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Research Paper

Differing Land Use Strategies and Effects in Preexisting Livelihood Systems and Natural Environments of Lower Didessa Valley, Western Ethiopia

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Abstract

The continuous encroachment of highland cultivators into the lower Didessa River Valley in west Ethiopia since the mid-20th century has brought environmental, economic, and social changes. This study aimed to depict land use changes and their subsequent impacts on preexisting livelihoods and the environment. The travelers' records, structured interviews with the local communities, and various documents were collected and analyzed qualitatively. The study revealed that the intensified systems of surplus production since 1950 have remarkable and distinct historical political ecology features and impacts by displacing preexisting livelihood systems and reshaping the social and environmental settings in the valley. Thus, (re)considering policies and programs is important to realize sustainable development in the valley. Moreover, further multi-disciplinary research is necessary to understand land use systems and the ecological situations of the Mecha Oromo and Nilotes when planning interventions in the valley.

Keywords: *Historical Political Ecology; Shifting Cultivation; Mechanized Farming; Livelihood; Social Changes*

INTRODUCTION

This paper seeks to explicate how the change in mode of production affected preexisting livelihoods and the natural environment in the lower Didessa River valley from 1950 to 2008. From the mid-20th century, the valley experienced agricultural expansion by agricultural settlers, the state, and several large commercial farmers. They cultivated the valley, which is largely forest ecology sparsely settled and extremely fertile soil. The term 'settler' (late comers, plough cultivators) has been used for farmers who migrated from nearby or far regions in search of land and became numerically dominant over local people (the Nilotes and Oromo). Cultivators came with diverse farm operations that utilized the natural resources in different ways. They introduced a mode of production that was contrary to preexisting systems in terms of type and intensity of practices.

The theme of this study is that when people move from one environment to another with differing methods of production, there have been consequences for both themselves and the new environment in which they have settled in Arokiasamy and Tamah (2021). The case of lowland provides a good model for how people understand the environment and the effects of failure to consider local economies and dynamics in resource relations.

In 1882, a Dutch traveler, Juan Maria Schuver wrote that the region was "wilderness" and was a "reception area" for the Gumuz people escaping for security from imperial pressures as well as internal conflicts. He described that these external and internal pressures in the regions north of the Blue Nile River forced the Gumuz to move south of the rivers and eastward across the Didessa River to its confluence with the Angar River between 1880 and 1920 (Wendy et al., 1996). However, Schuver did not provide details on the lower Didessa.

Among the earliest records on the agricultural and environmental settings of the valley were an account by Alexander Bulatovich, a Russian advisor to Ethiopia. During his tour of the valley in

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1898, it was a hunting ground rather than a farmland. Due to dreadful diseases, an insignificant number of Oromo farmers traveled down the valley and grew cotton, maize, ginger, pepper, and cardamom on small plots (Alexander, 2000). He also observed a cotton estate cultivated by the Leqa state rulers which king Bakare (r.1840-1868). During their travels in the valley in 1934, Captains Dunlop and Taylor observed the small-scale cultivation of legumes, grain and cotton cultivation (Dunlop, 1937). In those periods, farmers chose to produce cotton and spice crops because these crops were less attacked by wildlife, required less labor, and required a shorter period of stay in the lowlands.

In his study of agriculture in the region during the 1960s, K.E. Knutsson indicated swidden as the major system of cultivation in the valley (Knutsson, 1969). The presence of animal diseases such as malaria and trypanosomiasis contributed to the slow progression of agriculture. As a result, only able-bodied farmers seasonally descended into the valley and produced cotton, maize, and pepper through shifting cultivation and the extraction of forest products. He also noted that local landholders had controlled extensive areas of the valley for the monopoly of such resources, and cotton and grain production laid the basis for highland-lowland relations (Knutsson, 1969)

In 1970, Wallmark studied the Gumuz cultivation system of the lower Didessa and depicted that the Nilotes were engaged in shifting cultivation, hunting, and gathering as a subsidiary system of livelihoods. He remarked that the Nilotes were sparsely settled and suggested that in the long run, pressure from highland cultivators would put pressure on their livelihood in general and on the agricultural system in particular (Patrick, 1981).

The valley's settlement history includes land occupancy trends, regional and local migration, and the resultant agricultural expansion. These factors had a decisive influence on the changes in land-use systems and resource relations. The land use systems in the valley can be examined in two broad phases: the customary land use system and the expansion of modern agriculture, including state farms, settlements, and commercial farming. The former relates to sparse settlements, resource extraction, and small-scale food production. The latter refers to an increase in settlement and agricultural intensification at the expense of preexisting land use strategies (Dereje, 2018).

The effects of differing land use strategies on the valley environment entail the roles of development agencies, namely the state, settlers, and commercial farmers, to transform the environment and agriculture since the late 1950s. The process introduced differing land use strategies, resulting in two major changes. First, land occupancy and farm operation by a large number of plough cultivators narrowed down space for shifting cultivation and resource extraction. Second, extensive agricultural expansion destroyed massive forest and habitat of wildlife. By the late 2000s, the region had turned to surplus production by smallholders and commercial farmers. This process dramatically displaced earlier land use systems and particularly disturbed the preexisting environment-livelihood linkage. The effect was the creation of many identities in relation to resources that shifted the valley into a region of complex economic and social insecurity.

Several studies have been conducted to examine how economic and environmental policies and associated development projects have impacted local livelihoods and ecosystems in different regions of Ethiopia. However, most studies did not consider the role of the historical political ecology approach in understanding the historical roots and long-term consequences of such processes. However, the proposed approach is of paramount importance for several reasons. First, it can reveal the historical underpinnings of current livelihood and environmental problems (Perreault et al., 2015). Second, this approach enables us to challenge dominant narratives and assumptions about environmental change and human-nature relations (Wall, 2017). Third, it highlights the diversity and complexity of local environmental knowledge and practices (Offen, 2004). Most importantly, it can inform policymaking by providing alternative solutions (Siman &

Niewiarowski, 2023). The historical political ecology approach is a way of studying the interactions between human societies and natural environments over time, considering the political and economic forces that shape them.

The objective of this study was to examine the historical dynamics in land-use and natural resource tenure systems and assess how changes in the mode of production affected preexisting livelihoods and the conditions of the natural environment. These factors have paramount importance in understanding the historical roots and long-term consequences of processes to inform policymakers and research on these issues. To this end, the interdisciplinary nature of the historical political ecology approach and its integration with mixed research methods help us comprehend how preexisting livelihoods and natural environments have been transformed by external interventions such as resettlement programs, development, modernization, globalization, and local responses to these changes. Moreover, this study will reveal the underlying structures and power relations that influence the distribution of costs and benefits of environmental change among different groups of people.

LITERATURE REVIEW

Historical land and resource use and tenure systems and their implications on changes in the mode of production that affect preexisting livelihoods and the natural environment in the lower Didessa were the central issues in this study. Thus, the historical political ecology approach is best suited to uncover the historical causes and effects of such processes (Mathevet et al., 2015; Vaccaro et al., 2013). This is a way of studying the interactions between human societies and their natural environments over time, considering political and economic factors (Offen, 2004; Siman & Niewiarowski, 2023). The approach is the most appropriate for this study because of its central assumption that environmental change is not a natural or inevitable process but rather a result of human actions and decisions that are influenced by power relations, ideologies, and interests (Roberts, 2021).

One of the roles of the historical political ecology approach is to understand how preexisting livelihoods and natural environments have been affected by external forces such as colonialism, capitalism, globalization, and development (Roberts, 2021). For example, this approach can help us understand how indigenous communities have been affected by the changes brought about by colonial expansion (Brisbois et al., 2021), resource extraction and land dispossession (Turner & Robbins, 2008), and cultural assimilation (Montero-Rosado et al., 2023), and how local ecological knowledge and practices have been marginalized or incorporated into dominant forms of environmental exploitation exploitations (Osborne et al., 2021). By tracing the historical roots of environmental problems and conflicts, this approach can also help us identify the actors and interests involved, current and future trajectories of environmental change, and potential solutions and alternatives (Mathevet et al., 2015; Siman & Niewiarowski, 2023).

The approach is most trustworthy in following a line of investigation similar to the issues addressed in this study. The approach has a significant role in revealing the historical roots of current environmental problems, the power relations and interests that drive land grabbing, the resistance and adaptation strategies of local communities, and the potential alternatives for more sustainable and equitable land governance (De Maria, 2019; Gemechu & Muluneh, 2022).

Moreover, the approach is strongly integrated with the research methods. It is a critical and interdisciplinary field that draws on various forms of social theory, mixed research methods, and commitment to social and environmental justice. The approach was integrated with mixed research methods to offer new insights and perspectives on past and present human-environmental relationships (Shi, 2022). Thus, the travelers' accounts, oral evidence, and archives were integrated with questionnaire surveys and interviews to elicit the historical setting and existing local

knowledge and perceptions of environmental issues, and resource management was used to assess historical processes, impacts, and implications on local livelihoods and natural environments (Roberts, 2021; Tzagkarakis & Kritas, 2023).

RESEARCH METHOD

Types and Sources of Data

Primary data were obtained through oral evidence and structured interviews. Oral evidence was used to offer a broad picture of socioeconomic and environmental history. Moreover, structured interviews were conducted to obtain data from the participants. Likewise, several secondary sources were used in this study. The travelers' accounts were used to capture data on the settings, primarily from the 19th and 20th centuries.

Research Design

The nature and sources of the data and analysis techniques require a mixed method approach. This approach is of paramount importance to gain a more comprehensive and nuanced understanding of the issues in this study and to triangulate and validate the findings. In line with this approach, an embedded research design was used in this study. This design involves collecting and analyzing both quantitative and qualitative data at the same time (Cheetham et al., 2018; Hanathasia et al., 2024), but within a larger qualitative design.

The identified approaches and designs are most appropriate for historical political ecology research in this study for several reasons. It allows to combines multiple methods to study the interactions between human societies and their environments, historical context, power relations, and social justice over time and across scales. Embedded research design is a type of mixed-methods research that collects and analyzes both quantitative and qualitative data within a single study or a series of studies. The design helps to address the complexity and diversity of political-ecological phenomena by integrating different sources and types of data, such as archival records, oral histories, surveys, interviews, observations (Scholz & Tietje, 2001).

Methods of Data Collections and Analysis

The informants for oral tradition data were identified based on their knowledge and experience of issues related to land and resource use history in the local community and environmental conditions. The data were recorded, transcribed, and analyzed using the qualitative method of narrative analysis (Pabilando et al., 2021). Identifying, collecting, and analyzing travelers' accounts were done depending on the purpose and objectives of the study. We have tried to ensure the reliability, credibility, and authenticity of the accounts. We analyzed the content and context of the accounts using a qualitative narrative analysis method to identify patterns, themes, meanings, and perspectives in the accounts in line with the objective of the study (Carroll, 2012). Similarly, the archival data used in this study were sorted, identified, and critically analyzed to substantiate other data.

FINDINGS AND DISCUSSION

The Valley Region

The lower Didessa River valley is a massive land mass following two big rivers, the Didessa and the Angar. The valley expends to the Blue Nile valley in the north and the Dabus River in the west. It comprises the present-day districts Sassiga, Guto-Gida, Limmu, Gidda, Dongoro, Balo, Yaso, Agalo-Meti, Oda-Godare, and Sirba-Abbay. Nilotes, such as the Gumuz, Berta, Ma'o, Komoand the Gabato sparsely inhabited the western valley territory. The Mecha Oromo inhabited the adjacent highland areas of the valley in the southern, northern, and eastern parts, and for a long time, they

established a strong rule over the valley (Hunegnaw et al., 2013).

The accounts of explorers starting from the mid-19thcentury, with the objectives of knowing the people, trade, and agricultural system and collecting the flora and fauna of western Ethiopia, reported the characteristics of the valley environment, that is, its vegetation, climate, wildlife, landscape, and soil. Among these, Frank E. Hayter, who conducted a gold prospecting expedition in western Ethiopia and crossed the valley from east to west in 1936, reflected a fuller pictures que view of the valley's vegetation. He described it as "...a typical African bush land" and specifically the Handaq forest as "...an undulating sea of treetops, without a break anywhere." (Hayter, 1935) Hayter further lamented:

> *Never shall I forget the unutterable gloom that pervades this vast game reserve. The narrow track we followed was covered with dead and decaying vegetation, stamped flat by the feet of countless animals traversing it for more years than I should care to say, and was enshrouded in perpetual twilight, caused partly by enormously lofty and heavily foliaged trees, but mainly by the almost unbelievable quantity of matted creepers...formed a black canopy.*

The interviewed elders and travelers' accounts revealed that the main types of vegetation ranged from savanna to montane moist evergreen forest, including rain forest, woodland, savanna, and grassland types. The vegetation patterns varied with the difference in topography. Moreover, the valley is a celebrated habitat for diverse wildlife. In the early twentieth century, Gwynn remarked, "...the Didessa and Angar valleys properly were, till recently, great elephant grounds up to the Abai." Likewise, in 1898, Bulatovich witnessed the abundance of wildlife in the valley, and he killed five elephants in one day. The valley was home to buffalo, lion, and dangerous snakes, such as the viper-like snake, adder, and cobra (Hayter, 1935)

The valley exhibits a humid tropical climate and receives high rainfall estimated from 1,509 mm to 2,322 mm from late April to September. The lowland was infested with *Anopheles* mosquitoes that caused malaria and trypanosomiasis, respectively. The areas repeatedly experienced binder pests, anthrax, and other diseases that have discouraged human habitation and agricultural practices. Apart from the presence of dangerous wildlife that attacks livestock, crops, and human beings, tradition recalls the frequent occurrence of crop pests in the region whose origins are linked to the lowland ecologies in Ethio-Sudanese border.

The sources indicate that the administrative boundaries of the valley have been changed at various times. From early 1841 until the conquest of Menilek II in 1882, emerging petty states-controlled valley territories in different directions to extract their wealth. Following the incorporation of the region into the Ethiopian state from 1882 to 1935, the larger part of the valley territory was made *meadbet* (kitchen), a direct source of resources for the central government. In the post-Italian rule from 1941 to 1994, the valley was administrated under Wallagga administrative province, which was shared by four sub-provinces namely; Horro-Guduru, Nekemte, Gimbi and Assosa (Government document, n.d.). Following the 1994 territorial restructuring, the valley territories were shared between the Oromia National regional Sate in the East and the south, and Benishangul Regional State in the west and north. As a result, Balo-Jagnanfoy, Yaso, Sirba-Abay, Oda-Godare and Agalo-Meti have been administered under Benishangul Gumuz Regional State, known as Kamashi zone, and the remaining under the Oromia National Regional State (EMA, 2007).

Customary Land use and livelihood modes

Archival data and travelers' accounts reveal that for much of its history, the valley has been a hub of resource extraction and small-scale cultivation for local societies. Accordingly, local Oromo

and Nilotes had varying degrees of access to the resource at various times. Thus, they considered the valley an integral part of their environment. In their land-holding system, the right to valley resources was communal, and theoretically, all members of the society had equal usufruct and responsibility to manage them. There was no clear distinction between nature as 'wildernesses' and 'inhabited in their cosmological views of the Nilotes and the local Oromo people.

Food Gathering

The use of wild plants for food and medicinal purposes was a common tradition among Ethiopians. The fundamental difference is in the types and frequencies of consumption across ecologies. The valley was renowned for the abundance of wild foods that were obtained from plants and animals (bush meat). People utilized several roots, tubers, seeds, flowers, fruits, berries, and leaves as supplementary food (Amare, 1974). For the inhabitants of the valley, wild foods were staple foods during the starvation seasons. Nilotes, for instance, the buds of young bamboo trees, fruits, roots, leaves, and mushrooms were available during the rainy season at the times of insufficiency of crops for consumption. In a valley where bee swarms were abundant, honey was obtained in three ways: by making beehives, collecting honey from the hollows of trees, and digging from the ground (Knutsson, 1969). The existence of flowers of diverse types and trees at diverse times that provide pollen and nectar for bees made honey production easily possible in the region all year round (Dereje, 2018).

Traditional healers also extracted medicinal plants to prevent disease, maintain health, and cure sickness through nutrition, toiletry, bodily care, and ritual healing. We obtained different kinds of plants, including epiphytes, herbs, lianas, and parts of tree roots, leaves, bulbs, bark, fruits, and flowers from the valley. Until recently, the practice of traditional medicine has been popular among the Oromo and the Nilotes due to healers' cultural acceptability, its relatively low cost, and difficult access to modern health facilities. For this reason, local societies developed land use categories, which they categorized into arable land, grazing land, forestland, and others. Forests, in particular, were conserved to make resource obtaining possible and sustainable.

Extraction of animal products

Bush meat and other raw materials were obtained from wildlife in the valley by either trapping or killing. For these reasons, hunting wild animals was the major livelihood of the Nilotes in the western part of the valley (Abeya, 2001). Before it was practiced for cash and fame, hunting was a source of animal products and a source of resources for local people. The local people obtained animal products, such as meat, hides, and horns, from the valley ecology. Apart from bush meat, the skin of hippos was used to make whips, the horns of buffalo were used to make drinking vessels, and elephant tusks to make handles for dagger blades were the most important animal products obtained from wildlife. In due course, apart from hunting for subsistence, the valley came to be the center of trophy and commercial hunting. Hence, people developed a system for animal resource extraction, which largely involved hunting. They developed intimate knowledge of the forest and animals, including their sounds, telltale calls, footsteps, types of vegetation they fed on, their migratory behavior, and the skills to locate and hunt animals.

Swidden cultivation

It was a region of shifting cultivation where sorghum, cotton, cardamom, and pepper were growing. Caudatum sorghum was identified as an old staple crop of the Nilo-Saharans (Stemler et al., 1975). It is suggested that sorghum dispersed to western Africa and India from this region (Pankhurst, 1961). Besides, in 18th century, Bruce recorded that the Gumuz area was an important

source of very fine cotton for Agaw merchants who traded the item along with ivory and rhinoceros horns in the Gonder market. During this time, lowland farmers also used to supply cotton to the highland market, which was cultivated in the lower parts of the valley by using the ashes left after burning dense bamboo trees as fertilizer (Wendy, n.d.). In the early 1880s, in addition to cotton and sorghum, Gumuz and Shinasha farmers cultivated sweet corn, finger millet, peanuts, and peppers in Guba, Dangur, Bambasi, and the Fadasi areas of the Blue Nile Valley (Wendy et al., 1996). Shifting the cultivation method that involved field rotation was the major production strategy. The travelers' accounts showed that peanuts of different kinds, tobacco, groundnuts and some root crops were cultivated in the homesteads or largely in the main field separately from sorghum and maize.

These sources indicate that beginning in the late 19th century; the involvement of the local Oromo in valley cultivation was associated with natural and social factors affecting agriculture. First, the prevalence of livestock disease and the resultant loss of oxen for plough cultivation in the highlands forces farmers to engage in wide-scale cultivation. Second, landlessness and overtaxation from the government have pushed farmers to lowlands. Third, the increase in cotton demand and the introduction of white maize during this period necessitated the cultivation of the valley. Valley cultivators are generally known as *darabdu* (lit: seasonal cultivators), and agricultural plots are called swidden fields. In due course, maize fields, honey-producing areas, and grazing were reclaimed for permanent settlement.

In addition, herders from the adjacent highlands seasonally drove their cattle for grazing and salt licks. Twenty slat-lick centers existed in the valley where farmers used to drive their cattle during the rainy season when malaria and trypanosomiasis were less prevalent. A field trip to the region in 1957 indicates that

> *Every year, starting in November—when malaria threatens the least—people drive all their animals except horses to this salty region. The animals greedily lick and feed on the hora for several days. Local inhabitants have their cattle lick the hora as often as possible, while those from distant districts bring their cattle once a year. The hora fattens the animals and provides them with the necessary mineral elements* (Abebe, 1957).

It is noticeable that these land use and livelihood systems have integrated local communities and people across ecologies in the region. The case in point was the interdependence between the Nilotes and the local Oromo. Search for land, grain, and labor were the principal factors that drove highland farmers to visit the lowlands. Lowlanders visited the highlands in search of food during the rainy season and for employment in agricultural work.

Agricultural Intensification and Land Use Changes

Settling the Valley: settling the valley and the expansion of plough cultivation was a cause of land use change in the valley since 1950. The interviewed local elders stated that the valley settlements by smallholder cultivators were the result of self-organized settlements and state sponsored settlement programs. Similarly, available archival data revealed that beginning in the late 19th century, the harsh land tenure system of the imperial regime reduced the majority of local people to landless tenants. Owing to land alienation and over-taxation, several plough cultivators from adjacent highland settled in the peripheral areas of the valley. In addition, since the early 1950s, intensive land eviction, overtaxation, and miserable landlord-tenant relationships have produced several valley farmers. Thus, the interviewed elders explained the situation as some farmers sought the presence of "vacant" land in the valley as an opportunity to relieve feudal

burdens. Accordingly, the most mentioned areas settled and cultivated during this period were Tole and Jogir near mount Abba Sena, Ambalta adjacent to Arjo, the Angar Valley near Guttin, Ukkee Dalatti north of Mandi, Sassiga, areas, and some parts of Kamashi, such as Yaso and Agalo Meti in the central and western parts of the valley.

The sources showed that such valley settlement was further strengthened by the development activities of the Evangelical Church Mekane Yesus (ECMY) and the Angar Guttin Agricultural Development project during the 1960s and 1970s. Among others, ECMY established Dimtu Resettlement Center (1965-77) to resettle the semi-nomadic Nilotes and landless Oromo and develop the valley land between the Didessa and Kersa Rivers. By the mid-1970s, the Dimtu project was claimed to have successfully served more than 30,000 farmers. The Angar Guttin Agricultural Development project known as '*Solidaritè et Development*' (1970-77) was established by three Dutch brothers in the northern part of the valley near the Angar River, near Tullu-Injiro. The motive behind the project was the promotion plow cultivation by resettling landless farmers. The project has established experimental trials and labor-intensive intermediate agricultural technology. By the mid-1970s, the project was able to establish five large villages near Mount Injiro: Laga-warabo, Tullu-Gana, Tullu-Lenca, Dalasa Makanisa, and Hofata, each of which comprised 500 households.

Beginning in the late 1970, the Dimtu and Angar Guttin Agricultural Development centers served as the basis for large-scale settlements and state farms in the next decades under socialist agriculture. It is estimated that out of the 56,000 hectares of land that the Settlement Authority planned in 1980s, it utilized more than 47,000 hectares of land for the 25 settlement villages it established in the northern part of the valley alone (Zelalem, 1986). The interviewed elders observed that in settlement areas, the state promoted livestock production and plough cultivation. The documents and interview results indicate that the major origins of these farmers were in the adjacent neighboring districts and the northern part of the country, including Gojjam, Wollo and Gonder.

State farms: From 1975 to 1998, the state established large-scale mechanized farms in the valley. It introduced a more intensive and extensive agricultural system. State farms and resettlement programs were ambitious plans by the state to tame and civilize the environment through the use of science and technology. The archived letter written from Ministry of Agriculture to the Administrator of Wallagga Province shows that the state was able to establish nine large state farms that cultivated 40,000 hectares and were staffed by nearly 17,000 workers. Despite the praiseworthy achievement of the state in transforming disease-ridden ecology into viable agricultural land, the process caused environmental damage. State farms began operations under a program known as "*Fetan Irsha*" (lit: fast agricultural plan). However, all reviewed documents and interview results showed that the state plans and implemented activities lacked full-fledged environmental and agronomic studies. Certainly, these limitations affected the preexisting socioeconomic settings of the local society and the environment in particular.

These sources specified the adverse effects of state farms in the region from the right to land and livelihood vantage points. First, state farms took over land that the local people had utilized for cultivation, gathering, and grazing. State farms occupied hunting grounds, salt licks, and, to some extent, shifting cultivation areas. The occupation of forests by state farms meant the alienation of local people from cotton, cardamom, and grain-producing areas, as well as their hunting grounds.

Second, the state intervened in local livelihoods under the pretext of transforming agriculture. One of the major sources of conflict was the differing knowledge of agriculture and conservation. As part of its land use plan for the valley, the government set out to control the environment and reorganize agriculture. To that end, the government relocated valley inhabitants into villages and promised to modernize their subsistence, provide social infrastructure, and

control disease. However, the interview results revealed that in most cases, the relocation was aimed at securing state farms by restricting the movement of local people.

Moreover, state farms have paid little attention to indigenous subsistence methods. It tended to denigrate local practices because they did not align with the development plans that the state farms had launched. The interviewed local communities explained that government agents also saw local people as "ignorant" and "slothful." As a result, the state prevented local people from shifting cultivation near state farms under the pretext that this system of agriculture caused damage to state farms and forests. In due course, local people were not allowed to access the land or modern farm implements that adversely affected their livelihoods.

Commercial Farming: Following the disintegration of state farms in 1998, the state leased large acres of land in the valley to private commercial farmers. By the late 2000s, more than 167 private commercial farmers had leased nearly 70,000 hectares of land in the valley (Balo-Jegonfoy District, n. d.). The interviewed local elders felt that the negative impacts of agricultural investment in terms of environment and socioeconomic aspects outweighed its benefits. For the region, the shift from state-owned cultivation to commercial farming was only a shift of agency that was self-centered and more exploitative. The system has led to expansion of deforestation and land use change in diverse ways. First, when investors occupied formerly state-cultivated land, local people were pushed to forest land. Second, investors who leased uncultivated land indiscriminately removed the vegetation for cultivation. The area of land allocated for such investment until 2010 was almost double the size of the land that the state farms previously cultivated (Balo-Jegonfoy District, n. d.). The system is said to have caused damage to the remaining wildlife by intensifying the destruction of the remaining forest close to the leased land. As opposed to shifting agriculture, commercial farming expanded a mono-cropping system.

Consequences of Differing Land Use Strategies

Following the conversion of valley land to agricultural land and human dwellings, the traditional modes of livelihood have been diminished. Agricultural intensification occurred over an extensive area, leaving limited space for preexisting living. The primary mode of living affected was shifting cultivation. First, the conversion of extensive forest land to crop by plough and mechanized cultivators narrowed the space for shifting cultivation.

The other consequence of land use change was the deterioration of natural resources that local people used to depend on. The process eroded the gathering of wild food during civil unrest and food shortages, and trees provided supplementary food such as edible fruits, leaves, roots, buds, and others. Honey production has seriously deteriorated following the loss of thatches and tree species useful for making honey and hanging beehives. Farmers restricted the local people's access to grazing land and water and used big trees for beekeeping.

The collective effect of these changes was the dispute over land and social insecurity. The arrival of farmer-investors and smallholder farmers disrupted the previous use of land, processes and terms of land acquisition, and access to land. The land issue was often politicized, leading to conflict. The growth of land deals in valleys resulted in overlapping claims between competing actors. Disputes over land in the period largely occurred between local societies regarding the benefit and ownership of land and between local societies and guest farmers. While land dispossession created grievances among the local communities (the Gumuz vs. the Oromo), who were custodians of valley resources, the farmers' perception toward one another was mainly based on seniority in the area, which determined the overall setting of their interaction on land deals.

Similarly, the interviewed respondents poinout thatthat in the last 3 decades, local community-investor relationship was more often conflict than cooperation. One underlying cause

of the conflict was that local people did not get access to land and did not benefit from jobs created by the existing investments, largely due to the alleged lack of appropriate skills. These situations worsened tensions and repeatedly disrupted agriculture. To ease the tension, local governments apportioned land and relocated local people. In this process, local people were relocated to a number of villages, such as Hora-Wata, Mada-Jalala, Qarsa-Mojo, Balo Central, Angar Central, Bacibaca, Jirmaand others.

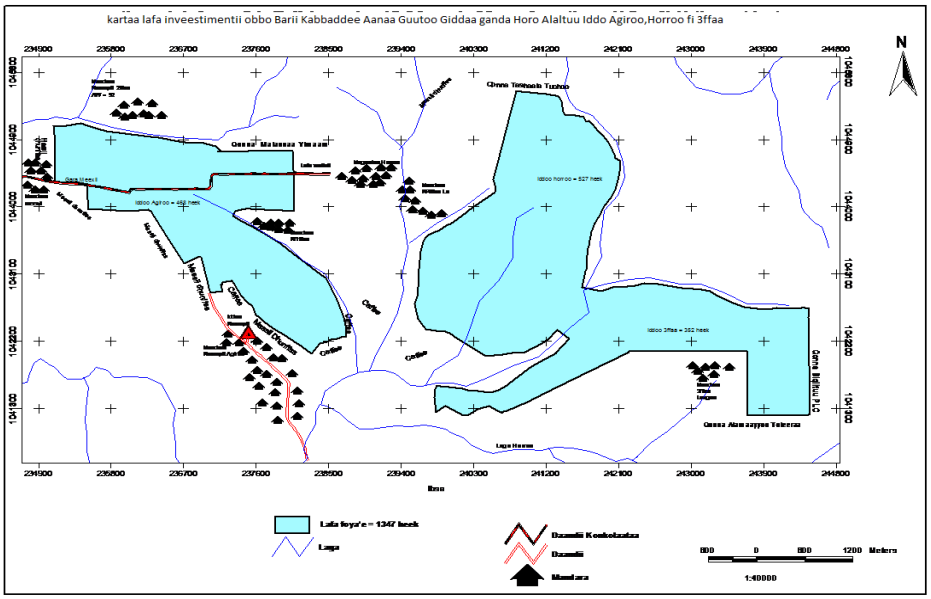

Figure 1. Villagization of local people's visas to private farms

Furthermore, agricultural intensification in lower Didessa increased the vitality of land, giving rise to land dispute between the local people, the Oromo and the Nilotes, mainly the Gumuz.

CONCLUSIONS

River valley agro-ecologies have been one of the target areas of the agricultural economy of Ethiopia since the mid-twentieth century. Beginning in 1950, the state emphasized the use of vast uncultivated fertile land in river valleys to produce surplus. The process of making valleys viable for agriculture include the control of lowland diseases. However, development activities do not necessarily consider the ecosystem and local socio-economic context. State farm and commercial farming, in particular, obtained surplus production without due consideration of the forest, wildlife, river system, and soil. Their disregard for the local livelihood system and the indiscriminate application of different land-use strategies eroded local economies. It disrupts local livelihoods by degrading resources and disrupting the link between people and environmental resources.

Modern agricultural systems such as intensive farming and agricultural mechanizations has therefore were established on shifting cultivation, grazing, hunting grounds, honey collection, and salt-lick areas. The conquest of the valley through agricultural modernization largely ignored the indigenous agricultural knowledge systems that favored the valley ecosystem. Nevertheless, some recent studies have confirmed the value of indigenous economic systems in terms of the sustainability of the links between the environment and livelihoods. These studies have argued that the indigenous mode of extraction and production could actually be more innovative and efficient than agricultural mechanization.

Eventually, regardless of the farming systems that are advocated to improve the development of agriculture in the valley ecosystem, this article has tried to highlight the importance

of studying the knowledge and practices of local communities and understanding the link between the environment and livelihood whenever development projects are launched. It also tried to underscore the need to look for better ways of integrating indigenous and modern farming systems with the goal of enhancing productivity and creating a sustainable environment.

LIMITATION & FURTHER RESEARCH

The contexts, types and scale of interventions are dynamic and have become complicated from time to time, mainly within recent private large-scale agriculture. Although the situation is worsening, relevant stakeholders should consider the issue in a timely manner. Specifically, policies and associated development planning and implementation should be evaluated for their effects on the well-being of preexisting livelihood systems, social and ecology, and must adopt a holistic and participatory approach. Moreover, multi-disciplinary research is necessary to identify and record the valley land use systems on one hand and knowledge of the ecological regimes of the Mecha Oromo and Nilotes to be considered in agricultural policy, planning and implementation.

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