

The Socio-Economic Impacts of Carbon Trading in Humbo Woreda , SNNPR,Ethiopia

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ACRONYMS
IPCC - Intergovernmental Panel on Climate Change
HCF - Humbo carbon Project
PDD - Project Design Document

Abstract
Carbon-trading deals involving forestry projects in developing countries could reduce poverty at the same time as they offer an inexpensive way to off-set carbon dioxide emissions. Under the clean development mechanism (CDM) of the Kyoto Protocol, industrialized nations are allowed to meet part of their carbon emission reduction commitments by carrying out reforestation and clean energy projects in developing countries. The use of forests to reduce emissions is not only financially viable, but could also bring significant benefits to the local communities involved. For Ethiopia, carbon trading also represents an opportunity to fund sustainable through financial inflows. However, with a low share of global carbon trade, there are strong concerns that Ethiopia is losingout this valuable opportunity. Markets for environmental services have been growing in recent years wherein more and more people are willing to pay for carbon project benefits.. The study focused on the socio-economic impacts of carbon trading in Humbo district, SNNPR, Ethiopia. The analysis subsequently examined the nature and extent of community participation in the project implementation, and the carbon payment that are envisaged from the project. Quantitative and qualitative methods of research have been applied throughout the investigation. Accordingly, observation, in depth interviews, focus group discussions and questionnaires were used to gather information.

Introduction

Carbon trade

The carbon trade is an idea that came about in response to the Kyoto Protocol. The Kyoto Protocol is an agreement under which industrialized countries will reduce their greenhouse gas emissions between the years 2008 to 2012 to levels that are 5.2% lower than those of 1990 (UNFCC,2003).

The idea behind carbon trading is quite similar to the trading of securities or commodities in a marketplace. Carbon would be given an economic value, allowing people, companies or nations to trade it. If a nation bought carbon, it would be buying the rights to burn it, and a nation selling carbon would be giving up its rights to burn it. The value of the carbon would be based on the ability of the country owning the carbon to store it or to prevent it from being released into the atmosphere. A market would be created to facilitate the buying and selling of the rights to emit greenhouse gases. The industrialized nations for which reducing emissions is a daunting task could buy the emission rights from another nation whose industries do not produce as much of

these gases. The market for carbon is possible because the goal of the Kyoto Protocol is to reduce emissions as a collective.

On the one hand, the idea of carbon trade seems like a win-win situation: greenhouse gas emissions may be reduced while some countries reap economic benefit. On the other hand, critics of the idea suspect that some countries will exploit the trading system and the consequences will be negative. While the proposal of carbon trade does have its merits, debate over this type of market is inevitable since it involves finding a compromise between profit, equality and ecological concerns.

Literature Review

Emissions Trading

Article 17 of the Kyoto Protocol authorizes Annex B countries to engage in international emissions trading. This means that the Annex B countries will have the option of buying or selling some portion of their emission allowances. These allowances are called "assigned amount units" (AAUs) in the Kyoto Protocol.

Emissions' trading is one of the flexibility mechanisms allowed under the Kyoto Protocol to enable countries to meet their emissions reduction target. Countries/companies with high internal emission reduction costs would be expected to buy certificates from countries/companies with low internal emission reduction costs. The latter entities would also be expected to maximize their production of low cost emission reduction so as to

maximize their ability to sell certificates to high cost entities. The overall outcome is that the emission reduction target is met, but at a much lower cost than would be incurred by requiring each entity to achieve the emission reduction target on their own (UNNP, 2001).

Potential of Carbon Trading to Enhance Food Security in Sub-Saharan Africa

Developed countries have mainly caused climate change, but developing countries bear a disproportionate share of the impacts. Impacts are expected to be most severe in low-latitude and less developed areas. Sub-Saharan Africa (SSA) is considered to be one of the most vulnerable regions for climate change, because of the high exposure and the low adaptive capacity of agriculture which is the most important livelihood (IPCC, 2007). Changes in the production capacity of agriculture and decreasing incomes have negative impacts on local food security (Jones and Thornton, 2003, Brown and Funk, 2008,).

Due to global change, agricultural area has increased also in SSA causing negative implications for the environment and natural resources while it has not been able to solve problems related to food security (Smith, 2007). Conversion of natural land to agriculture releases significant amounts of CO_2 emissions into atmosphere. In Sub-Saharan Africa, agriculture, land-use and forestry sector's share is currently 73 % of the total greenhouse gas emissions (WRI 2009). Future predicted greenhouse gas emissions from agriculture are estimated to increase 95 % between 1990 and 2020, mostly in the Middle East, North Africa and Sub-Saharan Africa (Smith, 2007). Carbon trading is a market mechanism to mitigate climate change. In carbon trading one party pays for another party in return for greenhouse gas emission reduction or for the right to emit (Capoor & Ambrosi, 2008).The Kyoto mechanisms allow the countries with Kyoto commitments to meet their target of reducing greenhouse gas emissions in a cost-effective way and motivate developing countries to join global emission reduction (UNFCCC, 2009). Thus carbon trading offers an opportunity to increase climate equity. Treaties include potential to finance mitigation and adaptation to climate change and enhance sustainable development. The options to mitigate climate change concern practices which reduce emissions, increase sinks or avoid emissions. In agriculture sector many options despite of mitigation improve simultaneously soil productivity through improved management or land use change improving food security. Agroecosystems imply significant potential for terrestrial carbon sequestration. Carbon sequestration can be improved through adding biomass to the soil, reducing soil disturbance and conserving soil and water (Lal, 2004). Such practices include soil fertility management, reduced tillage, diverse crop rotation, erosion control and irrigation management. Options which improve soil fertility enhance directly adaptation to climate change maintaining or improving agricultural productivity, thus meeting the food demand. In the long term sustainable soil management increase as well system's stability to maintain food security in unexpected circumstances climate change causes. Adopting mitigation options and selling emission reduction in carbon markets creates new income for local people increasing population access to resources through which adequate nutrition is achieved. Implementation requires, however, overcoming agroecological and socio-economic constraints. Agroecological and socio-economical factors contribute to which mitigation options are implemented in the region, who have access to participate international carbon trading as well as how and to whom are the emerging benefits distributed. In addition, knowledge is needed of the possibilities carbon trading can offer and the verification process as well as how different mitigation options can be implemented locally (Lal, 2004).

Objectives of the Study

- It is to identify and evaluate carbon project design and implementation which could guarantee greater social and economic benefits to participants and further enhance local sustainable development through carbon payment.

Research Methodology

Bryman (2001) refers to a research method as a technique for collecting data and Mouton (2001) highlights the importance of methodology as a procedure that a researcher uses to condense, organize and analyze data in the process of undertaking scientific research in social sciences. In this research, both quantitative and qualitative approaches were used.

Quantitative method was used to measure variables that were linked to the research problem in the case study area. The rationale behind using qualitative method, in addition to quantitative data, was to increase understanding about the dynamics, opinions and perceptions of people in the case study areas about carbon trading through carbon project program and its impact in empowering the livelihood of local community

Sampling Technique

The target population for the study comprised households living in the two adjacent rural administrative units (villages); the rationale behind selecting the two sample villages namely; Abela Longena and Bosa Wanchi were

chosen on the basis of their involvement in the project activities. Currently, there are about 863(724 male-headed and 139 female-headed) and 692 (511 male-headed and 181 female-headed) households in the two sample villages respectively (source: Humbo Woreda cooperative association Office, 2013).

As suggested by Gay regarding the sample size, for descriptive study, 10 to 20 % of the accessible population is enough (Gay 1983, cited in Kumar, 1999). The sampling intensity of 10% was used to guide the number of households' selection. The respondents were the head of households because they are responsible for making decision on the household activities and resource use. Accordingly, in this study 10% from each of the above population groups i.e., 73 men headed and 14 women headed households from Abela Longena and 52 men headed and 19 women headed households from Bosa Wanchi were selected by using stratified sampling methods.Therefore, the total number of Households in two villages was 33 female-headed households and 125 male headed household. As indicated above, the target population of the study was not homogeneous, i.e., there was certain variability both within and between the target population groups, which would tend to affect the representativeness of the sample. So as to reduce such an eventual sampling bias, households were stratified on the basis of their residential *kebele* and gender of the head of the household.

To determine the proportion of each stratum in the study population *(p)*, the following formula suggested by Kumar (1999:159) was applied.

S*x* = E *x/p,* Where S*x* = *the proportion of stratum x in the population (p)*

E *x=the number of elements in stratum x*

P=*total population size*

Accordingly, for instance, the proportion of female-headed households in Abela Longena was computed as:

Female-headed households (S*x)* = 139/863= 0.16 (i.e. 16.10%) the proportion of each sample and gender category from both villages have been computed in Similar fashion. The sampling interval was determined by applying the formula below:

I = N/*n*

Where I= sampling interval

N=total number of population, &

n= sample size

Sampling interval (I) of the Abela Longena male-headed households: Bosa Wanchi

I=722/73 I=511/52

= 9.8 ~10 =9.8 ~ 10

Therefore, the sample units were identified at an interval of ten for both population based on the list of the registrations which was arranged alphabetically.

Finally, purposive sampling technique was used to identify some key informants from both rural community and the institution itself. Accordingly, two HCP cooperative leaders, two environmental managers from World Vision Ethiopia, 12 carbon project committee members, two government development agents and one Woreda cooperative personnel were purposively selected and included in the study as sources of the information. In general, the total sample size selected by using both random and non-random sampling methods from the different target population groups of the study was about 177.

Data collection techniques

The survey was aimed at collecting information on socio-economic, environmental perspective and the benefits accrued from HCP. Data was collected from both sampled household and village based aspects. Semi- structured questionnaire, focus group discussions aided by checklist, as well as interview and participant observation were employed.

So as to meet the already stated research objectives and answer major research questions, a wide range of data was collected from both primary and secondary sources. Accordingly, first hand information was obtained through the above mentioned instruments while second hand information was collected through analysis of the existing documents, such as books, journal articles, websites, performance report papers, annual bulletin, research papers and etc.

Data Analysis Methods

As mentioned above, the major types of data collection tools that were used in the study included FGDs, sight observation, personal interviews and survey questionnaire. The raw data that was collected from both primary and secondary sources through the aforementioned data collection tools were subsequently edited and tallied manually; and entered in to computer software program of MS-excel. The analysis process was also made by making use of frequency distribution tables, percentage, charts and other descriptive statistical methods. The data gathered were coded and arranged in the manner that the reader could easily understand and also the findings of

the study were adequately stated.

Result and discussions

Humbo Carbon project implementation and design.

Project implementation is the process of converting plans into action. Good planning in the development process requires not only a sound plan design but also active and conscious support from the overwhelming majority of the community and includes poor and marginalized groups (Ferrinho, 1980).

Considering the above theoretical background, a qualitative field survey was conducted to assess the local community participation in HCP projects in terms of planning and implementation. Focus group discussion indicated that the local community participated in the project activity starting from design and implementation time. With regard to the local community involvement in project planning and implementation, information obtained from the interview with world vision environmental manager there appears to be some involvement in the project planning and implementation stages. While WVE (World Vision Ethiopia) had been spearheading project design and implementation, at the initial stage communities were consulted and they provided their views at the project design stage.

As FGD result indicated, the communities' involvement only seemed to be related to the immediate benefits of the project. This means that beneficiaries participated because they were requested to collaborate in some types of project activity with the expectation that they would gain something in return. For example, informants of the Bosa Wanchi focus group indicated that during the implementation stage they were involved, as they would receive cash for work activities on the project site. In this regard, Oakley and Kahassay (1999) noted that collaborative participation can take place as a result of some persuasion or incentive, agreeing to collaborate with externally determined development projects, often by contributing their labor, and other resources in return for some expected benefits.

According to expert interview, one of the main roles of Humbo carbon project is that no decision regarding carbon project can be made without consulting the local community and reaching consensus. The local community is involved in the design, implementation and project evaluation. Therefore, sights, Abela Longena and Bosa Wanchi project areas were chosen and mapped by the villagers in collaboration with local leaders.

Most of the respondents mentioned HCP project was established in 2006 after extensive debate with the local community. The project is owned and managed by the communities who live adjacent to the forest. As significant number of respondents 91% acknowledged HCP is managed by cooperative leaders and belongs to local community while 9% said it belongs to the World Vision.

Majority of respondents 95% mentioned that the land in Humbo was severely degraded before carbon project implementation. While 4% and 1% of respondents pointed out that the land was moderately degraded and slight degraded, respectively (See Figure 1). According to household survey in both villages most respondents pointed out the land was degraded due to unregulated firewood and charcoal production. Moreover, a few mentioned bush fire, encroachment by farmers to practice shifting cultivation and encroachment by farmers to expand settlements activities which led the area to be degraded.

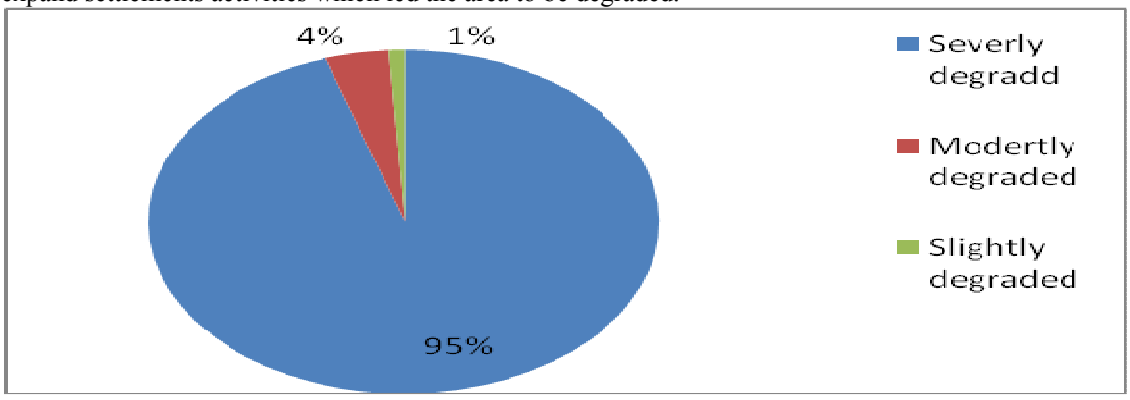

Figure 1 the condition of land in Humbo before the project implementation

The expert interview also pointed out that areas had no forest cover and soil erosion was very severe, soil productivity and stream water disappeared before the commencement of carbon project.

FGD results also showed before the implementation of carbon project, most forests in Humbo areas were considered as common property; consequently, everyone had a right to use and most of the time illegal activities were practiced in the area for many years ,all these leads the area to be degraded.

The study noted that at the time of project inception, the project areas were under an open access regime where all community members living adjacent were accessing the area for livestock grazing, firewood collection and charcoal making. This open access regime had led to severe resource degradation and was not sustainable in

the long-term.

The carbon project has therefore resulted in a regulated system with clear user rights for members of the cooperative society while at the same time establishing roles and responsibilities for sustainable resource management.

(Source: Humbo Project PDD 2006)

Figure 2 the degraded land of Humbo before the commencement of carbon project

Source: (picture taken by the researcher April, 2013).

Figure 3 Humbo carbon project after the commencement of the project.

In the management arrangement, communities take the whole responsibilities and accrued benefits from the project. The study found high level of satisfaction among respondents with carbon project practiced in Humbo. Small number of respondents showed not fully satisfied or indicated to be not satisfied at all (See Figure 4.4). The large number of respondents, who are satisfied, mentioned the local control and access to the resources was important. For those who mentioned not satisfied, the prominent reasons includes seeking more power and control over resources, and more tangible benefits have to accrue from carbon project.

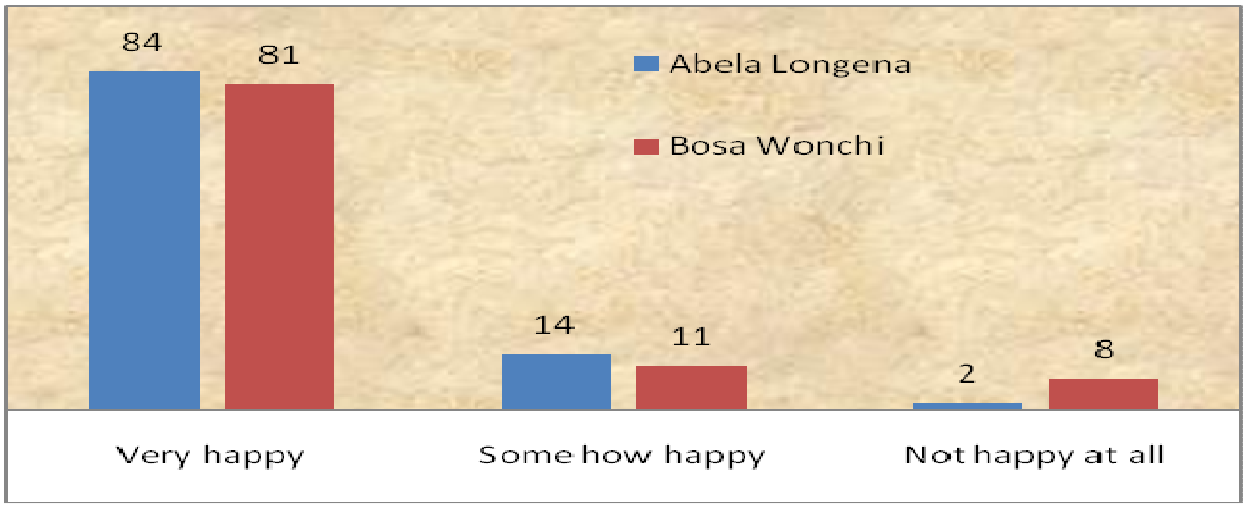

Figure 4 Percentage of respondents indicated to be very happy, some how happy and not happy with practiced carbon project in Longena and Bosa villages

Actors for the implementation of Humbo carbon project

The FGD results have shown that World Vision Ethiopia (WVE), in collaboration with World Vision Australia (WVAU), is the primary initiator (proponent) of the assisted regeneration carbon project and has played a prominent role in the formulation of the project, organizing the communities concerned and in soliciting as well as mobilizing funds for the project. World Vision (WV) is committed to continue supporting the project by giving technical and human power support and by facilitating the management and flow of funds to the community. The project management cost to date has been covered by WVAU. The ERPA (Emissions Reduction Purchase Agreement) has been signed by WVE and WVAU on behalf of the communities with the trustee. WV also signed sub-ERPA with the forest development and protection cooperatives and concerned district level rural development office based on the main ERPA. WVE is receiving carbon payments through WVAU on behalf of the community and disbursing the funds to respective cooperatives proportionately upon the amount of emissions they have reduced. This responsibility also entails that WVE has an active role in monitoring the project to ensure that the terms and conditions incorporated in the ERPA are adhered to during the implementation of the project and that the trustee receives reports.

According to Humbo cooperative office manager, the Woreda cooperative office is responsible for all matters related to corporative societies as mandated by Ethiopian law. The Office is accordingly required to organize communities into viable cooperative societies. This includes assisting in development of documents that establish the cooperative society such as the constitution and assisting in registration. The Cooperative office also monitors and supervises activities of the cooperative societies. The Humbo Woreda cooperative office was particularly instrumental in developing by-laws that govern the forest development cooperative societies as well as train them in institutional governance and basic financial management. The cooperative office is also expected to guide in financial management and conduct annual financial audits of the cooperative societies.

According to interview World vision environmental manager, World Bank is the carbon buyer using financial resources from the Government of Canada which approved and authorized voluntary participation of the World Bank in November 2010.The project is largely funded by WVAU through WVE. The funds have helped in meeting the upfront costs from project identification through community consultations, project development, establishment of baselines, and development of the monitoring program up to signing of the emissions reduction purchase agreement. The World Bank Bio carbon fund has also provided financial support specifically for the consultants that conducted the feasibility, validation and verification exercises and community capacity building. The Ethiopian government through relevant departments has also provided in-kind support for project development and approval as well as members of the forest protection and development cooperative societies.

Humbo cooperative association manager also mentioned, in order to bring all the cooperative societies to form one umbrella organization, a union will be established to bring all the seven cooperative societies together. The Union will be the main link between forest cooperatives, local government, WVE and gradually with the carbon buyers. It is expected that all functions currently carried out by WVE will eventually be transferred to the Union, yet WV will continue to play an advisory role. In preparation for this role, WVE is building the capacity of the cooperatives and working closely with the zone and district level cooperative offices to ensure smooth running of activities. WV was expected to pull out of the project in September 2012 but still

they couldn't put this into practice. As the result shows WV still didn't transfer its responsibility for the cooperative union. Above all this study revealed that all stakeholders are doing for the betterment of the project and this shows there is positive relationship among local community, local government and project developers.

Socio-economic benefit from the project

According to interview with Humbo Woreda cooperative association expert there are many socio-economic synergies essential for well-being of local community accrued from carbon project as a result of increased access and participation in carbon project. There were profound socio-economic benefits attained by households as regards to carbon project. This involves mainly the collections of forest based products to be used for family consumption. Fuelwood and construction materials revealed most significant compared to other products. Fuelwood energy is the main sources for domestic energy in Abela Longena and Bosa Wanchi village. The observation isn't surprising, as it is common in most rural areas of Ethiopia which are not connected to national electricity system to relay on fuelwood as the only sources of domestic energy.

Cooperative leaders also pointed out in terms of direct household level the carbon project activity provide two most important benefits such as the supply of basic needs, safety-net during difficult time. Local communities who are a member of carbon project earn their livelihoods from subsistence agriculture and rearing livestock, With regard to economic activity household engaged in, the quantitative field survey findings indicated Abela Longena 28.2% of the respondents in Abela Longena are engaged only in crop production, 7% only in livestock, 47.1% both in crop production and livestock, 2.4% selling of forest product and 15.3% in causal employment.

About (35.2%), (11.4%), (45.8%), (1.4%) and (7.2%) of respondents in Bosa Wanchi engaged in crop production, livestock, both crop production and livestock, selling of forest product and causal employment respectively (See Figure 4.5). Crop production was the main activity for both villages undertaken by the households followed by livestock production and a few household engaged in selling forest product and casual employment. But most households preferred to combine some economic activities together so as to earn living. As the result indicates those who are engaged in casual employment and selling forest product also participated in crop production. The result indicates that they are engaged in different economic activities for food and income purposes.

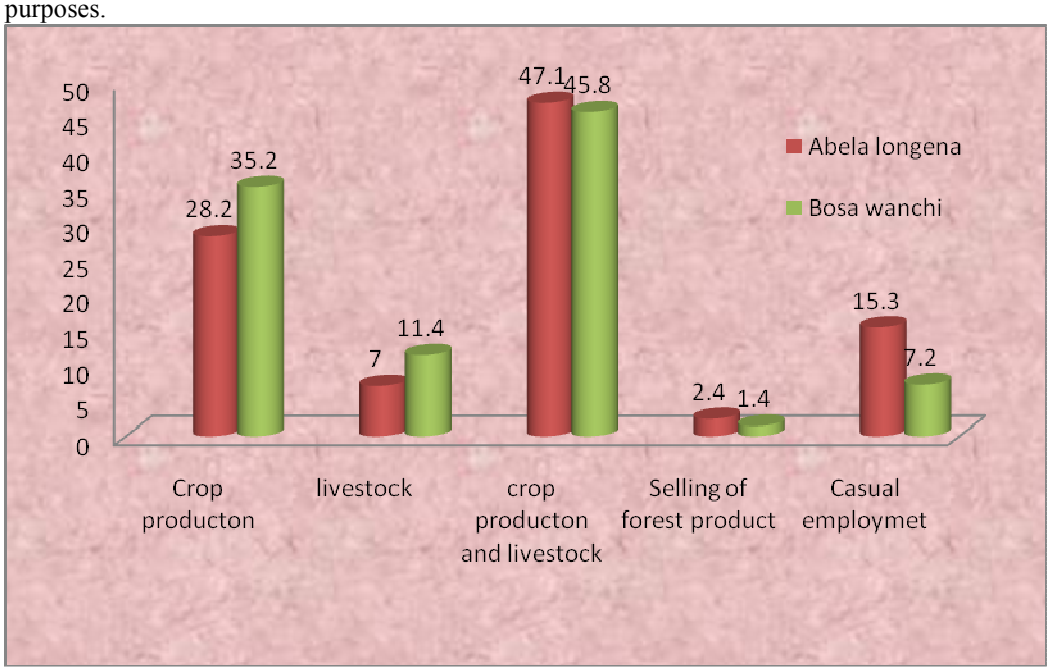

Figure 5 Percentage of respondents and annual income sources for household's livelihood of both villages.

The FGD results have shown that the introduction of savings and credit cooperative society, which provides loans to members of the project. Therefore, the project members started to take loan and participating in different income generating activity such as bee keeping, poultry and rearing cattle in groups and individually.

On the other hand, based on the practiced carbon project activity there is no revenue sharing mechanism between government and carbon project members. The study noted significant members of respondents to be aware of the revenue belong to the carbon project members. It was found that 99% of the respondents in both villages to be informed that the money earned from carbon project belongs to the local community.

This shows the degree of awareness and participation, communication and transparency between the

community and local cooperative institutions of both villages. The revenue from carbon trade exists in both villages. Both villages benefited from carbon fund as well.

Table 1 Money earned from carbon trade in both villages

	Money earned from carbon trade in three years time.			
village	2009	2010	2011	Total in birr
Longena	216,442.51	295,403.85	408,292.90	920,137
Bosa	77,214	70,214	97,084	244,512

According to the expert interview the carbon trade payment will differ among the villages. The amount will be calculated according to the impact that carbon sequestration achieved by the project during the year. In three years time Abela Longena village earned birr 920,137 and Bosa Wanchi received birr 244,512 carbon payment (See Table 1). The carbon credit buyer is the Government of Canada through the World Bank Bio carbon Fund. The Bio carbon fund brings with it rich experience accumulated over the years working with forestry carbon projects in particular function as earlier pointed out. The society shall keep 30% of the net profits of the society as a reserve fund. The amount of money deducted from the net profit as a reserve fund shall be deposited in a saving account opened in the name of the society.

Presently, Abela Longena has birr 252,000 deposit in the saving account and Bosa Wanchi has birr 45,000. This is very significant benefit and has increased the motive for community forest conservation effort. The collected income is being used in both villages for development projects, for example, to improve infrastructure carbon project management activities such as patrol costs and costs associated with facilitation of carbon project cooperative institution.

The money from this fund should be used in such a manner to bring benefits to the entire community. All the interviewees think that the money from the carbon fund is managed in a fair manner by their cooperatives leaders and the money has been audited by the professionals, they are invested in the real priorities. Furthermore, they defined the further list of priorities, among the others: flourmill, Grain store, and credit fund were the most mentioned. According to the survey, the majority of interviewees think that the local community benefits from forest protection. The result showed that most families perceive the benefit of the project at the community and the family level.

They pointed out carbon project activity has brought socio economic transformation in the areas of improved agriculture, food and fruits, environmental rehabilitation and carbon payment. In this regard, during the field survey, quantitative data was collected to assess the perception of the beneficiaries' in terms of project benefits to support their family. Of the sample, 91% of the respondents indicated that the project supported their family, while only 9% responded that the project did not support their family because families did not receive any individual payments. According to carbon project committee interview, starting from 2013 the project will make direct payments to the individual households.

According to interview with cooperatives leaders the community conservation areas are under monitoring by different groups of 5 to 10 community members, the so called security guard. The number of people in each group was decided according to the size of a protected block. The members of the security guards were recruited from the members the project. Cooperative leaders and forest protection sub-committee were in charge of recruiting the members of monitoring patrol. The role of these groups is to conduct the preventive illegal activities. The security guards are salaried from the community fund. According to the interviewees, the project creates income and job opportunities to local community.

According to household survey in both villages most respondents pointed out agricultural productivity is increased after the implementation of HCP. But agriculture is subsistence in nature with hardly any excess production to sell. The major problem is exacerbated by frequent failure of crops in the dry season. When asked if they produce enough food to sustain their family the whole year, 51% replied Yes, 49% No. Those respondents who said No, mentioned during food scarcity time, the project provided them food grain through purchase in cheap price. The result indicates some farmers do not produce enough food on their farm to sustain their family and buy food grains from market and from the grain store of the project during hard times.

Conclusions

The results of this study illustrate the potential socio economic value of carbon storage helps the local community. The study shows that carbon project makes a significant contribution to carbon trading and therefore can generate carbon credits for local communities.. It is also expected that much revenue can be earned by selling carbon credits in the carbon market through CDM project. Local community participation in carbon project is a key to stop alarming degradation. This is a win-win situation; if carbon project is better practiced, the local communities have better access for carbon payment which helps the local community for their own welfare and survival. The payment from carbon project has been perceived by the local people as benefit for both the local community and the individual households.

The management of the money in community fund is also seen as fair. Furthermore, the local people agreed to invest the carbon payment on real priorities of the villages.

Furthermore, the carbon project activities have a potential to improve rural livelihoods and the local community welfare, as well as to enhance the mainstream forest conservation. The standing forest is more valuable in environmental, financial and cultural terms than when it is cleared for other purpose. The practiced activity seemed to offer significant returns either in cash, consumptive use and hence, poses an opportunity to meet both developmental and conservational goals. In short the findings shows carbon project can enhance economic development through the payment of carbon trading.

Recommendation

- Even though socio-economic benefits have shown promising results through carbon trading, more efforts need to be made to increase tangible benefits to the household level. This can be done through encouragement of alternatives income generating activities such as supporting household agricultural production, beekeeping projects, agro forestry, value adding to the project and agricultural products.
- Appropriate economic institutions and mechanisms need to be established for the CDM to result in equity and sustainable development. The effects of global warming in Ethiopia show serious consequences on the economy. The quantification of carbon sequestration, by this study, can direct policymakers, researchers, and administrators in bargaining for the price of
- international greenhouse gas reduction, which can advance the economic, social and environmental development of Ethiopia.
- Another important aspect of this study is that it is also possible to use the farms to sequester carbon from the atmosphere by practicing agro forestry, as this has proved to be a vital element of carbon sequestration. Policy makers should put in place measures to ensure that most farms are titled so as to encourage people to plant more trees get carbon payment through carbon trading.
- The problem of market for carbon and finding a buyer should be addressed extensively.
- To see more realistic picture on community perception of the benefits coming from carbon payment. The project has to pay the carbon payment directly to the households.
- Various agroforestry activities must be promoted so that the project has a potential to raise the productivity of agricultural land. This will not only increase the overall production but may also improve the situation of food security in the area, which is very important for the local people.
- Although carbon investments cannot fulfill all investment needs of these countries, nevertheless they can make significant contribution towards sustainable development in the region. Some of existing carbon sequestration projects in Africa shows that many projects are already moving towards this goal. However, Africa doesn't benefit from such projects. Multilateral donors like the World Bank would need to push for more carbon investments in the region, which may also induce other investors to follow suit.

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