annual growth rate of 3%, the pressure on forest resources will also increase. Population pressure is considered to be one of the major drivers of land use change in Ethiopia and will consequently intensify land degradation (Anley, Bogale & Haile-Gabriel, 2007). Therefore, as the population increases, the forest area will decrease to accommodate human settlement and crop production, and the demand for natural resources, including forest resources, will increase (Amsalu, Stroonsnijder & de Graaff, 2007). As more people venture into forest resource exploitation as is shown in Table 1, rural Ethiopian women who are dependent on forest resources will become increasingly disadvantaged.

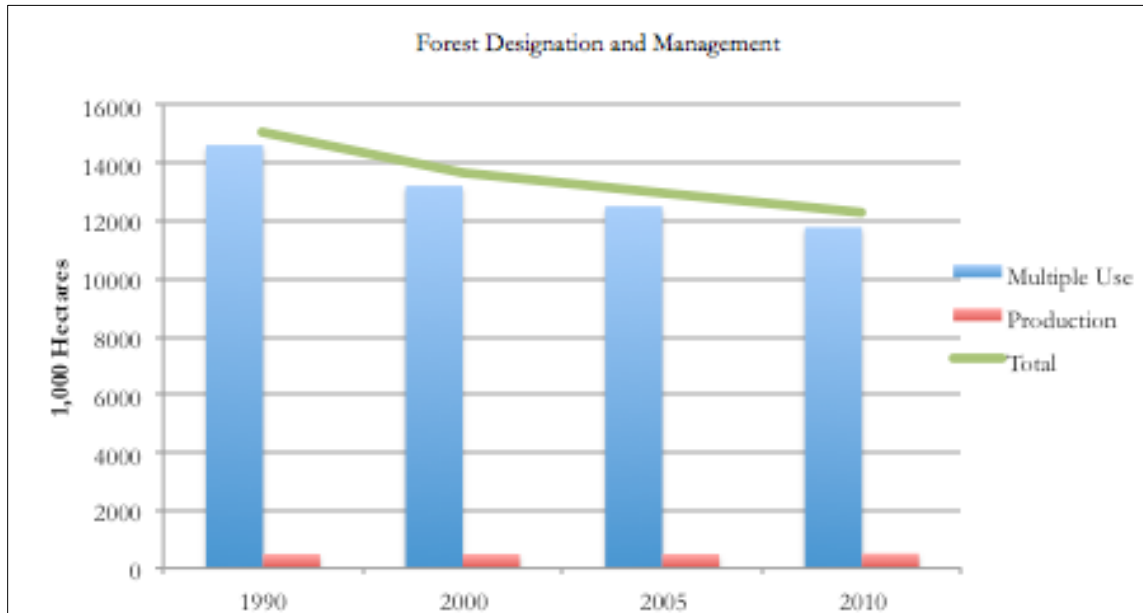


Figure 2. Total use and primary designated functions of forests in Ethiopia (FAO).

Rural women in Ethiopia rarely have alternative sources of income other than from forest resources, making mitigating deforestation and preserving forest resources seldom an option. Rural women generally have little access to credit to buy farm inputs, thus limiting their engagement in other incoming generating activities such as crop production, a high value task dominated by men. As indicated previously, women are more dependent on forest resources than men; therefore a significant amount of the data from Figure 2 represents the activities in which rural Ethiopian women are engaged. Figure 2 illustrates the general pattern of forest cover in Ethiopia between 1990 and 2010, measured in total forest cover, multiple use, and production. Multiple use is defined as forest area designated primarily for more than one purpose, and production is defined as forest area designated primarily for production of wood, fiber, bio-energy, and/or non-wood forest products. Data on forests in Ethiopia is limited. The forest resources assessment document put forward by the Food and Agriculture Organization (FAO) on Ethiopia defines multiple types of forest cover, but only two categories show any data: multiple use and production. Despite these gaps in data, it is clear that forest resources have an instrumental role to play in rural Ethiopia and that forest cover as a whole is declining due to deforestation (Global Forest Resource Assessment, 2010). Considering the high level of dependence of rural Ethiopian women on forest resources for multiple use and production purposes, the decline in forest cover appears detrimental to the livelihoods of women.

A recent study of the Ethiopian district of Dendi showed that most households that are dependent on forest resources as a source of income rarely have alternative sources of income such as crop production (Asfaw et al., 2013). This is consistent with the findings that women are more dependent on forest income than men and, as a result of limited access to resources and gender inequality, have no access to alternative sources of income. This has been noted within both male-headed and female-headed households (Asfaw et al., 2013). If the rate of forest

depletion continues to rise, the livelihoods of the rural women and their families will continue to be threatened (Mamo et al., 2006).

Therefore, as the rate of deforestation increases, forest resources deplete, causing a fuel shortage. Women have to travel further in order to access the fuel wood; the distance walked, the weight of the load, and the burning of fuel wood have severe health implications. These health consequences can reduce the level of productivity and decrease overall household income (Figure 3). Variants on this feedback loop have been observed across low income countries by Bolaji (2012), Wan et al. (2011), Mamo et al. (2006) and Reynolds et al. (2010). The following sections further examine fuel shortages, women’s workload, and human health threats in the specific Ethiopian context.

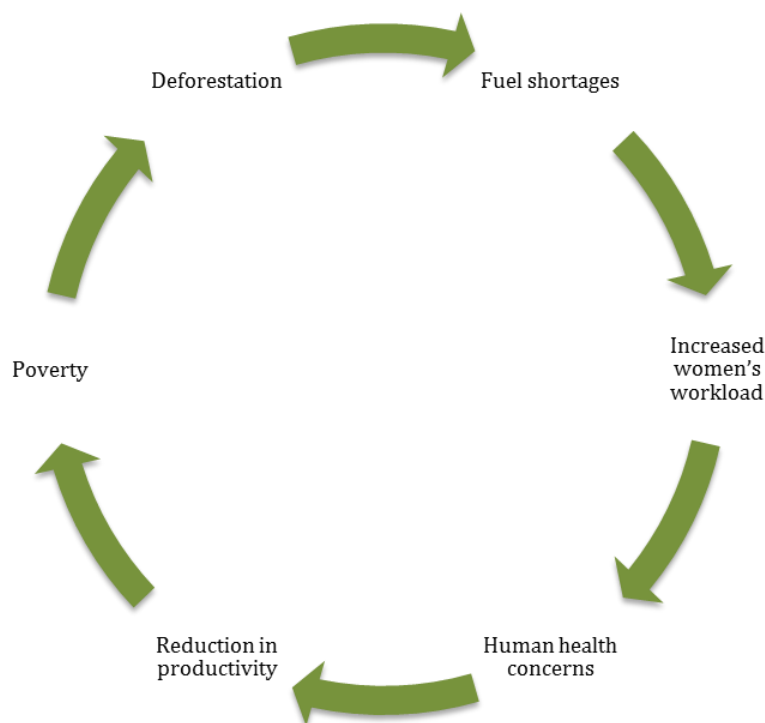


Figure 3. Feedback loop of relationships between women and the environment.

#### 4.2. Time Spent by Rural Ethiopian Women Travelling to Collect Firewood for Household Use or Sale

While data on women and the environment are scarce, the Ethiopian Rural Household Survey provides some of the most comprehensive insight into the challenges facing women who are dependent on forest resources.

Figure 4 illustrates the distance that women in the ERHS survey stated that they have to travel to collect wood for fuel. The time travelled ranges from no travel to three hundred minutes. Most women travel between zero and one hundred twenty minutes. Rural Ethiopian

women are being forced to walk longer and longer distances to retrieve resources that are fundamental to their survival. The distance travelled to gather wood also affects the cost of purchasing fuel wood, another consequence of deforestation and a challenge that rural women must confront (Mamo et al., 2006). However, the increased rate of deforestation and the depletion of forest resources affect not only the ability to generate household income but also the health and safety of rural women. An Ethiopian study reported the incidence of miscarriages among women who collected firewood as 16% on average and 44% among those of age 35-44 (Wan et al., 2011). Box 1 further illustrates the shared experience of firewood collection by rural women.

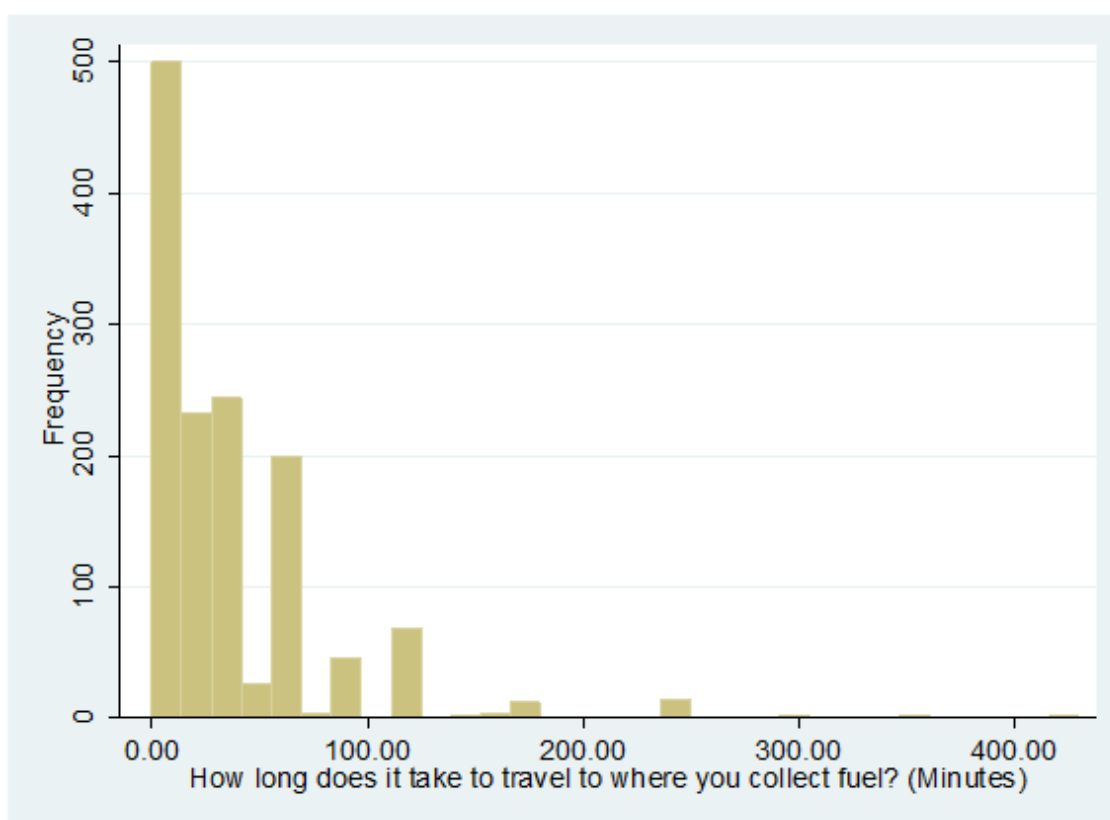


Figure 4. Minutes travelled to collect fuel wood, 2009 Ethiopian Rural Household Survey (ERHS, 2009).

**Box 1: Challenges of Firewood Collection** (Shimekach, Tizezew; Pers corr; November, 2013)

A woman from the village Abay Minchi in the Amhara region of northern Ethiopia must walk three or more hours every single day to collect firewood. At 55 years old, her body cannot stand up to the severe physical burden of the treacherous daily journey without extreme pain. Although she has no husband and no children, she has been making this trek since the age of 21. Each day, she ties approximately 45 kilograms of wood to her shoulders, and travels over rocky, hilly and uneven terrain back to her home to cook and try to sell fuel wood for income. Her story is no anomaly; women across rural Ethiopia, representing a myriad of villages, ethnic groups and family backgrounds make similar trips every single day. As a result of this intense time and energy commitment, these women cannot concentrate on other aspects of life and family; for instance, fuel collection often takes precedence over education and health.

Firewood presents health and safety risks following collection, as well. In addition to the physical strain of carrying heavy bundles of fuel wood, many daily tasks involve intensive burning of wood on an open fire, a practice that has been linked to respiratory diseases such as emphysema and asthma (Wan, et al., 2011).

#### 4.2.1. *Women as Innovators: Solutions to Deforestation in Rural Ethiopia*

Although women are often the main cause of deforestation and land degradation, they are also the force behind initiatives to combat environmental degradation (Reynolds et al., 2010; Federici, 2011; Zeweld, 2010). Because they are also victims of these environmental changes, there is an incentive to be involved in the environmental rehabilitation initiatives (Nyssen et al., 2008; Shimekach, Tizezew; Pers. corr.; November 2013). As seen in Box 2, women regularly collaborate with international organizations and the Ethiopian government to reforest and rehabilitate local land.

**Box 2:** Women's involvement in environmental restoration and reconstruction (Shimekach, Tizezew; Pers. corr.; November 2013)

The World Bank created a woodlot establishment program that provided seedlings from its nurseries for plants such as eucalyptus to a Woreda in the Gondar area. The Woreda consists of 34 villages. In each village, the village leader, on behalf of the women, decides which seedlings will be most beneficial to the community. The Ethiopian government plays a key role in producing and supplying seedlings to provide to the women. Though the program focuses on women, the government is interested in extending it, so surplus seedlings are given to the men. A key aspect of this program is to educate women and communities about soil and water conservation. The program also provides fencing to separate the seedlings from other agricultural projects. After the trees have matured, they can be sustainably harvested for firewood.

The government also manages a soil and water conservation program in which Tizezew Shimekach Sisay also plays a significant role. The programs plants hybrid grasses that can later be used to feed cattle. Though it is challenging to enforce these programs and close off designated areas to people and animals, the success of this program is noteworthy. Women have also been championing the rehabilitation and reconstruction of the natural landscape.



Figure 5. Rehabilitating Rural Degradation (Shimekach, Tizezew; Pers. corr.; November, 2013).

As shown in Figure 5, when adequate support and resources from government, non-governmental organizations and rural communities are available to women, women-centered efforts at environmental restoration can effect positive changes. According to Robertson and Swinton (2005), involving local communities in decision-making about resource management is key. A thirty year comprehensive study of the conservation activities in one of the world's most degraded areas, the Tigray highlands of Northern Ethiopia, showed a 68% decrease in sheet and rill erosion rates, an increase in the infiltration and spring discharge as well as increased vegetation growth (Nyssen et al., 2008). These stories emphasize the potential for success in environmental rehabilitation interventions and invalidate claims of the inevitability of land degradation.

## 5. DISCUSSION AND CONCLUSIONS

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This paper began with a description of the vicious cycle of natural resource degradation and poverty that impact the livelihoods of rural women in Ethiopia, however our research shows that there are ways in which this cycle can be broken. Though women are major causes of land changes such as deforestation and degradation, they are also the victims. As evidenced by research studies and policy implementation elsewhere around the world, when women have access to resources, they can better protect themselves. Simultaneously, women have a responsibility to harvest forest resources sustainably. There are programs that are currently functioning on the ground in rural Ethiopia that, if given more support, could better help to mitigate deforestation and land degradation.

This study shows that women in rural Ethiopia have played a major role in deforestation and the depletion of forest resources due to their dependence on forest resources for income and household use. Women's activities are directly linked to their roles of providing food, water, care and protection for their household (Tenagne; Pers. corr.; November 2013). As a result of their extensive engagement with the environment, rural Ethiopian women have an active body of knowledge in protecting the environment and natural resources (Shambel, 2012). However, rural Ethiopian women often lack the resources that they need to cope with changing landscape and decreased natural resource accessibility. They are politically, economically and institutionally constrained and this limits the extent to which their environmental knowledge can be applied to develop and utilize the forest resources in a sustainable manner (Shambel, 2012).

As a result of these constraints, rural Ethiopian women have few alternative sources of income and depend largely on forest resources (Djoundi & Brockhaus 2011). Access to land tenure would enable rural Ethiopian women to engage in other income generating activities such as crop and livestock production. Having tenure would also provide the security necessary to invest in sustainable land-use practices. Credit is also necessary for women to purchase farm inputs such as fertilizers and improved seeds – resources that can help produce income and reduce women's unsustainable dependence on forest resources (Asfaw et al., 2013). However, this access to land tenure and credit would be ineffectual if not coupled with access to markets. Rural women will be able to efficiently produce and sell their products when there is access to a

market place. The World Bank (2010) suggests that when paired with secure land tenure and credit, access to markets could facilitate conservation therefore addressing some of the challenges that rural women face as a result of changes in land and resources. In a survey study of the South Wollo region of Ethiopia, the respondents emphasized that access to land and credit were major deterrents of active engagement in income generating activities (Shambel, 2012). This lack of access has forced some women to borrow from local money lenders through the system of usury; a fraudulent system based on the principle that interest on loans compounds on a monthly basis if the debt is not repaid in time (Shambel, 2012). Women have no access to credit and land and when they do, it is not as beneficial as it could be and thus there is a need for policy reforms and structures that benefit rural Ethiopian women who are seeking alternative sources of income.

Women with no alternate sources of income often migrate to urban areas where they continue to collect and sell firewood, which further fuels deforestation. Some end up in dangerous industries, such as prostitution, which pose a variety of health risks. Box 3 shows how the work of women’s empowerment activists in conjunction with the United States Agency for Development (USAID) can provide access to credit and microloans and break this detrimental cycle. Glenn Anders, the Mission Director of USAID, reiterated the potential of underserved groups such as women in Ethiopia in a press release statement, “This assistance from the American people will strengthen access to credit for two very important entrepreneur groups – the Diaspora and women – who will in turn help bolster an already growing national economy” (US Embassy, 2008).

**Box 3:** Addressing poverty and environmental degradation through credit and microloans (Shimekach, Tizezew; Pers. corr.; November 2013)

Abrihet\* received 5 hens and a cock through the microloan program that supports women with HIV, a joint effort of women’s empowerment activists such as Tizezew Shimekach Sisay and the USAID. Like many women, Abrihet had moved from the rural areas to a small but a more urban area in search of an income. However, HIV prevented her from collecting firewood to sell for income. Because her family discriminated against her, she was destitute and living in poverty. However, through the program she was first able to receive medication and five hens and a cock to use as a source of income. The chickens are specific hybrid chickens that are capable of laying an egg each day if fed properly. These eggs are bigger and more desirable than eggs from local chickens. Abrihet and women like her sell the eggs to Ethiopian supermarkets at 2.25 Birr per egg, and the supermarket marks it up to 2.50 Birr. Under the leadership of Tizezew Shimekach Sisay, this program has had 300 beneficiaries over a period of approximately two years. Some of the women then expand to selling potatoes, tea and coffee. Women who are assisted by this program can make on average 3000 Birr (\$167 a year). The money they earn first goes to meet their nutritional and health needs. In order to minimize the cost of living, two or more women rent a house together, and women who rely on this program meet to discuss and share their experiences. Then the leader of this group meets with Tizezew Shimekach Sisay once a month to relay any questions, challenges and solutions that come up in discussion. As a result, women gain a new found sense of empowerment and self-reliance. Appropriate income generating activities that can be executed in a small area with limited capital, such as small-scale poultry farming or micro gardening have helped Abrihet and 300 other beneficiaries. \*Real names are not used.

Monetary Financial Institutions (MFIs) in Ethiopia have noted the positive impact of providing rural women with access to credit (IFAD, 2011). Women who receive credit and



increase their income spend much of it on their household thus increasing the welfare of the entire family (Cheston & Kuhn, 2002). Access to credit and microloans are ways of empowering rural Ethiopian women and establishing alternative sources of income.

There are active women's groups and associations in Ethiopia that are working towards women's empowerment. The mission of the Ethiopia Women's Lawyers Association (EWLA) is "promoting women's empowerment and access to justice, strengthening the capacity of duty bearers, and influencing policies, laws, and practices to realize women's enjoyment of equal rights with men." This is one of several organizations that believes that empowering and educating women is the first step to acquiring access to land tenure, credit and markets (EWLA, 2013). Others suggest that women can gain empowerment and equal recognition when they have access to these resources (Quisumbing & Pandolfelli, 2009; Shackleton, Paumgarten, Kassa, Husselman & Zida, 2011).

Though EWLA does not explicitly address environmental problems that rural Ethiopian women face, they want to ensure equal access to public services and benefits that can be extended to include natural resources. EWLA's efforts challenge the structures and institutions that allow men's rights to dominate those of women. The structures and institutions that govern access to forests and off-farm employment opportunities are at times the same structures that restrict women's involvement in forest management and access to resources (Asfaw et al., 2013).

## **6. POLICY RECOMMENDATIONS**

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Studies show that access to education reduces women's dependence on forest income and creates avenues for alternative off-farm employment opportunities (Mamo et al., 2007; Babulo et al., 2008; Shackleton et al., 2011). A higher level of formal education is associated with decreased forest depletion and forest resource dependence (Adhikari, Falco, & Lovett, 2004). It also creates opportunity for more viable sources of income. Women with access to education have greater decision-making roles and bargaining power within the household (Lim, Winter-Nelson, & Arends-Kuenning, 2007). Furthermore, "women are the primary teachers of the generation. If women are well educated and empowered both socially and economically they can benefit the environment. As they are the primary beneficiaries of their environment, they can have bigger roles in conserving and protecting the environment as they comprise half the population" (Wassie, Alemayehu; Pers. corr.; November, 2013). Providing access to education and subsequent decision-making responsibilities can better enable rural women to confront adverse environmental changes.

Ethiopian women face a number of challenges that endanger their economic, social and physical wellbeing; therefore, their needs demand immediate attention. Efforts to alleviate the hardships of rural Ethiopian women must consider feasibility, time-sensitivity and cost-effectiveness. Policies that promote women's empowerment in the realm of law, justice and politics, to help women gain access to land tenure and credit, markets, education, community-

decision making and household technologies; this has the potential to enhance the livelihoods of rural Ethiopian women and mitigate deforestation and depletion of forest resources.

Furthermore, it is important to adopt technologies and practices that mitigate deforestation, curb forest resource depletion and enhance the livelihoods of rural Ethiopian women. Reforestation is one way to combat the increasing rate of deforestation, and can ensure fuel security, food security, increased water quality, sustained economic activity and increased awareness about environmental issues (Reynolds, Farley, & Huber, 2010). In addition, the introduction of more efficient and safer ways of cooking such as clean woodstove technology can reduce the dependence on fuel wood and the negative health effects of cooking over an open fire (Reynolds et al., 2010). The prevalence of harmful cultural practices such as early child marriage may decrease if the above recommendations are implemented (Shimekach, Tizezew; Pers. corr.; November, 2013). Addressing deforestation and enhancing women's access to important natural resources can greatly improve women's livelihoods in rural Ethiopia.

In order to mitigate land degradation and deforestation whilst empowering rural Ethiopian women, collaborative programs and initiatives that involve governmental organizations, non-governmental organizations and rural communities must be implemented. Ethiopia's three successive national plans indicate that women need to participate in natural resource management (Lemma, Tenagne; Pers. corr.; November, 2013). Therefore the programs must factor in the economic, cultural and physical needs of Ethiopian women and their dependence on natural resources.

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