

# Assessment of Livelihood Impacts in and Around Jorgo Wato Forest, West Wollega, Oromia

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## Abstract

Assessment of livelihood impacts is necessary information for the identification of whether the livelihood of the community is impacted or not. A study was conducted to explore impacts of forest cover change on rural local livelihoods in and around Jorgo Wato forest, West Wollega Zone of Oromia National Regional State. Purposive and random sampling selection of 120 household's interviews and 12 focus group discussions were used in this study. Due to forest cover changes, the livelihoods of the communities were affected and changed to more diverse activities. In order to minimize the impacts of forest cover change on communities and communities on forest cover change, programmes and strategies to use multiple benefits sharing of the communities from the various forests and forest products services as well as strengthening/establishing participatory forest management and forest policies that give carbon rights to land users are desirable prerequisites for enhancing forest benefits as the main means of protection.

**Keywords:** Assessment, impacts, livelihood

## INTRODUCTION

Livelihood is defined as the assets (natural, physical, human, financial and social capital), the activities and the access to these (mediated by institutions and social relations) that together define the support gained by the individual or household (Ellis 2000). In principle, there are four ways in which FBPA (forest based poverty alleviation) can be seen. First, it can be made by converting forests to non-forest land uses such as permanent agriculture. Second, it can be earned by ensuring access to forest resources and achieving this either by protecting the existing benefits that forests provide to rural people, or by redistributing access to and benefits from forest resources. Third, it can be seen by making transfer payments to forest dwellers who protect forests environmental services. Fourth, it can be realized by increasing the value of forest production through technologies that increase physical forest output; higher prices for forest products including better market access, increased processing and forest based value adding activities and the development of new products. Transition from hunting and gathering to sedentary agriculture, forests tend to become less dense and forest cover decreases not only in association with growing population densities and higher market demands, but also in association with changing types of forest use by local populations (Sunderlin *et al.* 2005).

Deforestation also impacts the lives and livelihoods of many millions of forest dependent inhabitants around the Globe. Low income households are directly or indirectly dependent on forest/forest products from forest resources for their livelihood (Warra *et al.* 2013). The dependence of rural communities on biodiversity, ecological processes and ecosystem services provided by tropical and subtropical forests is far greater in magnitude than in the temperate zone, these areas where forest cover is fast disappearing (Nagendra 2007). Forests provide paid employment for more than 100 million people and support the livelihoods of many of the world's rural poor populations (FAO 2016b).

A study performed in Central Ethiopia showed that, the major livelihood strategy induced driving forces towards the existing rapid land use land cover changes includes the expansion of farming soil, charcoal production and fuel wood collection. Farmers converting their land into plots of cultivated lands in order to increase their crop output and make out with the problems of food shortages, while some rural families are increasingly engaged in charcoal preparation and fuel wood extraction as profitable livelihood strategies. Economically poor households are extremely dependent on charcoal and fuel wood sale to satisfy the livelihood requirements of their families. The combined effects of these factors certainly results in rapid conversion and/or modification of the land use cover (Messay and Tsetargachew 2013).

Low levels of income solely from agriculture do not meet the household's basic everyday expenditure (Garedew 2010). The expansion of cultivated land is mainly caused by vegetation clearing in search of suitable plot of land for farming. Conversions of grazing lands and shrub lands have contributed significantly to the expansion of the crop land (Messay and Tsetargachew 2013). Forest resources of Ethiopia provide critical economic benefits and livelihood supports, in addition to critical environmental functions such as erosion control and climate change mitigation. Livestock play an important role in the farming family, through traction, improving soil fertility, serving as financial savings and through direct food products. Non-farm diversification and adaptation have focused around excessive natural resource mining (e.g. wood land clearing) without replacement.

Livelihood diversification means that farming households engaging in multiple agricultural and non-

agricultural activities for example, by combining on-farm activities with seasonal agricultural work elsewhere, taking a job in the city, processing farm products or opening a shop. Both agricultural and livelihood diversification are ways of managing climate risk (FAO 2016b). The shortage of farmland has forced farmers to shift from extensification to intensification agriculture, mainly through increasing labor and other inputs per unit of land (Ayalew *et al.* 2012).

In Ethiopian, non-farm diversification played a great role in the dynamics of rural livelihoods contribution between 13-44% of household income (Shimeles *et al.* 2011). Lack of livelihood security has forced farmers to use the wood lands indiscriminately in order to cope with recurrent household biophysical shocks (Garedew 2010). Forests are central to rural livelihoods and serve as economic safety nets for people who live in or nearby them (Mamo *et al.* 2007). Changing forest structure and composition have direct implications for local forest based livelihoods throughout the Afromontane forests of Highland Ethiopia (Guillozet *et al.* 2014).

Many poor people rely on collecting fuel wood for cooking and for heat. In addition to these, people cutting down trees for fuel wood, farmers and developers may also cut down strips of forest for more space for agriculture. Soil in forested land is covered with a rich layer of nutrients. The nutrients come from leaf litter that falls from the trees, and the trees also contain lots of nutrients. Absence of forest causes the removal of soil nutrients easily by wind and rain results in washing away of the soil nutrients into the rivers. Removal of soil nutrients makes infertile land and declined in crop productivity (FAO 2016a). Farmers can further enhance their resilience through diversification, which can reduce the impact of climate shocks on income and provide households with a broader range of options when managing future risks. One form of diversification is to integrate production of crops, livestock and trees i.e. agroforestry systems. From such systems they use the leaves of nitrogen fixing leguminous trees to feed cattle, use manure to fertilize the soil, and grow short duration crops like pulses to provide extra protein during periods of seasonal food insecurity (FAO 2016b).

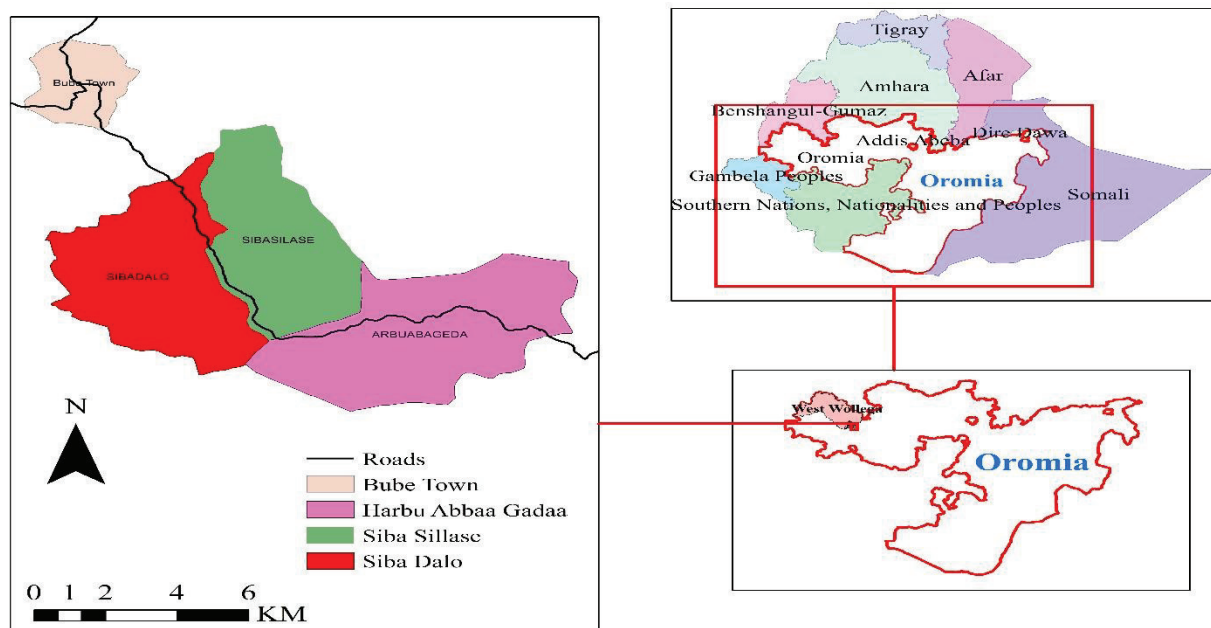
As forests change in size and composition and as markets develop to exploit them in new ways, communities whose livelihoods are integrated with forests transform in response to shifting ecological, economic and policy landscapes (Guillozet *et al.* 2014). This position puts a great challenge on the part of the ecosystem and the livelihoods of the masses who depend upon it for their existence. The majority of rural people of the study area live close to the forest and around the forest boundary. Their livelihood depends on the forest for firewood, coffee shade, timber and generates income from forest to sustain their everyday demands. Therefore, the aim of this study was to explore impacts of forest cover change on rural local livelihoods in and around the forests.

## MATERIALS AND METHODS

### Description of the Study Sites

The study was conducted in and around Jorgo Wato Forest of Nole Kaba District, West Wollega, Oromia National Regional State. Nole Kaba is one of the 21 administrative districts of West Wollega Zone and the district has 27 kebeles, of which 25 kebeles are rural kebeles and 2 kebeles are urban/town administrations. Nole Kaba (Bube town is the capital town of the district), which is situated at a distance of 491 km from Finfinnee and 50 km from the zone capital city Gimbi (441 km from Finfinnee called regional capital city) (NKDAO 2017). Jorgo Wato forest is situated at a distance of about 10km from Bube town to the direction of southeast along gravel road. Jorgo Wato forest is absolutely located between 08° 43' 00"N to 08° 50' 00"N and 35° 47' 30"E to 35° 55'00"E (Fig. 1). The district have three climatic conditions of high altitude (21%), mid altitude (65%) and low altitude (14%) and ranges from 1525 m.a.s.l to the maximum 2576 m.a.s.l at peak of mountain Jorgo Wato. The mean annual temperatures varies from 13.5<sup>o</sup>c-27.5<sup>o</sup>c and annual rainfall pattern ranges between 1600-2000 mm (NKDAO 2017; OFWE 2017).

The populations of the district are 85,706(41,485 males and 44,221 females). Out of this, 77,262(37,142 males and 40,120 females) are lives in rural administrative kebeles, while 8,444(4,343 and 4,101 females) are lives in the urban administrative kebeles. The total area coverage of the district is about 65,557ha of land. Among this coverage, agricultural land, coffee plantation, forest area, grazing land and lands used for the community services occupy an area coverage of 11,834ha, 16,476ha, 19,476ha, 3,837ha and 13,091ha, respectively. More than half which means 54.8% of the area is covered by coffee plantation and forest area (NKDAO 2017).



**Figure 1. Location of Study Area Map.**

### Methods

A three stage sampling procedure was used for the selection of sample household heads. In first stage, Nole Kaba district, were selected purposively based on the presence of large forest area coverage in the zone. In the second stage, a household questionnaire survey were administered in the three kebeles from seven kebeles surrounding the forest randomly based on the interaction of the local community towards the forest, severity of forest decline, conversion of forest coverage to other land uses or other land uses to forests including plantation. In the last stage, from total households in the study area, 120 samples of household heads (52 from Harbu Abbaa Gadaa, 37 from Siba Sillase and 31 from Siba Dalo Kebeles) were randomly selected by using Kothari (2004) formula given below.

$$n = \frac{z^2 \cdot p \cdot q \cdot N}{e^2 (N - 1) + z^2 \cdot p \cdot q}$$

Where N= Size of population, n= Size of sample, e= Acceptable error (the precision), p = Sample proportion, q= 1-p (None occurrence of event), z= Standard variate at a given confidence level

In order to address the objective, both primary and secondary data were collected. Primary data about driver patterns of forest cover changes in the study area were generated from the field visits, FGDs interview and household surveys. A total of 12 FGDs, 3 FGDs per each kebeles having a group member of 5 to 9 participants and 3 FGDs of experts having a group member of 4 to 6 were undertaken. Secondary data on the general overview of the study area (e.g. population, area coverage, climate etc.) were obtained from the governmental organizations (e.g. District Administration Office, Kebele Administration office, and West Wollega District of Oromia Forest and Wildlife Enterprise). Local households and agricultural experts were assisted to give in depth information about the drivers of forest cover changes in and close to the forests.

Data collection tools were designed through semi-structured interviews, participatory tools such as focus group discussions (FGDs), key informant interviews and transect walks were utilized to gather information. Numerous social groups such as elders, natural resource experts, forestry experts, Kebele managers and development agency officials from the respective kebeles were participated in the inquiry. A specific checklist of questionnaires were also used to interview the key participants (development agencies, government officials, forest experts and Kebele leaders). Discussions were used as a means of generating ideas regarding issues related to the drivers of forest cover changes in and around the forest.

Finally, all the collected data's were subjected to SPSS version 20.0 and reported in the form of percentages, frequencies and tables. Qualitative information (response of the FGDs and household interviews) were analyzed, verified and applied to draw inference and conclusions.



Figure 2. Photo taken from the study area by the author, March, 2017.

## RESULTS AND DISCUSSIONS

### Livelihood Strategies

Livelihood strategies are the combination of activities that people choose to undertake in order to achieve their livelihood aims (Addisu 2017). There are five livelihood assets identified in the study area. Those are human resources, natural resources, financial capital source of household income, social livelihood outcome and physical capital.



Figure 3. Photo taken from the study area by author, March, 2017.

### Human resources

According to data collected from the respondents' during household surveys and FGDs, labor availability for agriculture decreased from time to time during the time interval of the study periods. Labor available for agricultural purpose accounts about 25% (30), 58.3% (70) and 77.5% (93), respectively decreased between 1986-1996, 1996-2006 and 2006-2016. They raised, the reasons for the decline of labor availability specifically youths who have the power to participate in agricultural activities. Among the mentioned problems, after 2006 become decreased because of expansions of modern education (educated person have couldn't wish back to agricultural activities) and due to shortages of land used for agricultural purposes. This factor forces the youths/educated person to leave their original land to search other options of way of life.

### Natural resources

Almost all household populations depend on agricultural land production for their livelihood. Food crop production and livestock production represents the main farming activity where the majority of households involved. Crop production is the major livelihood strategy in the study area, and it was practiced by almost all of the sampled households. The most common grown crops in the study areas during the study periods of 1986 - 2016 were teff, maize, barley, sorghum, wheat, coffee, faba beans and field peas. But, recently, coffee, maize and teff are the most produced crops in the study area in terms of area coverage while barley, wheat and sorghum production declined from time to time due to climate condition, termite problems and the declined fertility of the available land. Faba bean and field peas are on the way of out of production from the areas.

West Wollega zone is one of the areas in the country where farmers get very low crop yield due to many

reasons like termite, shortage of crop cultivation land and problems of wildlife (Tadesse *et al.* 2011). Cereals like sorghum, millets, wheat, maize and rice are major staple foods of the most population (ECA 2015). The type of production was traditional and they use a pair of oxen to plough their farmlands. The majority of the produced crops was used only for consumption rather than other purposes because of no more production due to land scarcity.

The perceptions of households about trees or forest uses during 1986-1996 as well as 2006-2016 were indicates that, forests are source of forest product (e.g. fodder, fuel wood and shelter for local people), supplementary income (like gesho/hops /*Rhamnus prinoides*, honey, timber, logging, frankincense), source of government revenue, obstacles to agricultural expansion and climatic importance. Recently (2006-2016), the values of trees or forest uses increases from time to time. In addition to the past, it serves as the source of job opportunity, but only collecting gesho/*Rhamnus prinoides*, collecting coffee berries and grazing of livestock inside the forest is allowed.

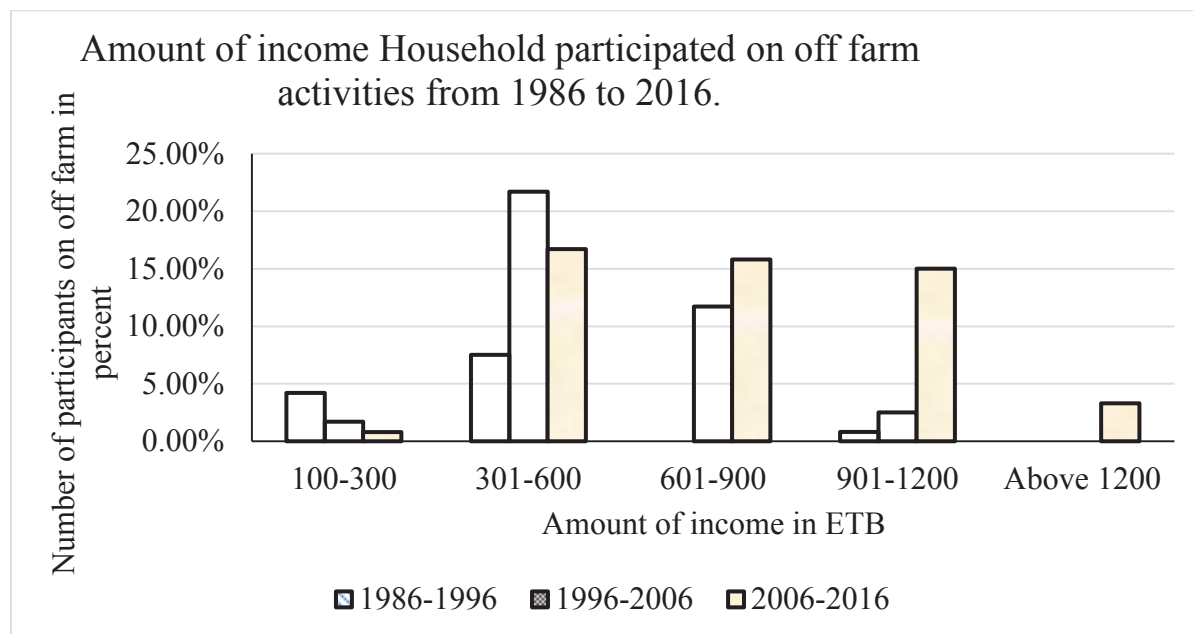
No leaving of land abandoned during the period of 2006-2016 were existed because of scarcity of land and population growth. But, before 2006, they used shifting cultivation methods to increase their productivity, now no means of such methods. About 85% (102), 40% (48) and 16.7% (20) respondents abandoned their farmlands during the periods of 1986-1996, 1996-2006 and 2006-2016, respectively. This indicates that, the number of households who leave their own land free from cultivation decreased from time to time. There is also another cultural method of improving soil fertility by applying organic fertilizers like manure and crop residues on farmlands as well as converting/transferring of livestock compound/homes from time to time. Such type of conversion is widely known in western parts of our country. Currently, such systems become declined due to land scarcity and declined number of livestock resources in the study area.

Before 2006, both DAP and UREA fertilizers were rarely used in small quantities by few households, but after 2006 DAP and UREA were used in large amount bought from agricultural growth inputs and supply body by high prices for the reasons of land infertile/declined fertility of land favorable for agricultural production. Access to inorganic fertilizers is impaired by its high prices (Ayalew *et al.* 2012).

#### **Financial capital source of household income**

The main source of household income, marketing of household consumption, household members participated on off farm activities and their incomes from off farm activities are among the major financial capital sources of household income. The major source of income of household families during the periods of 1986-1996 and 1996-2006 were comes from agricultural products (crop and livestock production). Household farmers responded that, their source of income were comes from food crop and livestock, bee keeping, coffee and a few from causal labor. Coffee, food crop and livestock in large amount while bee keeping (rarely existing after 2006), guarding/waiting, harvesting and managing the forest and causal labor in small amount were the major source of household incomes during 2006-2016.

According to Addisu (2017) who reported that, the major source of income for the households comes from the selling of livestock and their products (like milk and egg). Food crop, coffee, livestock and honey production were among the major production household sold to fulfill their consumption of family needs between the periods of 1986-1996 and 1996-2006. But, during 2006-2016, food crops and livestock leads the main marketable production next to coffee production. The total number of participants and their monthly incomes from off farm activities were increased from time to time (Fig. 4).



**Figure 4. Income of households from off farm activities during 1986- 2016 per month.**

Source: - Summarized survey data of March, 2017.

The number of respondents participated on off farm activities were 12.5% (15), 37.5% (45) and 51.7% (62) in the periods of 1986-1996, 1996-2006 and 2006-2016, respectively. Those are derived from petty trade, casual labor, cattle/livestock fattening (after 2006 obtained 100-500 birr per one cattle), keeping/guarding of the forest, harvesting/tree logs preparation under investor, animal trading, daily laborers (e.g. 40 birr/day recently), church priest and carpentry.

The importance of extra income besides agriculture is important for households in ensuring food security and risk minimization. This is the reason why the household family members participated on off farm activities (Garedew 2010). In the study area, off farm activity increases the incomes of the households between 0.8-21.7% ranges during 1986-2016 study periods (Fig. 4). Non-farm activity contributes about 13-44% of the rural livelihood household income (Shimeles *et al.* 2011) and up to 22-53% of total income (Davis *et al.* 2007).

#### Social capital livelihood outcome

The majority of the respondents' replied that, food crops grown in their areas like teff, maize, barley, wheat, sorghum and coffee serves as a food security between the periods of 1986-2016. About 35% (42), 45.8% (55) and 23.3% (28) households face of food shortages during the periods of 1986-1996, 1996-2006 and 2006-2016, respectively. Household members who faced a food shortage forward their reasons like wildlife animal damage, low productivity of land (infertile land) and scarcity of rainfall (after 2006) as a major problem for their unachievable food.

The life of the agriculture based community based on the rain fed agriculture and climatic conditions (Ayalew *et al.* 2012). This cause the farmers faces food shortages when climate unfavorable for the production of food crops. During such conditions occur, the farmers made their own coping strategy for maintaining their family survives. The major coping strategies of the respondents' during the periods of 1986-2016 were comes from borrowing grain or money, selling of their own livestock's, migrate to nearby urban areas for labor power and cultivating short duration of barley variety and haricot beans. Growing short duration of crops like pulses to provide extra protein during periods of seasonal food insecurity (FAO 2016b).

Food insecurity is the outcome of the interaction between environmental factors and socioeconomic conditions like rainfall variability, droughts, population growth, deforestation, declining of soil fertility and crop productivity (Garedew 2010). Agricultural production is affected by rising temperatures, increased temperature variability, changes of rainfall and droughts. This makes increasingly hard to grow crops. If temperatures exceed a crop's optimal level or if sufficient water and nutrients are not available, yields of the crops become to decrease (FAO 2016b).

#### Physical capital

Energy is necessary for every person for undertaking regular daily activities. In order to get enough energy, people used different sources of energy collected from wood and wood products. According to the respondents' ideas, the major fuel wood type used by households during 1986-2006 were collected from locally available

trees/shrubs species. Those were includes: ‘Abbayyii’/*Maesa lanceolata*, ‘Bakkanniisa’/*Croton macrostachyus*, ‘Kosorruu/Sokorruu’ /*Acanthus sennii*, ‘Laaftoo/sondii’/*Acacia species*, ‘Muka arbaa’/*Albezia species*, ‘Sooyyoma’/*Vernonia thomsoniana*, ‘Baargamoo’/*Eucalyptus species* and ‘Baddeessaa’/*Syzygium guineense* while recently after 2006 they used additionally ‘Eebicha’/*Vernonia amygdalina*, ‘Haarbuu’/*Ficus sur*, ‘Reejjii’/*Myrica salicifolia* and straw of maize and sorghum serves the household family holder as a major source of energy.

The majority of the population living in the rural areas depend on traditional energy sources, mostly fuel wood (Bekele *et al.* 2015). Removing of straws from farmland have impacts on soil fertility improvement. The removal of biomass from the fields affect agriculture and agricultural productivity as one of the major sources of food insecurity in developing countries such as Ethiopia (Warra *et al.* 2013). The increasing demand for fuel wood is the major contributor of increased use of crop residues and animal dung for fuel, which in turn effect on the use of organic source of fertilizer to traditionally replace the fertility of agricultural soils (Ayalew *et al.* 2012).

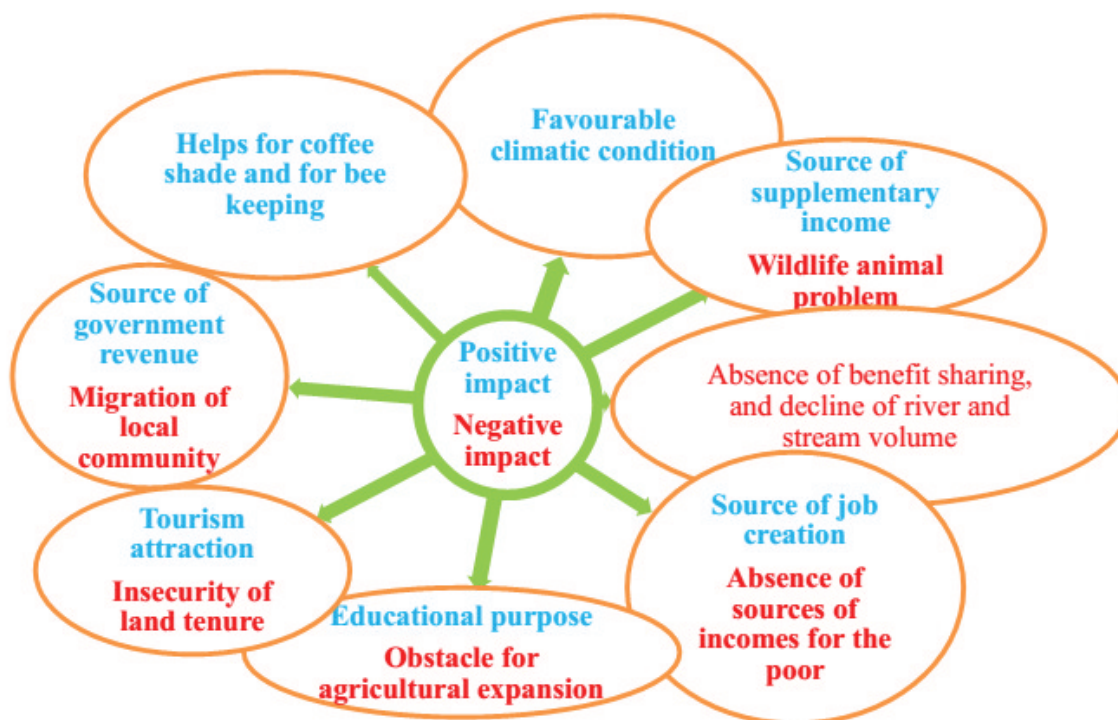
Livestock production (their products such as milk and milk products) were the major livelihood strategies practiced in the study area. Respondents’ pointed out that the available grassland has been declining over time as a result of agricultural land expansion, especially coffee plantation, climate condition and plantation forest expansion of Jorgo Wato on their communal and individual own lands. This forest expanded from time to time as well as the number of the population of the area and their needs increased, resulted to scarcity of farmlands. A large number of respondents (39.2%, 60% and 59.2% during the periods of 1986-1996, 1996-2006 and 2006-2016, respectively) explained that the declining size of livestock and milk and milk products has adversely affected their livelihoods. This in turn has effects on ensuring food security and on improving the living conditions of the rural community dependent on agricultural and livestock production in general.

Focus group discussions and elder/key informants members told that, the number of their livestock and livestock products declined from time to time due to shortage of livestock feeds, disease problems and climate conditions especially hot climate during the absence of rainy seasons. The major livestock productions constraints in West Wollega is derived from feed shortages, diseases, shortage of improved breeds, labor shortages and wildlife animals (Tadesse *et al.* 2011). A study of Warra *et al.* (2013) indicates that, the livelihoods of the rural community are affected by the declining number of livestock and livestock products (milk and milk products) due to the shortage of animal feeds. Shortage of livestock feed is caused due to the expansion of agricultural land (Ayalew *et al.* 2012).

Livestock and crop production are the main livelihood strategies of the communities in western tip pastoral areas of western Ethiopia (Addisu 2017). Livestock plays an important role in supplementing the livelihood of the rural community, serves as a means of food security and coping strategy during food shortages. But due to human population growth, climatic condition, land shortages and shortages of grazing land/animal feeds, the number of livestock becomes declines. Animal rearing/livestock production, crop production and forest managements are affected by climate change conditions. Heat stress increases animals’ susceptibility to disease, modify the prevalence of livestock parasites and diseases, and threatens the carrying capacity of grasslands and rangelands. This results in reducing fertility and feed production for non-grazing systems leads reducing fertility, and meat and milk production (FAO 2016b). Households sell out their livestock’s and livestock products, crop and coffee products assets to ensure continued food and cash supply for their family. Due to the above mentioned problems, the community may also shift their resources from extensive to intensive agricultural production, from crop production (cereals and pulses) and livestock production to coffee production and others to non-farm income activities like petty trade, daily labors, waiter/guarder of the forest, livestock fattening and trading of livestock’s and livestock products.

### **Impact of forest cover change on rural livelihood of the community**

During FGD, the participants’ responded that, forest cover changes have both positive and negative impacts on their livelihoods as summarized (Fig. 5).



**NB:** Blue color indicates positive impact while Red indicates negative impacts.

**Figure 5. Impact of forest cover change on livelihood of the community.**

Source: - Survey data collected from FGDs, elders and experts, March, 2017.

Information obtained from interviews with household heads, FGDs, elders/key informants, Kebele leaders, Kebele managers and experts confirmed that, the volume of locally available streams and rivers and their flow patterns have decreased over time. This is caused due to the increased size of *Eucalyptus* species and other exotic tree species like *Pinus patula* and *Cupressus lusitanica* planted in the area. For these and other related reasons, the volume of available surface water has decreased and many springs and streams have declined. Thus, the large amount of exotic tree species plantation on the area affects water resource availability. Before the entrance of exotic tree species plantation in the area, there is a large amount of streams flow during the winter and summer seasons.

The decrease in the volume of streams has affected their livelihoods by reducing the capacity of supplementary irrigable land/'bone' for food crop and other vegetables production during the dry seasons. 'Bone' is an 'Afaan Oromoo' word which means growing crops close to the streams or wetlands during dry conditions with the help of vapor from the ground'. This brings minimize their income and additional cost to the farming family living around the forests. The livelihoods of the community are affected by the declining volume of streams and rivers flows results reduced irrigation land for crop production (Warra *et al.* 2013). Other reports by (FAO 2016a) implied that, in some areas, fast growing species have an impact on water supplies.

Household heads, FGDs, elders/key informants, Kebele leaders, Kebele managers and experts also said that, the livelihoods of the community living around the forest become changed as a result of forest cover changes. They mentioned that, the livelihoods of household members converted from more crop production (earlier) to coffee plantation (recently) for the reasons of reduced crop production due to wild animals problem (increment of forested areas), from agricultural production to supplementary sources of incomes like beekeeping for honey production (no more yield as compared to earlier), migrate to other places (for agricultural activity, labor, handcrafts activities), illegal hunting and forest products preparation, animal fattening, daily laborers and guarding of the forest because of more lands are occupied by plantation forestry and land scarcity to undertaken agricultural activities.

On the other hand, this forest also served the youth as a source of job opportunity in order to get additional income from the forest by cutting and loading of the prepared logs/harvesting and preprocessing activities. They are also participating in the management of the forest/plantation activities done by the OFWE like hole making, planting, weeding, hoeing, etc. One metric cubic of logs harvested from plantation forest is prepared by a cost of 100 ETB (OFWE 2017).

People living in the study area are distinguished by various livelihood challenges and opportunities. Termite problems, land scarcity, shortages of livestock feeds and diseases, soil infertility, wildlife damages of crop



production, climate condition, increment of fertilizer price and insecure tenure and use right are the major factors threatening the livelihoods of the community living around the forests.

Communities living in this area are under serious worries of life due to absence of insuring tenure and use right and no known boundary between their farmlands and forest areas. There is also no sharing of benefits from the forests and forest products after harvesting of their products. Wildlife animals living in this forest damages their agricultural products including teff. Protection of wildlife animals for their agricultural products needs human power until harvesting during day and night times. Their children's are the waiter/guarder of wildlife animals from agricultural products have no chance of education. For this reason, they shift to coffee plantation rather than other crop production. Coffee production is the better option other than other crop production for the communities nearest to the forest areas. The overall consequence of these factors causes decreasing of agricultural productivity and livelihood insecurity.

## CONCLUSION AND RECOMMENDATION

Forest cover changes have both positive and negative impacts on the livelihoods of the community. The positive impacts of forest cover changes includes; sources of supplementary income, favorable climatic condition for local communities, source of job creation/opportunity especially for youth and helps for conducting different researches. Wildlife attacking of crop production, insecurity of land tenure, unclear boundaries between forest and cultivated land in the area, absence of benefit sharing from forest/forest products and absence of sources of incomes for the poor households from the forest are among the negative impacts of the forest cover change on the livelihoods of the community. Due to wildlife attacking, low productivity of land, scarcity of land for crop production, scarcity of grazing land and livestock diseases; they shift to coffee production, intensive rather than extensive agricultural production, off farm activities like fattening, trading of livestock and livestock byproducts, guarding activity and daily working inside the Oromia Forest and Wildlife Enterprise.

In order to minimize the impacts of forest cover change on communities and communities on forest cover change, programmes and strategies to use multiple benefits sharing of the communities from the various forests and forest products services as well as strengthening/establishing participatory forest management and forest policies that give carbon rights to land users are desirable prerequisites for enhancing forest benefits as the main motivation for protection.

The study area is known by huge diversity of different species of plants and wildlife's; therefore assessment and conservation of their diversities, impacts of planted exotic tree species on environment of the area and means of protecting wildlife animal damages of crop production needs future time studies.

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