Wild Coffee Conservation by PFM

through Communities and Government Institutions Capacity Building Project (WCC-PFM/CGICB)

PLAN VIVO
PROJECT IDEA NOTE

Addis Ababa
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SUMMARY INFORMATION

Project Title	Wild Coffee Conservation by PFM through Communities and Government Institutions Capacity Building Project (WCC-PFM/CGICB)
Project Location – Country/Region/Woredas	ETHIOPIA. Southern Nations, Nationalities and Peoples Regional Stare. Sheko Woreda
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Summary of Proposed Activities	Support to instituting silvicultural system of coffee production which maintains the regenerational capacity of the Montane Broadleaf Forest through retaining and/or planting of indigenous forest tree seedlings.
Summary of Proposed Target Groups	Local forest communities engaged in coffee production as a major livelihood support system.

Contents

ABBREVIATIONS

AGB	Above ground biomass
BGB	Below ground biomass
CBO	Community-Based Organisation
DSH	Diameter at stump height
masl	meter above sea level
MY	Mean stocking rate
NTFP	Non-timber forest product
PFM	Participatory forest management
SNNPRS	Southern Nations, Nationalities and Peoples Regional State
TMCF	Tropical Montane Cloud Forest
UTM	Universal Transverse Mercator
WBISPP	Woody Biomass Strategic Planning Project
WCMC	World Conservation Monitoring Centre
UNEP	United Nations Environment Programme
UNU	United Nations University

Part A. Project Aims and Objectives

A1. Problems to be addressed

Deforestation in the Project Area has largely ceased because the very high prices for coffee have made the forest more valuable as shade for coffee than its conversion to cropland. In 2004 the Woreda Administration prohibted any further conversion of forest to agriculture.

A forest inventory undertaken by the Project in 2010 found that in the Intensively Managed Smallholder Coffee Forest there was almost 100 percent clearing of seedlings and saplings. This effectively eliminates the regeneration capacity of the forest. Subsequent discussions with Key Informed Persons in Sheko woreda found that this very intensive management system has only been practiced since 2005.

It was also observed in the nearby Bebeka and Tepi Coffee Estates located in Bench-Maji Zone and in Sheka Zones where coffee has been intensively managed for over 30 years, that canopy cover was significantly reduced and trees comprised only of large diameter stems with no lower or middle strata. It was hypothesized that because of the total lack of regeneration caused by the very intensive system of coffee management, annual tree mortality with no regeneration had caused a systematic decline in tree density, wood biomass and thus carbon stocks.

It is considered that it may be possible to use the rate of decline of tree stocks in the Bebeka and Tepi Coffee Estates to model the future decline of tree stocks in Intensively Managed Smallholder Coffee Forest. Preliminary discussions with both Tepi and Bebeka Coffee Estate personnel have confirmed that the very intensive system of undergrowth clearing does indeed result in significantly reduced regeneration and reduced stem density and canopy cover. Both estates have now instituted nurseries for seedling development of indigenous trees and have instituted a programme of enrichment planting to boost the regeneration capacity of the coffee forest.

It is known that in the Harena Forest located in Bale Zone of Oromiya Regional State that farmers have developed a system of forest silviculture that protects and retains selected seedlings and saplings to ensure forest regeneration and the maintenance of tree stem density and canopy cover.

A2. Aims and Objectives

The overall objective of the Project is as follows:

'To contribute to the conservation of coffee biodiversity through the application of simplified PFM procedures to achieve sustainable ways of conserving this biodiversity

in situ with joint (community and government) management and benefit sharing mechanisms.' [1]

This refers to the development and application of simplified participatory forest management (PFM) procedures to be applied by communities, in collaboration with government agencies, for the conservation of wild coffee. Critical for the sustainability of this *in situ* conservation must be the development of benefit streams which can improve the livelihoods of the communities managing the forests and ensure the support of government agencies involved with forest management and biodiversity conservation. The simplified PFM approach has been developed to be more user / community friendly, facilitate wider participation and to speed up implementation. This contrasts with other PFM methods used in Ethiopia.

The specific objective of the project is:

> *'To promote and fine-tune the simplified PFM procedures, including forest zonation, so as to develop a stable relationship between government organisations and communities for biodiversity protection, and to ensure livelihood support and poverty reduction through sustainable forest management.'* [2]

The specific objective involves the development and adjustment of the simplified PFM procedures already developed and applied by the NTFP Project Phases I and II for the purpose of forest protection. This has linked PFM to the production of NTFPs, which include wild forest coffee in some areas. The specific fine tuning will be undertaken to ensure that PFM procedures, in terms of institutional development, forest zonation and management planning, are appropriate for conserving the coffee genetic biodiversity, especially maintaining the overall landscape habitat which will ensure the opportunities for genetic diversity to be maintained.

Part B. Proposed Project Area

B1. Description of Project Location

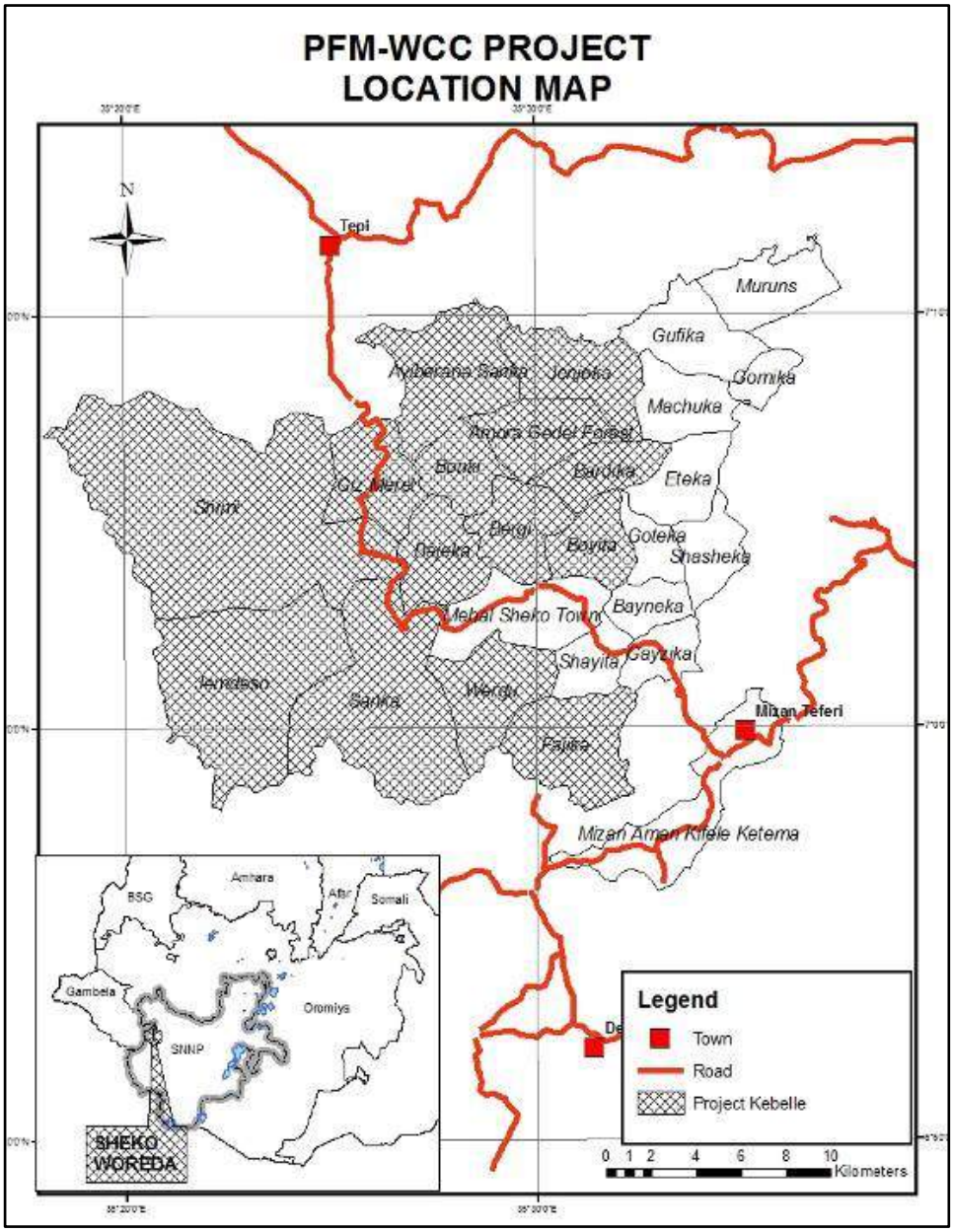
Location

The project area is located in the north-western part of the Southern Nations, Nationalities and Peoples Regional State (SNNPRS) and focuses on Sheko woreda in Bench-Maji Zone (Map 1).

[1] Project Document: Logical framework: A New Approach to the Conservation of Wild Coffea Arabica in South-West Ethiopia: Exploring the Potential of Participatory Forest Management (PFM) DCL-ENV/2009/151-385

[2] Project Document: Logical framework: A New Approach to the Conservation of Wild Coffea Arabica in South-West Ethiopia: Exploring the Potential of Participatory Forest Management (PFM) DCL-ENV/2009/151-385

Map 1. Sheko Woreda: Location



Physical Features

Climate

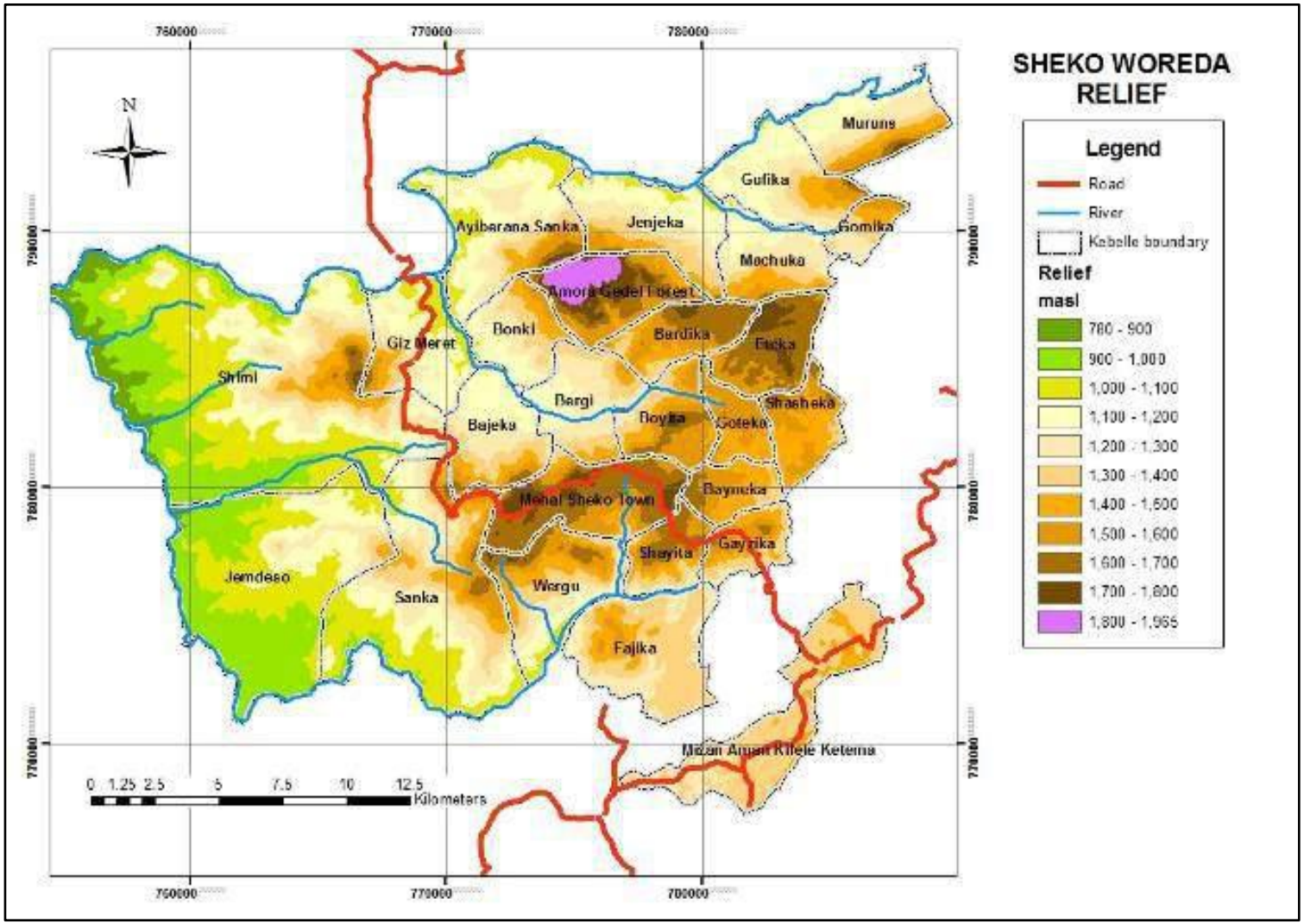
The rainfall pattern is uni-modal from March through to October although rain can fall in any month. Mean annual rainfall is between 1,700 to 2,000 mm. Mean annual temperatures range between 17° and 22° C.

Relief and Drainage

The project area comprises a deeply dissected plateau between 950 and 1,850 masl (Map 2).

The area is drained by the upper Akobo River and its tributaries, which joins the Baro at the border with Sudan.

Map 2. Sheko Woreda: Relief



Geology and Soils

The area is underlain by Tertiary Trapp basalts, which give rise to humic Nitosols. When recently cleared for agriculture these soils are well structured, high in organic matter and fertile. Under continuous cropping organic matter oxidizes although under the high rainfall conditions, with high rates of plant residues and generally low temperatures, organic matter and nutrient depletion rates are lower than in many other parts of the Ethiopian Highlands. Land preparation involves considerable weed and crop residue removal prior to planting. Whilst surface plant material is burnt there remain significant amounts of root material, which contributes to soil organic matter replenishment. However, under continuous cultivation and on very steep slopes, soil organic matter will decline and soil structure will degrade, leading to accelerated soil erosion.

Forest Types

Chaffey (1979)[3] mapped two types of forest in the Project Area: (i) Lowland Baphia Forest, and (ii) "Montane Broadleaf" Forest. The upper boundary of Chaffey's Lowland Forest was approximately 1,100 masl. Friis (1992)[4] recognized two types of forest that occur within the Project Area: (i) Transitional Rain Forest found between 500 and 1,500 masl and (ii) Afro-montane Rain Forest found between 1,500 and 2,600 masl. The Transitional Rain Forest has tree species from the Lowland *Baphia* Rain Forest below 1,100 masl. Friis' lowland forest, which he termed Dry peripheral semi-deciduous Guineo-Congo Forest he recorded as being confined to 500 – 600masl.

Within the Transitional and Afro-Montane Rain Forest *Coffea arabica* is found in its wild state between 1,000 and 1,850 masl. Within the forest varying levels of intensity of coffee tree management are found: ranging from little or no management to intensive management with three weedings per year, reduction in shade canopy trees and complete removal of seedlings and saplings.
The distribution of forest, agro-forestry and cultivation are shown in Map 3.

Three strata are recognized: (i) high canopy (30m), (ii) lower canopy, and (iii) shrub layer. There is only one emergent species from the high canopy: *Pouteria adolfi-friederici*, which has not been recorded in the Project Area.

The high canopy consists of the following species: *Pouteria altissima, Ficus sur, Croton macrostachyus, Albizia gummifera, Ekebergia capensis and Olea welwitschii*. The lower canopy trees are represented by *Dracaena afromontana, Galiniera saxifrage, Bersama abyssinica, Maesa lanceolata, Vepris dainellii and Millettia ferruginea.*

1. Chaffey D.R. (1979) "Southwest Ethiopia Forest Inventroy Project: A reconnaisance inventory of forest in southwest Ethiopia", Min. of Overseas Development, Land Resources Division, Project Report 31.
2. Friis, I. (1992) "Forests and Forest Trees in Northeast Tropical Africa the natural habitats, and distribution pattern in Ethiopia, Djibouti and Somalia", Kew Bull. Additional Series 15.

Spatial Patterns of the four Landcover Types

Map 3 shows in detail the spatial patterns of the four landcover types. Open cultivation and settlement appear as "core" areas, surrounded first by homestead gardens and then by Intensively Managed Coffee Forest (IMF). The Lightly Managed Forest (LMF), "natural" forest, is left as "islands" in the densely populated kebelles.

Areal Extent of Landcover Types

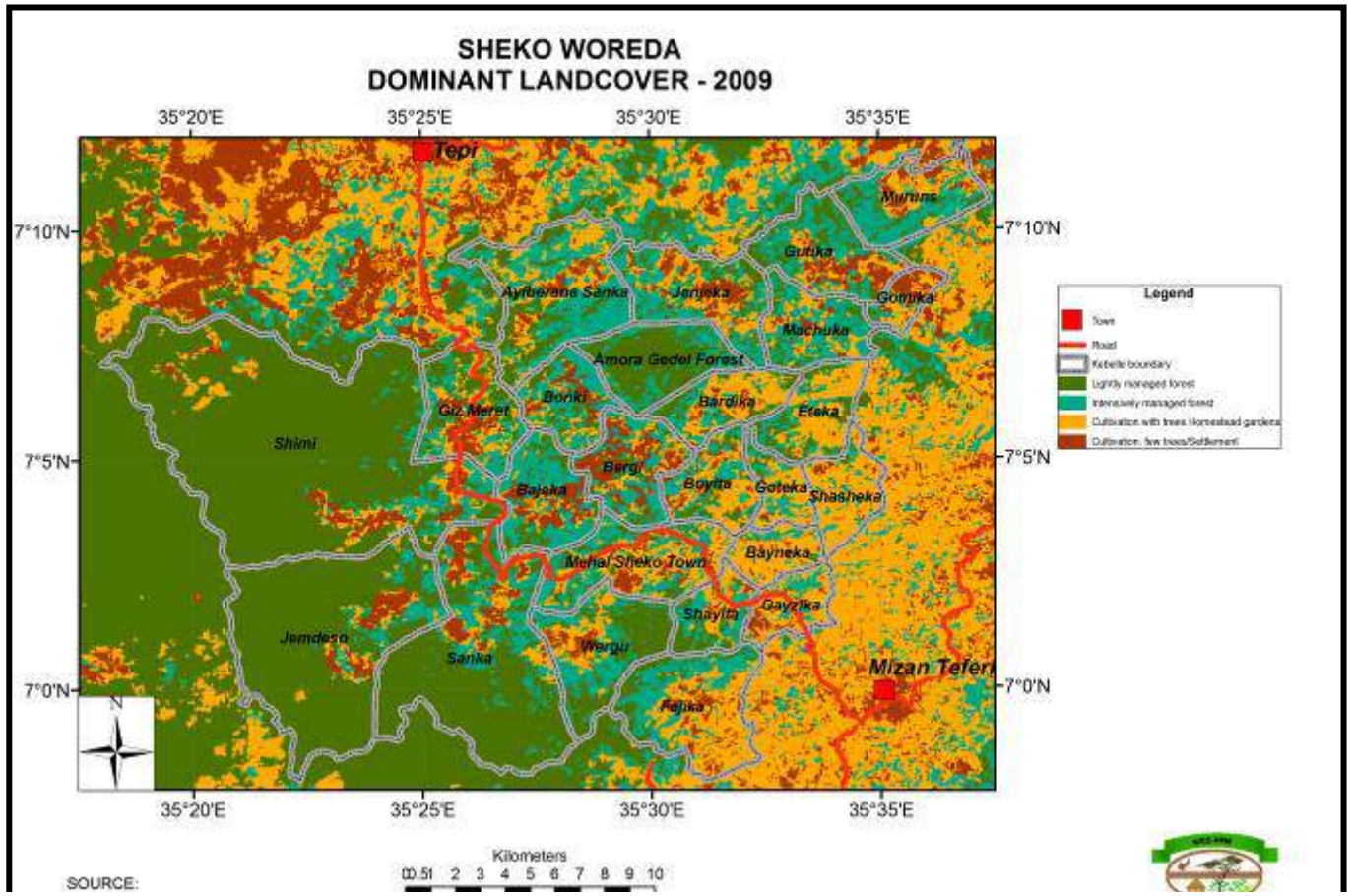
The areas of the four landcover classes by kebele for the whole of Sheko woreda are shown in Table 1. Kebeles are rank ordered in terms of total forest area (ha.) The Project's Baseline Survey of Fanika Kebele (in the adjoining South Bench woreda) recorded the average coffee holdings (including forest and garden coffee) of 2 hectares. With approximately 7,000 farm households in the woreda this would indicate a total area under coffee of 14,000ha.

Table 1. Area of Landcover Classes by Kebele (ha)

	LMF	IMF	AGFOR	AGRIC	Total			LMF	IMF	AGFOR	AGRIC	TOTAL FOREST
	ha	ha	ha	ha	ha			% of Kebelle	% of Kebelle	% of Kebelle	% of Kebelle	% of Kebelle
Amora Gedel	333	1,192	8	0	**1,534**		Amora Gedel	22%	78%	1%	0%	99%
Fajika	402	596	849	371	**2,219**		Fajika	18%	27%	38%	17%	45%
Shimi	5,944	3,092	132	584	**9,753**		Shimi	61%	32%	1%	6%	93%
Jemdeso	2,438	2,230	76	333	**5,077**		Jemdeso	48%	44%	1%	7%	92%
Sanka	1,669	2,458	286	405	**4,818**		Sanka	35%	51%	6%	8%	86%
Ayiberana Sanka	977	1,239	188	270	**2,675**		Ayiberana Sanka	37%	46%	7%	10%	83%
Wergu	280	1,178	320	113	**1,892**		Wergu	15%	62%	17%	6%	77%
Bonki	230	615	132	150	**1,127**		Bonki	20%	55%	12%	13%	75%
Machuka	229	720	205	128	**1,281**		Machuka	18%	56%	16%	10%	74%
Bajeka	320	754	84	314	**1,472**		Bajeka	22%	51%	6%	21%	73%
Giz Meret	390	799	188	288	**1,665**		Giz Meret	23%	48%	11%	17%	71%
Gufika	291	778	250	308	**1,627**		Gufika	18%	48%	15%	19%	66%
Jenjeka	467	710	309	376	**1,862**		Jenjeka	25%	38%	17%	20%	63%
Muruns	402	472	224	350	**1,448**		Muruns	28%	33%	15%	24%	60%
Bergi	148	593	231	438	**1,409**		Bergi	10%	42%	16%	31%	53%
Bardika	113	453	492	40	**1,098**		Bardika	10%	41%	45%	4%	52%
Boyita	125	421	503	105	**1,154**		Boyita	11%	36%	44%	9%	47%
Total	**14,757**	**18,302**	**4,477**	**4,574**	**42,109**		**Total**	**35%**	**43%**	**11%**	**11%**	**79%**

LMF =	Lightly Managed Forest
IMF =	Intensively Managed Forest
AGFOR =	Agro-forestry
AGRIC =	Agriculture & Settlement

Map 3. Dominant Landcover: Sheko Woreda (2009)



B2. Description of Socio-economic Context

Agriculture and Land Use Systems

Field crops include maize, sorghum, horsebean and rice. Maize is grown partly for sale (given the recent high market prices) whilst sorghum is for home consumption. Mean areas under maize and sorghum are 3.48 ha and 1.45 ha per household respectively (NTFP-PFM, 2009).

Coffee is the main perennial crop with a mean area of 2.06 ha per household (NTFP, 2009). This area includes both homestead and forest coffee. Other perennial crops include enset, fruit trees, spices, cassava and root crops.

The main crops for sale are coffee (84 percent of production sold) and banana (70 percent sold). Other major cash crops are mango (50 percent), papaya (41 percent), maize (45 percent) and sweet potato (40 percent).

The main consumption crops are sorghum (91 percent consumed), enset (88 percent), cassava (70 percent), oranges (95 percent) and avocado (96 percent).

The two priority land management practices on cropland are crop rotation (80 percent of households) and inter-cropping (52 percent of households). Fallowing of fields is practiced after 5 to 7 years cropping. Fallow periods are currently 2 – 4 years.

The hoe is the first priority for land preparation for 42 percent of households with another 42 percent of households ranking it as their second choice. Some 55 percent of households rank the plough as their first choice and another 13 percent as their second. The hoe clearly plays an important role in land preparation for households.

Communications and Markets

The Project area has one main road:

- Mizen Teferi to Tepi

It is an all-weather gravel road in reasonable condition. Sheko has telephone and Internet connections. The nearest air strips are Mizen Teferi and Tepi. Both had frequent schedules with Ethiopian Airlines until the services were discontinued in 2008.

Weekly markets are held at Sheko but, given the small population size, demand for most products is limited. Tepi and Mizen Teferi are the main local markets. The distance from Sheko town to Jimma via Mizen Teferi is 260 kms, and to Addis Ababa 560 kms. The road between Jimma and Mizen Teferi is currently being upgraded to asphalt.

Part C. Identification of Target Groups

C1. Participating Communities

Population and Settlement

The smallest administrative unit is the "kebele", which can vary in size from 1,500 to 10,000 ha. The number of households varies from 200 to 500 and average household size is 6 persons. The kebele is the unit at which all land administration and allocation takes place. Within each kebele there are a number of villages called "*Gots*". Each Got has a defined area and boundaries. The Gots therefore comprises a "target community".

The rural population of Sheko woreda according to the 2007 Census (CSA, 2009) was 51,195: with 6,040 (12 percent) classed as urban and 45,195 (88 percent) as rural. 2007 Census population data at the kebele level is not yet available. Using the 1994 Census data at the kebele level and using the annual population increase of 2.55 percent the current population and household data for the Project area kebeles is estimated in table 2.

Table 2. Population and Number of households by kebele in the Project Area (estimates for 2004 and 2011)

	Population			Households			
Kebelle	1994	2004	2011	1994	2004	2011	household size
Amora Gedel	0	0	0	0	0	0	0
Shimi	827	1,064	1,269	229	295	351	3.61
Jemdeso	324	417	497	124	160	190	2.61
Sanka	510	656	782	117	151	180	4.36
Ayiberana Sanka	837	1,077	1,284	191	246	293	4.38
Wergu	580	746	890	138	178	212	4.20
Bonki	981	1,262	1,505	190	244	292	5.16
Machuka	458	589	703	134	172	206	3.42
Bejeka	1417	1,823	2,174	331	426	508	4.28
Giz Meret	2065	2,656	3,168	476	612	730	4.34
Gufika	535	688	821	140	180	215	3.82
Jenjeka	1272	1,636	1,952	327	421	502	3.89
Muruns	964	1,240	1,479	248	319	381	3.89
Bergi	343	441	526	96	123	147	3.57
Bardika	464	597	712	104	134	160	4.46
Boyita	969	1,246	1,487	264	340	405	3.67
TOTAL	**12,546**	**16,138**	**19,249**	**3,109**	**3,999**	**4,770**	

Total population of the project area is estimated to be 19,249 in 4,770 households in 2011. Average household size is 4.04 persons.

Ethnic groups

The 1994 Census records the proportions of the main ethnic groups in Sheko woreda as follows:

Sheko 36 percent

Kafficho	15 percent
Amhara	14 percent
Bench	13 percent
Me'en	6 percent
Majangir	4 percent.

Local Organisational Capacity

The project is working through locally established Participatory Forest Management (PFM) groupsat each got. Access and use rights have been institutionally assured by registering the PFM group as branches of the legally recognised "***Association***" at the woreda level. The villagers have developed the criteria for membership. In general, everyone who is a member of the *Got* can become a member of a PFM group and through that the woreda PFM Association; sometimes also having existing rights to coffee forest or the natural forests has been determined as a criterion for membership (notwithstanding residence in another Got or kebele).

Part D. Land Tenure and Carbon Rights

D1. Land Tenure in Ethiopia

Several federal and regional proclamations have been issued, among which are:

- Federal Rural Land Administration Proclamation (No 89/1997)
- Federal Rural Land Administration and Land Use Proclamation (No 456/2005)
- SNNPR Proclamation issued to determine the Administration and Use of the Rural Land (No. 46/2000)

According to the Constitution all land belongs to the people – effectively the state. Under the Federal and Regional Land Administration Proclamations all give agricultural land use rights to men and women. These have recently been guaranteed through a process of land registration in which individual plots of agricultural land have been registered and each land holder has a registration book. Non individual land, i.e. Communal Land, is generally managed through local Community land use rules. These lands have not been registered under the Land Administration process. Forest lands are administered under the Federal and regional Forestry Proclamations separately from the individual and communal agricultural lands.

D2. Land Tenure in Forest Areas

Land Administration in Forest Lands

Land administration in Forest lands is governed by the Federal Forestry Development Conservation and Utilization Proclamation (542/2007), which repealed Proclamation 94/1994. SNNPRS has issued its own Forestry Proclamation in 2012.

The new Federal legislation (542/2007) has a new section: 4. Promotion of Forest Development, subsection /3, which appears to distinguish two types of "natural forest" – (i) Designated State Forest and (ii) Forests that have not been designated as protected or productive state forests. The full section is as follows:

3/ Management plans shall be developed with the participation of the local community, for forests that have not been designated as protected or productive state forests, and such forests shall be given to the community, associations or investors so that they conserve and utilize them in accordance with directives to be issued by the appropriate body".

"State Forests" are either "Protected" or "Productive" Forests under the legislation.

This new section clearly opens the way for Communities or Associations to be allocated natural forests that have not been designated as "State Forests" (Protective or Productive"). According to the Federal MoARD this was clearly the intention of the Federal legislation (personal comm. Kiflu Segu, MoARD).

The Regional Forest Proclamation provides for “Community Forest”. The relevant definition is:

“Community Forest” *means a land held for the purpose of development, conservation and utilization of forests on natural forests taken from the state or on communally held lands by the surrounding societal groups of the forest who organized in cooperative.*

The Proclamation also allows for registration of Community Forests. The relevant section reads:

The regional state shall designate forests held as community forest currently and that will identify by the pertinent organ for the future and register thereon.

The Proclamation allows for legal agreements between the State and the Community for Community management of the forest.

The community shall be organized in conformity with the development, conservation and utilization of the forest, and they enter in to a contract with the state based on the management plan of the forest.

With respect to the harvesting of forest products the proclamation states:

(2). The Community shall have the right to produce, utilize, move and sell the product of forest.

(3). Without prejudice to sub article 2 of this article, the community shall obtain a permit from the pertinent organ so as to move or store forest products.

Land Use and Tenure in Coffee Forests

With the increase in coffee prices and expansion of managed coffee trees has come the intensification of coffee production in the Forest areas. This has involved the intensive weeding of coffee trees and removal of competing undergrowth and tree seedlings.

D2. Local Forest tenure and Carbon Rights

Agreements have been signed between the Kebele Administrative Office, the Woreda Agricultural Office (WAO) and the got level branches / groups of the woreda PFM Association under which the Forest rights and responsibilities of all parties are prescribed. One of the duties of the WAO is to monitor the implementation of the management plan, to provide technical support, resolve border conflicts and provide legal support. It is stipulated that if the forest is needed for the public interest, appropriate compensation is to be provided to the PFM group concerned. The Kebele Administrative Office also has conflict management tasks as well as preventing illegal cases of land acquisition and assures that implementation of the plan of the got-level PFM groups is in line with the various proclamations and regulations.

Each PFM group undertakes a forest assessment from which it decides on forest management, how to share benefits from forest management, to obtain information on the forests and to claim for compensation. The responsibilities in forest management include the prevention of forest clearing for settlement, agricultural or other purposes. Graduated sanctions are defined in case of violation of rules and responsibilities. Each PFM Group has developed by-laws that elaborate membership rights, organisation, rights and responsibilities of the management board and the duties and responsibilities of three designated PFM Coordinators, who are concerned with protection, development and utilisation respectively.

As the PFM Groups are registered together as an Association neither the got level groups nor the woreda Association can engage in income generating activities. However, as the PFM Association has the status of an NGO, it has opportunities for fundraising where coffee marketing Cooperatives exist. Where this is so, an agreement has been signed between the Cooperative and the PFM in which it is stipulated that a certain percentage (c. 5%) of the profits of Coop is given to the PFM group for running and management costs. Each Cooperative decides the level of the contribution they can render to the PFM Association.

Part E. Project Interventions and Activities

1. Forest Degradation Processes and Measurement

A number of studies has examined the potential impact on forest structure and regeneration capacity resulting from the coffee management regimes practiced in the

Ethiopian Coffee Forests (Feyera Sebeta & Denich, 2006;[5] Woldemariam 2003[6], Kitessa Hundera et al., 2013[7]; Schmitt et al., 2009[8]; Gole 2003[9]; Aerts et al., 2013[10]). The Feyera Sebbeta and Denich study focussed specifically on the Sheko Forest in the Project Area. A three fold coffee forest management system has been established related to the degree of management intensity: Coffee Forest (CF) (which is natural forest or Lightly Management Forest (LMF) as mentioned earlier), Semi Forest Coffee (SFC) (which is Intensively Managed Forest (IMF) as mentioned earlier) and Semi-plantation Coffee Forest (SPF). In Coffee Forest coffee is harvested from wild coffee shrubs with little or no management interventions (thinning, weeding). In the Semi forest coffee system herbs, shrubs and emerging tree seedlings (except coffee) are removed annually, the upper canopy selectively thinned and coffee saplings selectively planted. In the semi plantation coffee system the management system is similar to the semi forest coffee system, but is much more intensively implemented.

All studies consistently reported significant reductions in seedling numbers in the Semi forest coffee and the semi plantation coffee systems compared with the Forest Coffee systems. A number of studies identified the ultimate loss of forest canopy through the lack of regeneration with extremely negative impacts on coffee yields as well as the loss of biodiversity. In the intermediate stages of forest loss coupled with the loss of biodiversity there would be reductions in pollination capacity initiating a decline in coffee yields.

One study has examined the potential of enclosures in arresting the forest decline in Ethiopian Coffee Forests (Kitessa Hundera et al. 2015)[11]. They used 10m by 10m enclosures from which all clearing ceased. They found that within two years tree seedlings were of the preferred shade trees species. They also found that there were more seedlings present than that required for replacement of annual tree mortality.

Currently, the weeding and harvesting regimes result in the total elimination of all seedlings and thus eliminating the forest regeneration and forest recruitment. However, tree mortality rates remain the same. Under natural conditions and in the long term recruitment and mortality rates are the same and the forest remains in a steady state. The rate at which

3. [5] Feyera Sebeta & Denich, M. (2006) “Effects of wild coffee management on species diversity in Afromontane rainforests of Ethiopia”, Forest Ecology & Management, 232, 68-74.
4. [6] Woldemariam, T. (2003) “Vegetation of the Yayu Forest in SW Ethiopia: Impacts of human use and implications for in situ conservation of wild Coffea arabica L. population”, Ecology & Development Series No. 10, Center for Development Research, Univ. of Bonn.
5. [7] Kitessa Hundera et al., (2013) “Effects of Coffee Management Intensity on Composition, Structure and Regeneration Status of Ethiopia’s Moist Evergreen Afromontane Forests”, Environmental Management 51: 801-809.
6. [8] Schmitt C.B. (2006) “Montane Rainforest with wild Coffea arabica in the Bonga Region (SW Ethiopia): plant diversity, wild coffee management and implications for conservation”, Ecology and Development Series No. 47, 2006.
7. [9] Gole T.W. (2003) “ Vegetation of Yayu Forest in SW Ehiopia: : Impacts of human use and implications for in situ conservation of wild Coffea arabica L. populations”, Ecology & Development Series No. 10., Center for Development Research, Univ. of Bonn.
8. [10] Aerts R. et al., 2011 “Semi Forest Coffee Cultivation and the conservation of Ethiopian Afromontane Rainforest Fragments”, For. Ecology & Management 261, 1034-1041.
9. [11] Kitessa Hundera et al., 2015 “The potential of small enclosure in assisting regeneration of coffee shade trees in South-western Ethiopian Coffee Forests”, J. of Ecology.

trees die and are replaced is termed the annual forest "turnover" rate (Richards, 1996). The annual turnover rate is a percent of the total forest biomass. Its equivalent, the "residence time" Galbraith et la. (2013)[12] is the turnover percent divided into 100. Thus an annual forest turnover of 2 percent gives a turnover period of 50 years.

Stephenson and Mantgen (2005) examined records from 158 tropical forests in both the old and new world. They found no differences in turnover rates between the two areas. They found that the average annual turnover rate was 1.74 percent with a total turnover period of 57 years. Galbraith et al. (2013) examined records from 177 tropical forest plots to assess the woody biomass residence period (or its equivalent the total turnover period). The average period was 60 years for both Neotropics and Paleotropics. However, it was estimated that a period of 74 years was applicable for Africa. This gives annual turnover rates of 1.66 percent and 1.35 percent respectively. Billingham et al. (1999) examined the annual turnover rates for forests in New Zealand and found rates there were 1.4 percent compared with 1.5 percent (67 years) in tropical forests. Richards (1996) estimates an annual turnover rate of 1.6 percent or a full forest turnover period of 63 years. Thus annual turnover rates are between 1.35 and 1.74 percent or turnover periods from 74 years to 57 years.

Galbraith et al. (ibid) examined the potential impacts of climate, Altitude and major soil types on residence periods. They found only a weak correspondence between residence period and climate. There was however a correspondence between residence period and altitude with clear evidence of increasing residence period and altitude. The Project area and the coffee cultivation zone in particular lies between 1,000 and 2,000masl. Examining Galbraith's figure 5 the residence time at 1,000masl is 60 years rising to 70 years at 2,000masl. The coffee cultivation zone is generally underlain by deep Nitosols. These fall into type 2 of Galbraith's three major soil types. Residence periods for soil type 2 vary widely between 40 and 60 years.

In Ethiopia, McCann (1997) examined the history of the forest in Gera woreda which is northwest of Jimma. In the mid-19th century it was the centre of the Gera Kingdom and according to Italian visitors to the area as late as 1880 the area was still completely cleared of forest and was under intensive agriculture. In 1881 Emperor Menelik's forces entered the area, exiled the Royal family and it is estimated that three quarters of the population fled the area. In 1928 when the Italian geographer Cerulli entered the area it was heavily forested. Very old residents interviewed by McCann were able to detail the forest succession from agriculture to mature forest as about 60 years.

A conservative estimate of the annual turnover rate would appear to be 1.43 percent or 70 years for the full forest turnover period.

The Project's forest inventory found that the total stock of forest carbon is 58 t/ha or 212 t/ha of CO2. With an annual turnover rate of 1.43 percent this gives an annual turnover rate of wood biomass of 1.7 tons/ha (or 0.8t/ha of C or 3.0t/ha of CO_2e). If there is no re-

10. [12] Galbraith, D. et al. (2013) "Residence times of woody biomass in tropical forests",Plant Ecology and Diversity DOI: 10.1080/17550874.2013.770578

generation and zero recruitment of new trees then the forest will be eliminated after 70 years.

2. Project Interventions to avoid forest degradation and impacts

The proposed project activities will support coffee farmers through awareness creation of the negative impacts of the current weeding regime, demonstrations and field visits to show how to leave a select number of tree seedlings and/or to plant indigenous tree seedlings to maintain the regeneration capacity of the forest. This will include visits to the Harena Forest in eastern Ethiopia where coffee farmers have developed a silvicultural system which maintains a stock of tree seedlings during the weeding process to maintain the tree stem density and forest regeneration. The financial support will cover the additional labour requirements to enable both maximum harvesting of coffee berries and also introduce a maintenance regime which ensures the continued regenerative capacity of the forest.

The Project will thus support coffee farmers to implement a system of coffee tree maintenance and harvesting which retains the natural recruitment rate. This will be done by leaving selected tree seedlings during the weeding operations and/or by the planting of indigenous tree seedlings within the coffee forest. In this way in each year 3.0 t/ha of CO2e emissions can be avoided.

To provide an indication of annual gross payments that could be expected two potential CO2e prices are used (US$4 and US$8 per ton CO2e)

REDUCED EMISSIONS FROM AVOIDED FOREST DEGRADATION			
Forest turn over rate	1.43%	per annum	
Forest turn over period	70	years	
IMF: Stocking rate: wood	116	t/ha	
IMF: Stocking rate: C	58	t/ha	
IMF: Stocking rate: CO2e	212	t/ha	
Annual turnover wood	1.66	t/ha/yr	
Annual turnover C	0.83	t/ha/yr	
Annual turnover CO2	3.03	t/ha/yr	(or CO2 emissions avoided)

		price US$/t CO2e	**price US$/t CO2e**
EXAMPLE		**$ 4.00**	**$ 8.00**
area of coffee treated	ha	1	1
annual gross payment	/ha	$12.13	$24.26
annual gross payment	/ha	ETB 218	ETB 437

Source: Zewdu Yilma, Temesgen Yohannes, Demesew Taye & P. Sutcliffe (2012)[13]

Part F. Identification of Non-Eligible Activities

Capacity Building – government, communities and CBOs

The strengthening of government institutions / officers (GO) is targeted mainly on the technical specialists (Zonal and *Woreda* Experts) and field staff (Development Agents – DAs) of the Rural Development Coordination Office (RDCO's) (now Agricultural Office) in the woreda selected for project intervention. All training conforms to the project policy of equal access, including a balance to include women and minority groups.

Themes for the various areas of work include:

- participatory approaches to problem solving and development,
- PFM approaches and the role of functional forest landscapes,
- co-management of natural resources,
- multi-stakeholder processes,
- coffee biodiversity conservation,
- NTFP-development, including production, processing and marketing,
- participatory land-use planning and sustainable land management,
- Environmental service provision and payments for environmental services.

CBO Development - PFMAs and PLC

The development and empowerment of CBO's is a key element in order to sustain the project outcomes. CBOs play an important role in organising local energy and initiatives, as well as providing organisational units which can efficiently manage different activities where groups of farmers / households need to collaborate. These include natural resource management and also trading activities, both of which are central to this project. CBOs also provide mechanisms for discussion, agreement and conflict resolution with respect to the different issues, including the utilisation of the different forest areas for biodiversity conservation. Hence the building of capacity in the CBOs is essential for effective achievement of project goals both during and beyond the project period.

Two specific target groups of CBO's are targeted at the *kebele* level:

a) Grassroots organisations for PFM activities – probably PFM Groups (who are members of the Woreda Forest Management Association, and

b) Grassroots organisations at the *kebele* level for NTFP marketing – Cooperatives and Private Limited Companies.

11. Zewdu Yilma, Temesgen Yohannes, Demesew Taye & Sutcliffe, J.P. (2012) "Forest Inventory in the Sheko Forest", WCC-PFM/CGICB

Participatory Forest Management Fine Tuning and Application

In the NTFP R&D (2003-2007 and 2007-2013) a new and streamlined approach to PFM was developed and tested to provide a more user friendly and rapid approach for community based forest management planning and implementation with an emphasis on NTFP and livelihood development, as well as the provision of environmental services (conservation of coffee biodiversity and water regulation). This approach is being further developed and adjusted to meet a specific focus on biodiversity conservation which is needed in this case. That will involve a number of issues, but specifically the zoning of forest for different uses – core conservation areas, protection areas, development areas and utilisation areas with the development of appropriate management arrangements.

Training of PFM group leaders will include:

- organizational elements,
- concepts of PFM as applied to biodiversity conservation,
- the policy context for this specific use of PFM for biodiversity conservation, and
- Skill development for forest resource assessment – especially coffee biodiversity, management planning, implementation and monitoring of forest conditions.

Livelihood Development – NTFP Production and Marketing, PES and Ecotourism.

In order for the communities to be supportive of the *in situ* coffee biodiversity conservation activities, their own development situation must be improved. The generation of increased benefits for communities will be sought through enterprises in and around the natural foeest (LMF) biodiversity areas, through marketing opportunities for organic, forest coffee and links to niche markets in Europe, as well as through payment for environmental services from the Voluntary Carbon Fund and other more specifically biodiversity focused sources, including ones from the international coffee industry.

These include:

- **Promotion of Best Practices for NTFP-production and processing:** Conducting an **a**ssessment of the relevance of local practices and the results of farmer-led trials in the NTFP R&D project on different practices for NTFP-production, post-harvest handling and processing, (especially for honey, beeswax, forest and agroforestry coffee, spices and bamboo) as the basis for promotion of validated 'best practices' for each of these products. These include specific practices relevant to women and minority groups.
- **Support to CBO's (PLCs) for improved marketing:** At the producer's level, the formation of marketing CBO's are being strongly supported in order to ensure organized production and/or processing of high quality NTFP in quantities which can attract the interest of traders or processors, these being Marketing Cooperatives, Unions and private sector market players.

- **Ecotourism:** One further livelihood development activity being explored is that of the development of ecotourism in this area. Links with a local NGO with interests in community based tourism have been made by the NTFP Phase II project and these will be explored for these specific sites.

Advocacy

The innovative character of the project makes it essential that it monitors carefully what works and what does not, and advocates at different levels of government (local, regional and national) to make the various policy and decision makers aware of the PFM approach to biodiversity conservation, the operational tools and lessons learnt from project implementation and their implications for policy development. Advocacy activities are being undertaken during all stages of project implementation, starting with the initial awareness raising. These advocacy efforts reinforce the evolving supportive policy environment and pave the way for the necessary changes and improvements in the policy framework so that PFM can be seen as relevant for biodiversity conservation, while the link between livelihood development and biodiversity conservation is recognised.

Part G. Long-term Sustainability Drivers

There are a number of activities that the Project is undertaking to ensure the long term sustainability of the Project even if carbon revenues are not forthcoming or should they cease. These include:

Development of Forest-centred Community Institutions and Increased Community Forest Tenure Security

The establishment of **these** institutions will enable communities to defend their rights, maximise benefits from sustainable harvesting and processing of forest products, as well as to fulfil forest management responsibilities. The approach to PFM is firstly for Communities to obtain secure forest access, management and use rights to forests within their jurisdiction. This will then allow them to develop recognition of the value of different forest areas for different benefits, especially various non-timber forest products (NTFP) and other forest-based enterprises – both for market and domestic use, but also for coffee gene pool conservation and watershed management. Broad forest zonation into natural forest (LMF), modified (coffee) forest (IMF) and agro-forestry systems creates the basis for the development of management practices and exploration of other forest enterprises, which are being and could be implemented by the local communities and thereby ensuring the maintenance of the forest and the NTFPs therein

Development of Profitable Forest-based Enterprises (including Eco-tourism) thereby increasing the Economic Value of the Forest

The development of forest-based enterprises that are profitable and locally appropriate will add value to the forest. The development of NTFP and other forest-based enterprise

production, processing and marketing activities are being organised around producers groups, who are being supported to develop skills not only in production of these products but also in adding value to them through processing and in niche marketing. The latter has a considerable potential and spices and honey are being tested as marketing brands building on coffee certification. The NTFP groups are being linked to, and usually part of, community groups responsible for Participatory Forest Management (PFM).

Improved Land Management and Land Use Planning integrating Sustainable Forest and Non-forest land Management

The integrated planning at the landscape scale for sustainable land management of forest and non-forest lands can play a role in reducing the pressures upon the forest from population increase and agricultural land degradation.

Policy backing for local forest control

Ensuring appropriate policies are in place will provide a secure foundation for local rights over the forests and their products.

Sustainable Coffee Management Systems supported

Current coffee management systems (weeding and harvesting) result in complete clearing of under-growth and the consequent elimination of forest regeneration. A sustainable coffee management system will be supported to ensure continued natural forest regeneration.

Part H. Organisation and Proposed Governance Structure

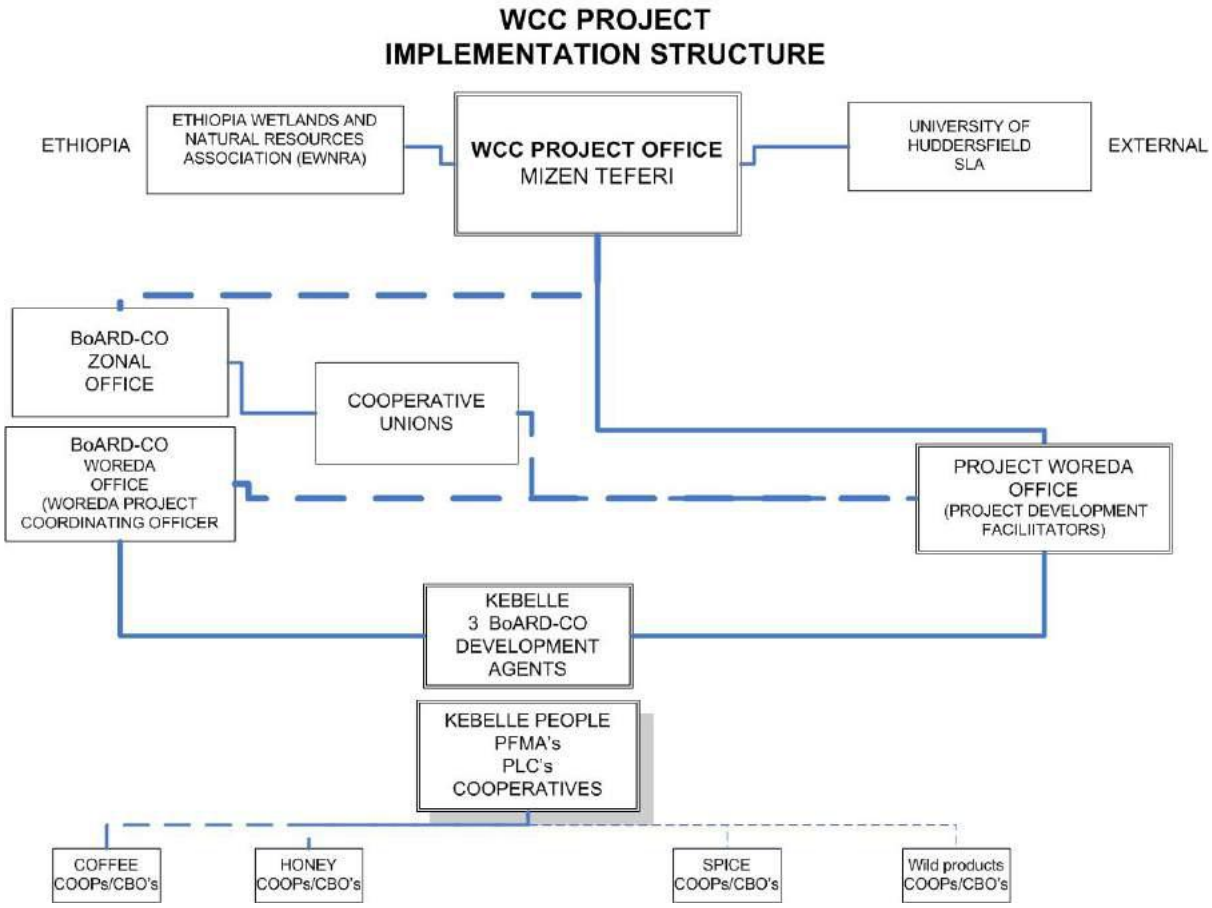
H1. Project Organisational Structure

Project Organization

Figure 1 outlines the links between the various actors in the project at the field level. The project is implemented by a team of Ethiopian specialists employed and monitored by the Ethiopian Wetlands and Natural Resources Association (EWNRA), working in close collaboration with the relevant government departments and also with local Community Based Organizations (CBOs) and the communities. The team is based in the Project area, with an office in Mizan Teferi, the capital of Bench Maji Zone.

The Project is administered by a Project Coordinator and a Technical Team in-country, which is responsible to the Project Management Committee and the Project Manager at Huddersfield University, which is the contractor for the EU.

Figure 1. WCC Project Organisational Structure.



In-country Project Coordinator

Ethiopian Wetlands and Natural Resource Association (EWNRA) has extensive field experience of community-based natural resource management research, implementation and dissemination in south-west Ethiopia. EWNRA is a local partner in the completed NTFP-PFM Research and Development Project Phase I and II and has proved to be very effective, both in obtaining matching funds and in providing training in participatory methods. It has significant experience of collaborating with government offices, including BoARDs, and has office facilities in Addis Ababa which can be used for liaison purposes.

When the EU-supported Project ends, EWNRA will remain as Technical Support to the proposed woreda level Carbon Trust Fund (see below).

Technical Team

The core technical team is based at Mizan and consists of four professional staff whose functions are given by their titles:

- Project Co-ordinator
- Participatory Forest Management Specialist
- Market Development Specialist
- Participatory Planning, Monitoring and Evaluation Specialist

In addition, the project employs three Community level PFM facilitators based in Sheko *woreda.* Four regular advisers (three international and one national) support, advice and monitor the permanent staff. Additionally, short term consultants from within the country and overseas are available for specialist support when this is required.

Technical Support Services

Huddersfield University has over 20 years of experience of managing training and field development activities in Ethiopia for a range of international funding agencies. The Centre for Sustainable and Resilient Communities has implemented two field development projects in South-West Ethiopia to date, including the NTFP-PFM R&D project phases I and II from which this one is developed. Huddersfield University is the Contractor to the European Union (EU) for the present WCC-PFM CGICB Project and hence, the Project Manager.

Sustainable Livelihood Action has considerable experience of working in the south-west of Ethiopia, in collaboration with Huddersfield University and has supported EWNRA in its institutional development. In addition, it has particular expertise among its staff in community-based natural resource management, sustainable forest management, local level land use planning and multi-stakeholder involvement in rural development and participatory forest management.

Relationship to National Organizations

From the offices in Mizen Teferi town support is provided to the Zonal Department of Agriculture (DoA's) and Cooperative Unions and to the lower level *woreda* Agricultural Offices and cooperative societies. In order to ensure close collaboration with the *woreda* government officials and the CBOs at community levels, *woreda* level PFM facilitators have been appointed. They are the lowest level employee of the project. At the *kebele* and *got* (sub-*kebele)* level the project works with the three government extension staff (development agents) per *kebele*, and through them and directly with community groups with different interests. (See Figure 2)

The Agricultural Offices are the associate partners in project implementation and are fully involved in it. Collaboration agreements have been signed with details of the modalities of collaboration, time inputs, responsibilities of the partners in implementation, project support etc. In each Agricultural Office a Government Office (GO) member of staff is assigned as the **Focal Person** for coordination purposes and provided with a motor bike to facilitate their activities.

Capacity building efforts for government staff are focused on enhancing staff skills and knowledge so that they can provide sensitive support to communities, especially in the areas of PFM management, NTFP development and trading, and the provision of environmental services. In particular, support and training focuses on how these activities will interact so that an integrated approach can be taken by government staff.

Joint planning, monitoring and evaluation of project activities are a key instrument for building up Government institutional capacities. This is done within the context of the existing strategic plans in each of the *woredas*, with project activities integrated therein. Where necessary, support is provided for the elaboration of new strategic plans, aiming at the incorporation of the project approach and its contribution to sustainable development.

Community-led Design and Benefits

The development and empowerment of CBO's is considered to be a key element in order to sustain the project outcomes. CBOs can play an important role in organising local energy and initiatives, as well as providing organisational units which can efficiently manage different activities where groups of farmers / households need to collaborate. CBOs also provide mechanisms for discussion, agreement and conflict resolution. Hence the building of capacity in the CBOs is essential for effective achievement of project goals both during and beyond the project period.

Empowerment of CBOs involves creating leadership capacities, conflict resolution abilities, as well as ensuring transparent behaviour by CBO leaders and democratic operation of the organisation. These are all essential if the CBOs are to gain support from their members and to be sustainable in the long term.

Two specific target groups of CBO's are being supported:

a) Grassroots organisations established around project related activities at community and kebele levels, especially in the areas of NTFP production and marketing, and Participatory Forest Management, represented at woreda level through establishing woreda level FMAs, with got level branch PFM groups, and

b) Existing Primary Multi-purpose Cooperative Societies and Cooperative Unions, at respectively *woreda* and zonal levels.

Since organizational development at community level is traditionally weak in the area, the project is facilitating CBO establishment through a process of advice, discussion and support. CBOs are being established to assume the considerable range of new challenges of forest-based community development. These CBO's build both on existing local institutions for forest management and experiences accumulated in the NTFP-PFM R&D project.

Other types of CBO's include informal NTFP producers or processors groups, women's groups, etc., but also legalized CBO's, such as Associations, Cooperatives or PFM-groups. Several CBO's can be formed within one kebele as primary target groups, but an effort is being made to ensure that there is an umbrella type of CBO in each kebele, in order to ensure integration of the different groups and their respective activities.

The organizational models to be chosen for each CBO will depend on internal efficiency for effective management, the CBO's objectives and consequently the external requirements according to the policy framework for CBO's.

H2. Applicant Organisation

Legal Status

EWNRA is a not-for-profit NGO established in 2000. It is non-political and strives on the principles of equal opportunities for all citizens in its interventions. It has registered according to the new Federal Charities and Societies Proclamation No. 621/2009 with registration number 0198 as Ethiopian Resident Charity.

Long-term Objectives of EWNRA

Vision: EWNRA exists to contribute towards ensuring sustainable use and management of Ethiopia's wetlands and natural resources for improving people's wellbeing and enhance a wide range of ecosystem services through fostering multi-stakeholder actions and integrated approaches.

Goal: To develop awareness, capacity and skills within Ethiopia to achieve the wise use of wetlands and the sustainable management of natural resources, thereby contributing to the development of the nation and sustaining the benefits from these resources for the coming generations.

EWNRA will play its role in the achievement of this goal by working with communities to develop economically feasible and environmentally sustainable ways of using natural resources, and helping to build the capacity of both community leaders and government field staff. It will also work with senior government staff at the regional and federal level to help inform policymaking and ensure that a sound understanding of field conditions is the basis of policy making.

Objectives of EWNRA: The prime objective that EWNRA has been established is to raise awareness and understanding of wetlands, wetlands associated resources and other natural resources in the country and to explore, through research and development projects, how these resources can be used in a sustainable way to reduce poverty and improve environmental conditions/management in order to meet the community and environmental needs.

In order to fulfil its vision and mission, EWNRA has adopted the following specific objectives:

- Assessing the benefits of wetlands and other natural resources to the community and seeking ways to enhance these benefits,
- Investigating the human impacts and threats on these resources,
- Developing skills and techniques to address these impacts and threats,
- Developing sustainable management techniques and

- Promoting community based natural resources management.

EWNRA's efforts to address natural resources issues is through the active participation of local communities and thereby contributing to improving their livelihoods and reducing poverty in the country, working hand in hand with all development partners or actors. Through this, EWNRA is committed to promote sustainable use of the natural resources in the country.

Current Activities

EWNRA is currently operating and implementing 8 projects in:

- Oromia Regional State – 3 zones 5 woredas (Metu, Hurumu, Omo Nada, Nonosele and Abbaya Woreda)
- SNNPRs -3 zones 8 woredas (Masha, Andracha, Gesha, South Bench, Yeki, Guraferda, North Bench and Sheko)
- Amhara Region – 1 zone and 2 woredas (Fogera rural and Woreta urban woredas but the later with rural kebeles)

In addition undertakes training and environmental advocacy activities nationally (focus is on wetlands and forest).

Personnel: Relevant Skills and Experience

In total EWNRA has 93 (20 female) employees. EWNRA has assigned 60 employees for projects implemented directly by itself, who are assigned in 5 offices – 11 (7F) in AA, 14 (4F) in Metu, 23 (2) in Masha, 9 (12), Abbaya and 3 (1F) in Fogera. Some 33 (4 female) staff members are working for WCC-PFM GCICB project that operates under the auspices of EWNRA (Sheko woreda, with the recent addition of Guraferda, Yeki and North Bench Woredas).

Part I. Community-Led Design

The development and empowerment of CBO's is considered to be a key element in order to sustain the project outcomes. CBOs can play an important role in organising local energy and initiatives, as well as providing organisational units which can efficiently manage different activities where groups of farmers / households need to collaborate. CBOs also provide mechanisms for discussion, agreement and conflict resolution. Hence the building of capacity in the CBOs is essential for effective achievement of project goals both during and beyond the project period.

Empowerment of CBOs involves creating leadership capacities, conflict resolution abilities, as well as ensuring transparent behaviour by CBO leaders and democratic operation of the organisation. These are all essential if the CBOs are to gain support from their members and to be sustainable in the long term.

Two specific target groups of CBO's are being supported:
a) Grassroots organisations established around project related activities at community and kebele levels, especially in the areas of NTFP production and marketing, and Participatory Forest Management, and

b) Existing Primary Multi-purpose Cooperative Societies and Cooperative Unions, at respectively *woreda* and zonal levels.

Since organizational development at community level is traditionally weak in the area, the project is facilitating the process of CBO establishment through a process of advice, discussion and support. CBOs are being established to assume the considerable range of new challenges of forest-based community development. These CBO's build both on existing local institutions for forest management and experiences accumulated in the NTFP-PFM R&D project.

Other types of CBO's include informal NTFP producers or processors groups, women's groups, etc., but also legalized CBO's, such as Associations, Cooperatives or PFM-groups. Several CBO's can be formed within one kebele as primary target groups, but an effort is being made to ensure that there is an umbrella type of CBO in each woreda, in order to ensure integration of the different groups and their respective activities.

The organizational models to be chosen for each CBO will depend on internal efficiency for effective management, the CBO's objectives and consequently the external requirements according to the policy framework for CBO's.

The current Project has followed a participatory approach in forest management planning with a simplified methodology applied to enable full understanding and ownership by the Participatory Forest Management (PFM) Group members. First a Participatory Forest Resource Assessment is carried out by members of the PFM group, with support of the PFM specialist and *woreda* government staff. In this assessment the general condition of the forest and the presence of key NTFPs and endangered tree species are assessed, as well as identifying all stakeholders. In the subsequent management planning, boundaries and different PFM Units are identified based on traditional names for those forest types. It is therefore very easy for villagers to recognise the different forest units. The management plan involves the whole area and includes agricultural fields and the settlement area. It is therefore not so much a forest management plan but rather a community-wide land use plan.

Using the GPS to delineate the PFM Management Units provides a digital geo-referenced map of the *kebele*. It can be overlain on topo-maps (Figure 2), landcover maps and watershed maps. Having a geo-referenced map of the *kebele* with the Management Units clearly portrayed, adds some measure of tenure security for communities in the face of possible land alienation (e.g. by investors). Similarly, it provides the basis for future land registration. Land Registration Teams at the *Woreda* Agricultural Office state that the current rope/ tape method of delineating plots would not be possible to use in forest areas, and the GPS is the cheapest option. By covering the whole of the *kebele* this permits an integrated approach to land use zoning covering the total natural resource base. Finally, the

PFM Management Unit system has found wide acceptance amongst Government *woreda* and Zonal DoA staff.

Figure 2. The Geo-referenced PFM Management Units over the 1:50,000 topo map sheet.

Part J. Additionality Analysis

Currently, coffee farmers are undertaking total weeding in their forest coffee plots which leaves no regeneration seedlings. This total weeding allows the maximum harvesting of coffee berries that have fallen to the ground. This will lead to the annual forest degradation through reduction in trees leading eventually to complete deforestation.

Currently, there are no legal requirements or regulations stipulating that farmers must not reduce the regenerative capacity of the forest in which they are growing coffee.

The current funding of the project by the EU supports the formation of the Woreda Participatory Forest Management Association and got level branches or PFM groups. It also facilitated the exploration of ways for communities to be in receipt of payment for environmental services in respect of the conservation of the coffee gene pool. However, there is no long term financial provision to support the additional on farm labour that will be required to maintain the same efficiency in harvesting coffee berries on the ground AND the retention and/or planting of indigenous tree seedlings to maintain the regenerative capacity of the forest.

Without the awareness creation and technical support of the WCC-PFM Project awareness creation and financial support the current weeding regime will continue leading to forest degradation and eventual deforestation.

Part K. Notification of Relevant Bodies and Regulations

The Project has lodged its PIN with the Ethiopian Environmental Protection Authority (EPA), which is the Designated National Authority (DNA) for the Clean Development Mechanism. The EPA has verbally indicated that they have no objection to the Project proceeding with the application.

The Project has received similar assurances from the Regional Administration of the Southern Nations, Nationalities and Peoples Regional State (See Annex 1).

Currently Ethiopia is in the process of developing its national REDD+ Strategy with World Bank support. The Project intends to abide with all Federal and Regional regulations with regard to the Forest Proclamations and to any regulations emanating from the strategic REDD+ planning. As yet, these have not yet been published.

Part L. Identification of Start-Up Funding

The Project is currently receiving financial support (EUR1.99 million) from the European Union for the Project – "A new approach to the conservation of wild *Coffea arabica* in south-west Ethiopia: developing the potential of participatory forest management (PFM), testing and dissemination". This funding includes support for developing payment for environmental services including reducing forest degradation through the sale of carbon offset certificates.

ANNEX 1. LETTER OF AUTHORISATION FROM SNNPRS ADMINISTRATION

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የግብርናና ገጠር ልማት ቢሮ

South Nations, Nationalities and Peoples' Regional State
Agriculture & Rural Development Bureau

ቁጥር 6348 /ኪ/ር-25/2002
Ref.No
ቀን 5-1-2002
Date

To Ethio-wetland and Natural Resource Association
Addis Ababa

Subject:- Providing support Letter

Referring to the letter dated August 24, 2009 with reference number 199-20-09 Ethio-wetlands and Natural Resource Association register to provide No objection letter to carry out carbon trading in South West Ethiopia Natural forest area. It is known that the NTFP-PFM R& D project is under implementation in three zones of South West Ethiopia (Kaffa, Sheka and Bench Maji) according to the agreement made with the regional government.

Carbon Trading is one of the mechanisms in which the developed countries can compensate the developing countries for their carbon emission. In addition, it is a good mechanism to reduce degradation and deforestation of the Natural forests while benefiting the local communities at large contributing to livelihood improvements for sustainable forest conservation.

Despite the fact that carbon trading in its infant stage in our countries, It is time to move to promote carbon projects to make the region as well as the country beneficial from the carbon trading market of the world.

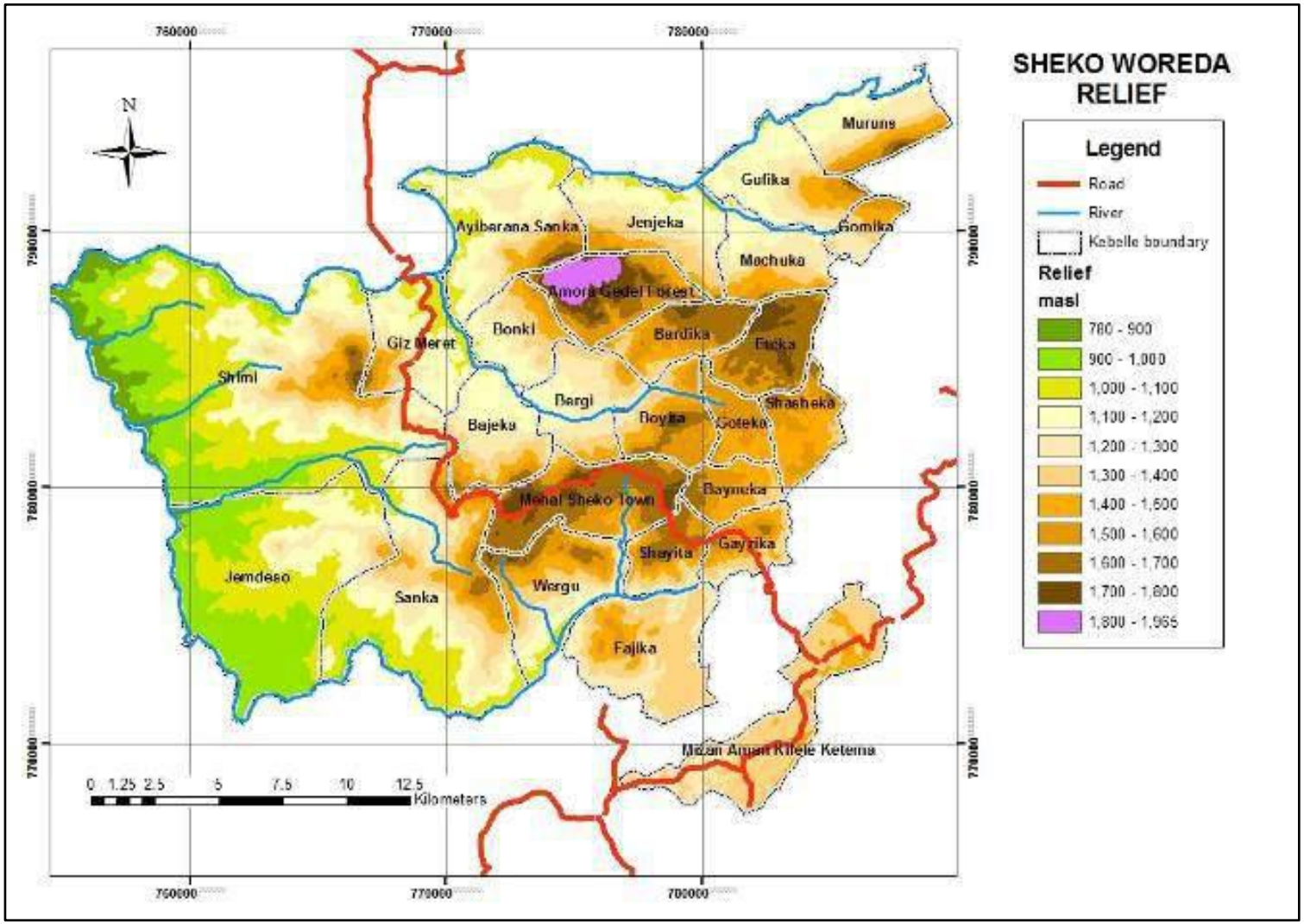
Therefore, we do not have any objection if the project is implemental according to the National and International laws.

Sincerely

CC.
Bureau of Agriculture and Rural development
Natural Resource Administration &
Environmental Protection Process
Hawassa

046-220-61-25/220-99-14
046-220-63-67/220-72-13
046-220-59-33/220-35-80
046-221-00-39
046-220-72-11
046-220-57-16
046-220-99-15
Awassa
309
80
E-Mail srrdb@ethionet.et
:srbonrd@telecome.net.et

Map 2. Sheko Woreda: Relief



Geology and Soils

The area is underlain by Tertiary Trapp basalts, which give rise to humic Nitosols. When recently cleared for agriculture these soils are well structured, high in organic matter and fertile. Under continuous cropping organic matter oxidizes although under the high rainfall conditions, with high rates of plant residues and generally low temperatures, organic matter and nutrient depletion rates are lower than in many other parts of the Ethiopian Highlands. Land preparation involves considerable weed and crop residue removal prior to planting. Whilst surface plant material is burnt there remain significant amounts of root material, which contributes to soil organic matter replenishment. However, under continuous cultivation and on very steep slopes, soil organic matter will decline and soil structure will degrade, leading to accelerated soil erosion.

Forest Types

Chaffey (1979)[3] mapped two types of forest in the Project Area: (i) Lowland Baphia Forest, and (ii) "Montane Broadleaf" Forest. The upper boundary of Chaffey's Lowland Forest was approximately 1,100 masl. Friis (1992)[4] recognized two types of forest that occur within the Project Area: (i) Transitional Rain Forest found between 500 and 1,500 masl and (ii) Afro-montane Rain Forest found between 1,500 and 2,600 masl. The Transitional Rain Forest has tree species from the Lowland *Baphia* Rain Forest below 1,100 masl. Friis' lowland forest, which he termed Dry peripheral semi-deciduous Guineo-Congo Forest he recorded as being confined to 500 – 600masl.

Within the Transitional and Afro-Montane Rain Forest *Coffea arabica* is found in its wild state between 1,000 and 1,850 masl. Within the forest varying levels of intensity of coffee tree management are found: ranging from little or no management to intensive management with three weedings per year, reduction in shade canopy trees and complete removal of seedlings and saplings.
The distribution of forest, agro-forestry and cultivation are shown in Map 3.

Three strata are recognized: (i) high canopy (30m), (ii) lower canopy, and (iii) shrub layer. There is only one emergent species from the high canopy: *Pouteria adolfi-friederici*, which has not been recorded in the Project Area.

The high canopy consists of the following species: *Pouteria altissima, Ficus sur, Croton macrostachyus, Albizia gummifera, Ekebergia capensis and Olea welwitschii*. The lower canopy trees are represented by *Dracaena afromontana, Galiniera saxifrage, Bersama abyssinica, Maesa lanceolata, Vepris dainellii and Millettia ferruginea.*

1. Chaffey D.R. (1979) "Southwest Ethiopia Forest Inventroy Project: A reconnaisance inventory of forest in southwest Ethiopia", Min. of Overseas Development, Land Resources Division, Project Report 31.
2. Friis, I. (1992) "Forests and Forest Trees in Northeast Tropical Africa the natural habitats, and distribution pattern in Ethiopia, Djibouti and Somalia", Kew Bull. Additional Series 15.

Spatial Patterns of the four Landcover Types

Map 3 shows in detail the spatial patterns of the four landcover types. Open cultivation and settlement appear as "core" areas, surrounded first by homestead gardens and then by Intensively Managed Coffee Forest (IMF). The Lightly Managed Forest (LMF), "natural" forest, is left as "islands" in the densely populated kebelles.

Areal Extent of Landcover Types

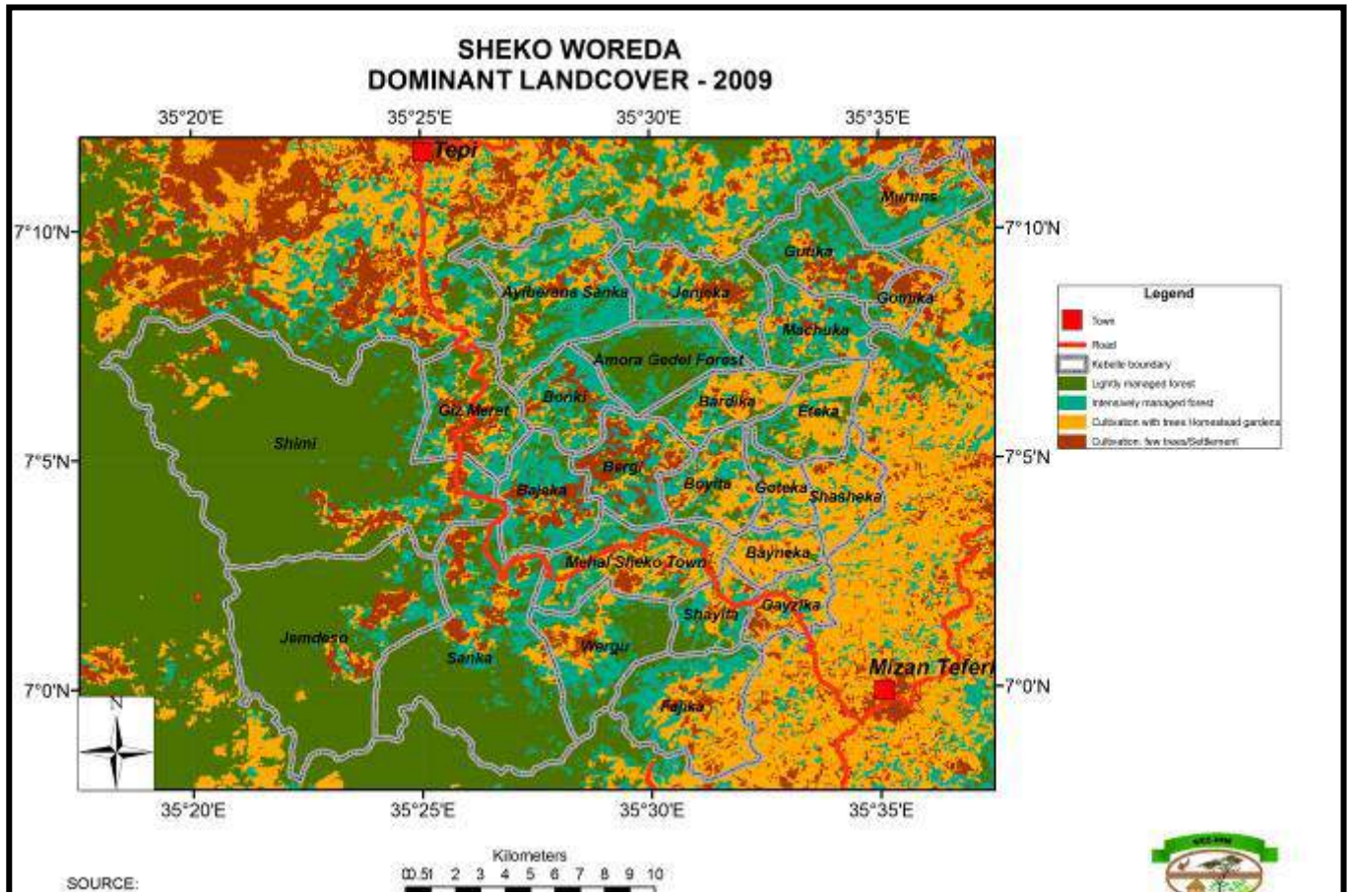
The areas of the four landcover classes by kebele for the whole of Sheko woreda are shown in Table 1. Kebeles are rank ordered in terms of total forest area (ha.) The Project's Baseline Survey of Fanika Kebele (in the adjoining South Bench woreda) recorded the average coffee holdings (including forest and garden coffee) of 2 hectares. With approximately 7,000 farm households in the woreda this would indicate a total area under coffee of 14,000ha.

Table 1. Area of Landcover Classes by Kebele (ha)

	LMF	IMF	AGFOR	AGRIC	Total			LMF	IMF	AGFOR	AGRIC	TOTAL FOREST
	ha	ha	ha	ha	ha			% of Kebelle	% of Kebelle	% of Kebelle	% of Kebelle	% of Kebelle
Amora Gedel	333	1,192	8	0	**1,534**		Amora Gedel	22%	78%	1%	0%	99%
Fajika	402	596	849	371	**2,219**		Fajika	18%	27%	38%	17%	45%
Shimi	5,944	3,092	132	584	**9,753**		Shimi	61%	32%	1%	6%	93%
Jemdeso	2,438	2,230	76	333	**5,077**		Jemdeso	48%	44%	1%	7%	92%
Sanka	1,669	2,458	286	405	**4,818**		Sanka	35%	51%	6%	8%	86%
Ayiberana Sanka	977	1,239	188	270	**2,675**		Ayiberana Sanka	37%	46%	7%	10%	83%
Wergu	280	1,178	320	113	**1,892**		Wergu	15%	62%	17%	6%	77%
Bonki	230	615	132	150	**1,127**		Bonki	20%	55%	12%	13%	75%
Machuka	229	720	205	128	**1,281**		Machuka	18%	56%	16%	10%	74%
Bajeka	320	754	84	314	**1,472**		Bajeka	22%	51%	6%	21%	73%
Giz Meret	390	799	188	288	**1,665**		Giz Meret	23%	48%	11%	17%	71%
Gufika	291	778	250	308	**1,627**		Gufika	18%	48%	15%	19%	66%
Jenjeka	467	710	309	376	**1,862**		Jenjeka	25%	38%	17%	20%	63%
Muruns	402	472	224	350	**1,448**		Muruns	28%	33%	15%	24%	60%
Bergi	148	593	231	438	**1,409**		Bergi	10%	42%	16%	31%	53%
Bardika	113	453	492	40	**1,098**		Bardika	10%	41%	45%	4%	52%
Boyita	125	421	503	105	**1,154**		Boyita	11%	36%	44%	9%	47%
Total	**14,757**	**18,302**	**4,477**	**4,574**	**42,109**		**Total**	**35%**	**43%**	**11%**	**11%**	**79%**

LMF =	Lightly Managed Forest
IMF =	Intensively Managed Forest
AGFOR =	Agro-forestry
AGRIC =	Agriculture & Settlement

Map 3. Dominant Landcover: Sheko Woreda (2009)



B2. Description of Socio-economic Context

Agriculture and Land Use Systems

Field crops include maize, sorghum, horsebean and rice. Maize is grown partly for sale (given the recent high market prices) whilst sorghum is for home consumption. Mean areas under maize and sorghum are 3.48 ha and 1.45 ha per household respectively (NTFP-PFM, 2009).

Coffee is the main perennial crop with a mean area of 2.06 ha per household (NTFP, 2009). This area includes both homestead and forest coffee. Other perennial crops include enset, fruit trees, spices, cassava and root crops.

The main crops for sale are coffee (84 percent of production sold) and banana (70 percent sold). Other major cash crops are mango (50 percent), papaya (41 percent), maize (45 percent) and sweet potato (40 percent).

The main consumption crops are sorghum (91 percent consumed), enset (88 percent), cassava (70 percent), oranges (95 percent) and avocado (96 percent).

The two priority land management practices on cropland are crop rotation (80 percent of households) and inter-cropping (52 percent of households). Fallowing of fields is practiced after 5 to 7 years cropping. Fallow periods are currently 2 – 4 years.

The hoe is the first priority for land preparation for 42 percent of households with another 42 percent of households ranking it as their second choice. Some 55 percent of households rank the plough as their first choice and another 13 percent as their second. The hoe clearly plays an important role in land preparation for households.

Communications and Markets

The Project area has one main road:

- Mizen Teferi to Tepi

It is an all-weather gravel road in reasonable condition. Sheko has telephone and Internet connections. The nearest air strips are Mizen Teferi and Tepi. Both had frequent schedules with Ethiopian Airlines until the services were discontinued in 2008.

Weekly markets are held at Sheko but, given the small population size, demand for most products is limited. Tepi and Mizen Teferi are the main local markets. The distance from Sheko town to Jimma via Mizen Teferi is 260 kms, and to Addis Ababa 560 kms. The road between Jimma and Mizen Teferi is currently being upgraded to asphalt.

Part C. Identification of Target Groups

C1. Participating Communities

Population and Settlement

The smallest administrative unit is the "kebele", which can vary in size from 1,500 to 10,000 ha. The number of households varies from 200 to 500 and average household size is 6 persons. The kebele is the unit at which all land administration and allocation takes place. Within each kebele there are a number of villages called "*Gots*". Each Got has a defined area and boundaries. The Gots therefore comprises a "target community".

The rural population of Sheko woreda according to the 2007 Census (CSA, 2009) was 51,195: with 6,040 (12 percent) classed as urban and 45,195 (88 percent) as rural. 2007 Census population data at the kebele level is not yet available. Using the 1994 Census data at the kebele level and using the annual population increase of 2.55 percent the current population and household data for the Project area kebeles is estimated in table 2.

Table 2. Population and Number of households by kebele in the Project Area (estimates for 2004 and 2011)

	Population			Households			
Kebelle	1994	2004	2011	1994	2004	2011	household size
Amora Gedel	0	0	0	0	0	0	0
Shimi	827	1,064	1,269	229	295	351	3.61
Jemdeso	324	417	497	124	160	190	2.61
Sanka	510	656	782	117	151	180	4.36
Ayiberana Sanka	837	1,077	1,284	191	246	293	4.38
Wergu	580	746	890	138	178	212	4.20
Bonki	981	1,262	1,505	190	244	292	5.16
Machuka	458	589	703	134	172	206	3.42
Bejeka	1417	1,823	2,174	331	426	508	4.28
Giz Meret	2065	2,656	3,168	476	612	730	4.34
Gufika	535	688	821	140	180	215	3.82
Jenjeka	1272	1,636	1,952	327	421	502	3.89
Muruns	964	1,240	1,479	248	319	381	3.89
Bergi	343	441	526	96	123	147	3.57
Bardika	464	597	712	104	134	160	4.46
Boyita	969	1,246	1,487	264	340	405	3.67
TOTAL	**12,546**	**16,138**	**19,249**	**3,109**	**3,999**	**4,770**	

Total population of the project area is estimated to be 19,249 in 4,770 households in 2011. Average household size is 4.04 persons.

Ethnic groups

The 1994 Census records the proportions of the main ethnic groups in Sheko woreda as follows:

Sheko 36 percent

Kafficho	15 percent
Amhara	14 percent
Bench	13 percent
Me'en	6 percent
Majangir	4 percent.

Local Organisational Capacity

The project is working through locally established Participatory Forest Management (PFM) groupsat each got. Access and use rights have been institutionally assured by registering the PFM group as branches of the legally recognised "***Association***" at the woreda level. The villagers have developed the criteria for membership. In general, everyone who is a member of the *Got* can become a member of a PFM group and through that the woreda PFM Association; sometimes also having existing rights to coffee forest or the natural forests has been determined as a criterion for membership (notwithstanding residence in another Got or kebele).

Part D. Land Tenure and Carbon Rights

D1. Land Tenure in Ethiopia

Several federal and regional proclamations have been issued, among which are:

- Federal Rural Land Administration Proclamation (No 89/1997)
- Federal Rural Land Administration and Land Use Proclamation (No 456/2005)
- SNNPR Proclamation issued to determine the Administration and Use of the Rural Land (No. 46/2000)

According to the Constitution all land belongs to the people – effectively the state. Under the Federal and Regional Land Administration Proclamations all give agricultural land use rights to men and women. These have recently been guaranteed through a process of land registration in which individual plots of agricultural land have been registered and each land holder has a registration book. Non individual land, i.e. Communal Land, is generally managed through local Community land use rules. These lands have not been registered under the Land Administration process. Forest lands are administered under the Federal and regional Forestry Proclamations separately from the individual and communal agricultural lands.

D2. Land Tenure in Forest Areas

Land Administration in Forest Lands

Land administration in Forest lands is governed by the Federal Forestry Development Conservation and Utilization Proclamation (542/2007), which repealed Proclamation 94/1994. SNNPRS has issued its own Forestry Proclamation in 2012.

The new Federal legislation (542/2007) has a new section: 4. Promotion of Forest Development, subsection /3, which appears to distinguish two types of "natural forest" – (i) Designated State Forest and (ii) Forests that have not been designated as protected or productive state forests. The full section is as follows:

3/ Management plans shall be developed with the participation of the local community, for forests that have not been designated as protected or productive state forests, and such forests shall be given to the community, associations or investors so that they conserve and utilize them in accordance with directives to be issued by the appropriate body".

"State Forests" are either "Protected" or "Productive" Forests under the legislation.

This new section clearly opens the way for Communities or Associations to be allocated natural forests that have not been designated as "State Forests" (Protective or Productive"). According to the Federal MoARD this was clearly the intention of the Federal legislation (personal comm. Kiflu Segu, MoARD).

The Regional Forest Proclamation provides for “Community Forest”. The relevant definition is:

“Community Forest” *means a land held for the purpose of development, conservation and utilization of forests on natural forests taken from the state or on communally held lands by the surrounding societal groups of the forest who organized in cooperative.*

The Proclamation also allows for registration of Community Forests. The relevant section reads:

The regional state shall designate forests held as community forest currently and that will identify by the pertinent organ for the future and register thereon.

The Proclamation allows for legal agreements between the State and the Community for Community management of the forest.

The community shall be organized in conformity with the development, conservation and utilization of the forest, and they enter in to a contract with the state based on the management plan of the forest.

With respect to the harvesting of forest products the proclamation states:

(2). The Community shall have the right to produce, utilize, move and sell the product of forest.

(3). Without prejudice to sub article 2 of this article, the community shall obtain a permit from the pertinent organ so as to move or store forest products.

Land Use and Tenure in Coffee Forests

With the increase in coffee prices and expansion of managed coffee trees has come the intensification of coffee production in the Forest areas. This has involved the intensive weeding of coffee trees and removal of competing undergrowth and tree seedlings.

D2. Local Forest tenure and Carbon Rights

Agreements have been signed between the Kebele Administrative Office, the Woreda Agricultural Office (WAO) and the got level branches / groups of the woreda PFM Association under which the Forest rights and responsibilities of all parties are prescribed. One of the duties of the WAO is to monitor the implementation of the management plan, to provide technical support, resolve border conflicts and provide legal support. It is stipulated that if the forest is needed for the public interest, appropriate compensation is to be provided to the PFM group concerned. The Kebele Administrative Office also has conflict management tasks as well as preventing illegal cases of land acquisition and assures that implementation of the plan of the got-level PFM groups is in line with the various proclamations and regulations.

Each PFM group undertakes a forest assessment from which it decides on forest management, how to share benefits from forest management, to obtain information on the forests and to claim for compensation. The responsibilities in forest management include the prevention of forest clearing for settlement, agricultural or other purposes. Graduated sanctions are defined in case of violation of rules and responsibilities. Each PFM Group has developed by-laws that elaborate membership rights, organisation, rights and responsibilities of the management board and the duties and responsibilities of three designated PFM Coordinators, who are concerned with protection, development and utilisation respectively.

As the PFM Groups are registered together as an Association neither the got level groups nor the woreda Association can engage in income generating activities. However, as the PFM Association has the status of an NGO, it has opportunities for fundraising where coffee marketing Cooperatives exist. Where this is so, an agreement has been signed between the Cooperative and the PFM in which it is stipulated that a certain percentage (c. 5%) of the profits of Coop is given to the PFM group for running and management costs. Each Cooperative decides the level of the contribution they can render to the PFM Association.

Part E. Project Interventions and Activities

1. Forest Degradation Processes and Measurement

A number of studies has examined the potential impact on forest structure and regeneration capacity resulting from the coffee management regimes practiced in the

Ethiopian Coffee Forests (Feyera Sebeta & Denich, 2006;[5] Woldemariam 2003[6], Kitessa Hundera et al., 2013[7]; Schmitt et al., 2009[8]; Gole 2003[9]; Aerts et al., 2013[10]). The Feyera Sebbeta and Denich study focussed specifically on the Sheko Forest in the Project Area. A three fold coffee forest management system has been established related to the degree of management intensity: Coffee Forest (CF) (which is natural forest or Lightly Management Forest (LMF) as mentioned earlier), Semi Forest Coffee (SFC) (which is Intensively Managed Forest (IMF) as mentioned earlier) and Semi-plantation Coffee Forest (SPF). In Coffee Forest coffee is harvested from wild coffee shrubs with little or no management interventions (thinning, weeding). In the Semi forest coffee system herbs, shrubs and emerging tree seedlings (except coffee) are removed annually, the upper canopy selectively thinned and coffee saplings selectively planted. In the semi plantation coffee system the management system is similar to the semi forest coffee system, but is much more intensively implemented.

All studies consistently reported significant reductions in seedling numbers in the Semi forest coffee and the semi plantation coffee systems compared with the Forest Coffee systems. A number of studies identified the ultimate loss of forest canopy through the lack of regeneration with extremely negative impacts on coffee yields as well as the loss of biodiversity. In the intermediate stages of forest loss coupled with the loss of biodiversity there would be reductions in pollination capacity initiating a decline in coffee yields.

One study has examined the potential of enclosures in arresting the forest decline in Ethiopian Coffee Forests (Kitessa Hundera et al. 2015)[11]. They used 10m by 10m enclosures from which all clearing ceased. They found that within two years tree seedlings were of the preferred shade trees species. They also found that there were more seedlings present than that required for replacement of annual tree mortality.

Currently, the weeding and harvesting regimes result in the total elimination of all seedlings and thus eliminating the forest regeneration and forest recruitment. However, tree mortality rates remain the same. Under natural conditions and in the long term recruitment and mortality rates are the same and the forest remains in a steady state. The rate at which

3. [5] Feyera Sebeta & Denich, M. (2006) “Effects of wild coffee management on species diversity in Afromontane rainforests of Ethiopia”, Forest Ecology & Management, 232, 68-74.
4. [6] Woldemariam, T. (2003) “Vegetation of the Yayu Forest in SW Ethiopia: Impacts of human use and implications for in situ conservation of wild Coffea arabica L. population”, Ecology & Development Series No. 10, Center for Development Research, Univ. of Bonn.
5. [7] Kitessa Hundera et al., (2013) “Effects of Coffee Management Intensity on Composition, Structure and Regeneration Status of Ethiopia’s Moist Evergreen Afromontane Forests”, Environmental Management 51: 801-809.
6. [8] Schmitt C.B. (2006) “Montane Rainforest with wild Coffea arabica in the Bonga Region (SW Ethiopia): plant diversity, wild coffee management and implications for conservation”, Ecology and Development Series No. 47, 2006.
7. [9] Gole T.W. (2003) “ Vegetation of Yayu Forest in SW Ehiopia: : Impacts of human use and implications for in situ conservation of wild Coffea arabica L. populations”, Ecology & Development Series No. 10., Center for Development Research, Univ. of Bonn.
8. [10] Aerts R. et al., 2011 “Semi Forest Coffee Cultivation and the conservation of Ethiopian Afromontane Rainforest Fragments”, For. Ecology & Management 261, 1034-1041.
9. [11] Kitessa Hundera et al., 2015 “The potential of small enclosure in assisting regeneration of coffee shade trees in South-western Ethiopian Coffee Forests”, J. of Ecology.

trees die and are replaced is termed the annual forest "turnover" rate (Richards, 1996). The annual turnover rate is a percent of the total forest biomass. Its equivalent, the "residence time" Galbraith et la. (2013)[12] is the turnover percent divided into 100. Thus an annual forest turnover of 2 percent gives a turnover period of 50 years.

Stephenson and Mantgen (2005) examined records from 158 tropical forests in both the old and new world. They found no differences in turnover rates between the two areas. They found that the average annual turnover rate was 1.74 percent with a total turnover period of 57 years. Galbraith et al. (2013) examined records from 177 tropical forest plots to assess the woody biomass residence period (or its equivalent the total turnover period). The average period was 60 years for both Neotropics and Paleotropics. However, it was estimated that a period of 74 years was applicable for Africa. This gives annual turnover rates of 1.66 percent and 1.35 percent respectively. Billingham et al. (1999) examined the annual turnover rates for forests in New Zealand and found rates there were 1.4 percent compared with 1.5 percent (67 years) in tropical forests. Richards (1996) estimates an annual turnover rate of 1.6 percent or a full forest turnover period of 63 years. Thus annual turnover rates are between 1.35 and 1.74 percent or turnover periods from 74 years to 57 years.

Galbraith et al. (ibid) examined the potential impacts of climate, Altitude and major soil types on residence periods. They found only a weak correspondence between residence period and climate. There was however a correspondence between residence period and altitude with clear evidence of increasing residence period and altitude. The Project area and the coffee cultivation zone in particular lies between 1,000 and 2,000masl. Examining Galbraith's figure 5 the residence time at 1,000masl is 60 years rising to 70 years at 2,000masl. The coffee cultivation zone is generally underlain by deep Nitosols. These fall into type 2 of Galbraith's three major soil types. Residence periods for soil type 2 vary widely between 40 and 60 years.

In Ethiopia, McCann (1997) examined the history of the forest in Gera woreda which is northwest of Jimma. In the mid-19th century it was the centre of the Gera Kingdom and according to Italian visitors to the area as late as 1880 the area was still completely cleared of forest and was under intensive agriculture. In 1881 Emperor Menelik's forces entered the area, exiled the Royal family and it is estimated that three quarters of the population fled the area. In 1928 when the Italian geographer Cerulli entered the area it was heavily forested. Very old residents interviewed by McCann were able to detail the forest succession from agriculture to mature forest as about 60 years.

A conservative estimate of the annual turnover rate would appear to be 1.43 percent or 70 years for the full forest turnover period.

The Project's forest inventory found that the total stock of forest carbon is 58 t/ha or 212 t/ha of CO2. With an annual turnover rate of 1.43 percent this gives an annual turnover rate of wood biomass of 1.7 tons/ha (or 0.8t/ha of C or 3.0t/ha of CO_2e). If there is no re-

10. [12] Galbraith, D. et al. (2013) "Residence times of woody biomass in tropical forests",Plant Ecology and Diversity DOI: 10.1080/17550874.2013.770578

generation and zero recruitment of new trees then the forest will be eliminated after 70 years.

2. Project Interventions to avoid forest degradation and impacts

The proposed project activities will support coffee farmers through awareness creation of the negative impacts of the current weeding regime, demonstrations and field visits to show how to leave a select number of tree seedlings and/or to plant indigenous tree seedlings to maintain the regeneration capacity of the forest. This will include visits to the Harena Forest in eastern Ethiopia where coffee farmers have developed a silvicultural system which maintains a stock of tree seedlings during the weeding process to maintain the tree stem density and forest regeneration. The financial support will cover the additional labour requirements to enable both maximum harvesting of coffee berries and also introduce a maintenance regime which ensures the continued regenerative capacity of the forest.

The Project will thus support coffee farmers to implement a system of coffee tree maintenance and harvesting which retains the natural recruitment rate. This will be done by leaving selected tree seedlings during the weeding operations and/or by the planting of indigenous tree seedlings within the coffee forest. In this way in each year 3.0 t/ha of CO2e emissions can be avoided.

To provide an indication of annual gross payments that could be expected two potential CO2e prices are used (US$4 and US$8 per ton CO2e)

REDUCED EMISSIONS FROM AVOIDED FOREST DEGRADATION			
Forest turn over rate	1.43%	per annum	
Forest turn over period	70	years	
IMF: Stocking rate: wood	116	t/ha	
IMF: Stocking rate: C	58	t/ha	
IMF: Stocking rate: CO2e	212	t/ha	
Annual turnover wood	1.66	t/ha/yr	
Annual turnover C	0.83	t/ha/yr	
Annual turnover CO2	3.03	t/ha/yr	(or CO2 emissions avoided)

		price US$/t CO2e	**price US$/t CO2e**
EXAMPLE		**$ 4.00**	**$ 8.00**
area of coffee treated	ha	1	1
annual gross payment	/ha	$12.13	$24.26
annual gross payment	/ha	ETB 218	ETB 437

Source: Zewdu Yilma, Temesgen Yohannes, Demesew Taye & P. Sutcliffe (2012)[13]

Part F. Identification of Non-Eligible Activities

Capacity Building – government, communities and CBOs

The strengthening of government institutions / officers (GO) is targeted mainly on the technical specialists (Zonal and *Woreda* Experts) and field staff (Development Agents – DAs) of the Rural Development Coordination Office (RDCO's) (now Agricultural Office) in the woreda selected for project intervention. All training conforms to the project policy of equal access, including a balance to include women and minority groups.

Themes for the various areas of work include:

- participatory approaches to problem solving and development,
- PFM approaches and the role of functional forest landscapes,
- co-management of natural resources,
- multi-stakeholder processes,
- coffee biodiversity conservation,
- NTFP-development, including production, processing and marketing,
- participatory land-use planning and sustainable land management,
- Environmental service provision and payments for environmental services.

CBO Development - PFMAs and PLC

The development and empowerment of CBO's is a key element in order to sustain the project outcomes. CBOs play an important role in organising local energy and initiatives, as well as providing organisational units which can efficiently manage different activities where groups of farmers / households need to collaborate. These include natural resource management and also trading activities, both of which are central to this project. CBOs also provide mechanisms for discussion, agreement and conflict resolution with respect to the different issues, including the utilisation of the different forest areas for biodiversity conservation. Hence the building of capacity in the CBOs is essential for effective achievement of project goals both during and beyond the project period.

Two specific target groups of CBO's are targeted at the *kebele* level:

a) Grassroots organisations for PFM activities – probably PFM Groups (who are members of the Woreda Forest Management Association, and

b) Grassroots organisations at the *kebele* level for NTFP marketing – Cooperatives and Private Limited Companies.

11. Zewdu Yilma, Temesgen Yohannes, Demesew Taye & Sutcliffe, J.P. (2012) "Forest Inventory in the Sheko Forest", WCC-PFM/CGICB

Participatory Forest Management Fine Tuning and Application

In the NTFP R&D (2003-2007 and 2007-2013) a new and streamlined approach to PFM was developed and tested to provide a more user friendly and rapid approach for community based forest management planning and implementation with an emphasis on NTFP and livelihood development, as well as the provision of environmental services (conservation of coffee biodiversity and water regulation). This approach is being further developed and adjusted to meet a specific focus on biodiversity conservation which is needed in this case. That will involve a number of issues, but specifically the zoning of forest for different uses – core conservation areas, protection areas, development areas and utilisation areas with the development of appropriate management arrangements.

Training of PFM group leaders will include:

- organizational elements,
- concepts of PFM as applied to biodiversity conservation,
- the policy context for this specific use of PFM for biodiversity conservation, and
- Skill development for forest resource assessment – especially coffee biodiversity, management planning, implementation and monitoring of forest conditions.

Livelihood Development – NTFP Production and Marketing, PES and Ecotourism.

In order for the communities to be supportive of the *in situ* coffee biodiversity conservation activities, their own development situation must be improved. The generation of increased benefits for communities will be sought through enterprises in and around the natural foeest (LMF) biodiversity areas, through marketing opportunities for organic, forest coffee and links to niche markets in Europe, as well as through payment for environmental services from the Voluntary Carbon Fund and other more specifically biodiversity focused sources, including ones from the international coffee industry.

These include:

- **Promotion of Best Practices for NTFP-production and processing:** Conducting an **a**ssessment of the relevance of local practices and the results of farmer-led trials in the NTFP R&D project on different practices for NTFP-production, post-harvest handling and processing, (especially for honey, beeswax, forest and agroforestry coffee, spices and bamboo) as the basis for promotion of validated 'best practices' for each of these products. These include specific practices relevant to women and minority groups.
- **Support to CBO's (PLCs) for improved marketing:** At the producer's level, the formation of marketing CBO's are being strongly supported in order to ensure organized production and/or processing of high quality NTFP in quantities which can attract the interest of traders or processors, these being Marketing Cooperatives, Unions and private sector market players.

- **Ecotourism:** One further livelihood development activity being explored is that of the development of ecotourism in this area. Links with a local NGO with interests in community based tourism have been made by the NTFP Phase II project and these will be explored for these specific sites.

Advocacy

The innovative character of the project makes it essential that it monitors carefully what works and what does not, and advocates at different levels of government (local, regional and national) to make the various policy and decision makers aware of the PFM approach to biodiversity conservation, the operational tools and lessons learnt from project implementation and their implications for policy development. Advocacy activities are being undertaken during all stages of project implementation, starting with the initial awareness raising. These advocacy efforts reinforce the evolving supportive policy environment and pave the way for the necessary changes and improvements in the policy framework so that PFM can be seen as relevant for biodiversity conservation, while the link between livelihood development and biodiversity conservation is recognised.

Part G. Long-term Sustainability Drivers

There are a number of activities that the Project is undertaking to ensure the long term sustainability of the Project even if carbon revenues are not forthcoming or should they cease. These include:

Development of Forest-centred Community Institutions and Increased Community Forest Tenure Security

The establishment of **these** institutions will enable communities to defend their rights, maximise benefits from sustainable harvesting and processing of forest products, as well as to fulfil forest management responsibilities. The approach to PFM is firstly for Communities to obtain secure forest access, management and use rights to forests within their jurisdiction. This will then allow them to develop recognition of the value of different forest areas for different benefits, especially various non-timber forest products (NTFP) and other forest-based enterprises – both for market and domestic use, but also for coffee gene pool conservation and watershed management. Broad forest zonation into natural forest (LMF), modified (coffee) forest (IMF) and agro-forestry systems creates the basis for the development of management practices and exploration of other forest enterprises, which are being and could be implemented by the local communities and thereby ensuring the maintenance of the forest and the NTFPs therein

Development of Profitable Forest-based Enterprises (including Eco-tourism) thereby increasing the Economic Value of the Forest

The development of forest-based enterprises that are profitable and locally appropriate will add value to the forest. The development of NTFP and other forest-based enterprise

production, processing and marketing activities are being organised around producers groups, who are being supported to develop skills not only in production of these products but also in adding value to them through processing and in niche marketing. The latter has a considerable potential and spices and honey are being tested as marketing brands building on coffee certification. The NTFP groups are being linked to, and usually part of, community groups responsible for Participatory Forest Management (PFM).

Improved Land Management and Land Use Planning integrating Sustainable Forest and Non-forest land Management

The integrated planning at the landscape scale for sustainable land management of forest and non-forest lands can play a role in reducing the pressures upon the forest from population increase and agricultural land degradation.

Policy backing for local forest control

Ensuring appropriate policies are in place will provide a secure foundation for local rights over the forests and their products.

Sustainable Coffee Management Systems supported

Current coffee management systems (weeding and harvesting) result in complete clearing of under-growth and the consequent elimination of forest regeneration. A sustainable coffee management system will be supported to ensure continued natural forest regeneration.

Part H. Organisation and Proposed Governance Structure

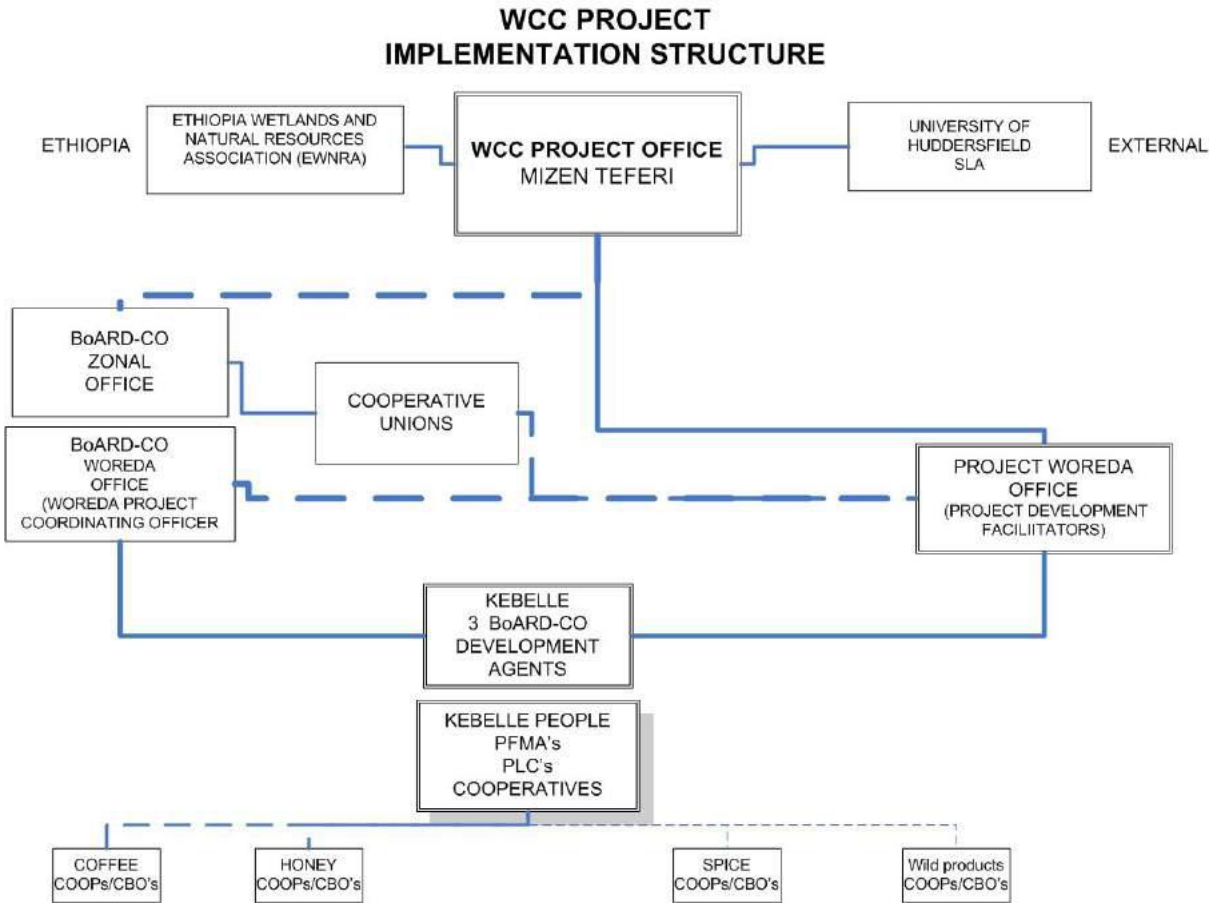
H1. Project Organisational Structure

Project Organization

Figure 1 outlines the links between the various actors in the project at the field level. The project is implemented by a team of Ethiopian specialists employed and monitored by the Ethiopian Wetlands and Natural Resources Association (EWNRA), working in close collaboration with the relevant government departments and also with local Community Based Organizations (CBOs) and the communities. The team is based in the Project area, with an office in Mizan Teferi, the capital of Bench Maji Zone.

The Project is administered by a Project Coordinator and a Technical Team in-country, which is responsible to the Project Management Committee and the Project Manager at Huddersfield University, which is the contractor for the EU.

Figure 1. WCC Project Organisational Structure.



In-country Project Coordinator

Ethiopian Wetlands and Natural Resource Association (EWNRA) has extensive field experience of community-based natural resource management research, implementation and dissemination in south-west Ethiopia. EWNRA is a local partner in the completed NTFP-PFM Research and Development Project Phase I and II and has proved to be very effective, both in obtaining matching funds and in providing training in participatory methods. It has significant experience of collaborating with government offices, including BoARDs, and has office facilities in Addis Ababa which can be used for liaison purposes.

When the EU-supported Project ends, EWNRA will remain as Technical Support to the proposed woreda level Carbon Trust Fund (see below).

Technical Team

The core technical team is based at Mizan and consists of four professional staff whose functions are given by their titles:

- Project Co-ordinator
- Participatory Forest Management Specialist
- Market Development Specialist
- Participatory Planning, Monitoring and Evaluation Specialist

In addition, the project employs three Community level PFM facilitators based in Sheko *woreda.* Four regular advisers (three international and one national) support, advice and monitor the permanent staff. Additionally, short term consultants from within the country and overseas are available for specialist support when this is required.

Technical Support Services

Huddersfield University has over 20 years of experience of managing training and field development activities in Ethiopia for a range of international funding agencies. The Centre for Sustainable and Resilient Communities has implemented two field development projects in South-West Ethiopia to date, including the NTFP-PFM R&D project phases I and II from which this one is developed. Huddersfield University is the Contractor to the European Union (EU) for the present WCC-PFM CGICB Project and hence, the Project Manager.

Sustainable Livelihood Action has considerable experience of working in the south-west of Ethiopia, in collaboration with Huddersfield University and has supported EWNRA in its institutional development. In addition, it has particular expertise among its staff in community-based natural resource management, sustainable forest management, local level land use planning and multi-stakeholder involvement in rural development and participatory forest management.

Relationship to National Organizations

From the offices in Mizen Teferi town support is provided to the Zonal Department of Agriculture (DoA's) and Cooperative Unions and to the lower level *woreda* Agricultural Offices and cooperative societies. In order to ensure close collaboration with the *woreda* government officials and the CBOs at community levels, *woreda* level PFM facilitators have been appointed. They are the lowest level employee of the project. At the *kebele* and *got* (sub-*kebele)* level the project works with the three government extension staff (development agents) per *kebele*, and through them and directly with community groups with different interests. (See Figure 2)

The Agricultural Offices are the associate partners in project implementation and are fully involved in it. Collaboration agreements have been signed with details of the modalities of collaboration, time inputs, responsibilities of the partners in implementation, project support etc. In each Agricultural Office a Government Office (GO) member of staff is assigned as the **Focal Person** for coordination purposes and provided with a motor bike to facilitate their activities.

Capacity building efforts for government staff are focused on enhancing staff skills and knowledge so that they can provide sensitive support to communities, especially in the areas of PFM management, NTFP development and trading, and the provision of environmental services. In particular, support and training focuses on how these activities will interact so that an integrated approach can be taken by government staff.

Joint planning, monitoring and evaluation of project activities are a key instrument for building up Government institutional capacities. This is done within the context of the existing strategic plans in each of the *woredas*, with project activities integrated therein. Where necessary, support is provided for the elaboration of new strategic plans, aiming at the incorporation of the project approach and its contribution to sustainable development.

Community-led Design and Benefits

The development and empowerment of CBO's is considered to be a key element in order to sustain the project outcomes. CBOs can play an important role in organising local energy and initiatives, as well as providing organisational units which can efficiently manage different activities where groups of farmers / households need to collaborate. CBOs also provide mechanisms for discussion, agreement and conflict resolution. Hence the building of capacity in the CBOs is essential for effective achievement of project goals both during and beyond the project period.

Empowerment of CBOs involves creating leadership capacities, conflict resolution abilities, as well as ensuring transparent behaviour by CBO leaders and democratic operation of the organisation. These are all essential if the CBOs are to gain support from their members and to be sustainable in the long term.

Two specific target groups of CBO's are being supported:

a) Grassroots organisations established around project related activities at community and kebele levels, especially in the areas of NTFP production and marketing, and Participatory Forest Management, represented at woreda level through establishing woreda level FMAs, with got level branch PFM groups, and

b) Existing Primary Multi-purpose Cooperative Societies and Cooperative Unions, at respectively *woreda* and zonal levels.

Since organizational development at community level is traditionally weak in the area, the project is facilitating CBO establishment through a process of advice, discussion and support. CBOs are being established to assume the considerable range of new challenges of forest-based community development. These CBO's build both on existing local institutions for forest management and experiences accumulated in the NTFP-PFM R&D project.

Other types of CBO's include informal NTFP producers or processors groups, women's groups, etc., but also legalized CBO's, such as Associations, Cooperatives or PFM-groups. Several CBO's can be formed within one kebele as primary target groups, but an effort is being made to ensure that there is an umbrella type of CBO in each kebele, in order to ensure integration of the different groups and their respective activities.

The organizational models to be chosen for each CBO will depend on internal efficiency for effective management, the CBO's objectives and consequently the external requirements according to the policy framework for CBO's.

H2. Applicant Organisation

Legal Status

EWNRA is a not-for-profit NGO established in 2000. It is non-political and strives on the principles of equal opportunities for all citizens in its interventions. It has registered according to the new Federal Charities and Societies Proclamation No. 621/2009 with registration number 0198 as Ethiopian Resident Charity.

Long-term Objectives of EWNRA

Vision: EWNRA exists to contribute towards ensuring sustainable use and management of Ethiopia's wetlands and natural resources for improving people's wellbeing and enhance a wide range of ecosystem services through fostering multi-stakeholder actions and integrated approaches.

Goal: To develop awareness, capacity and skills within Ethiopia to achieve the wise use of wetlands and the sustainable management of natural resources, thereby contributing to the development of the nation and sustaining the benefits from these resources for the coming generations.

EWNRA will play its role in the achievement of this goal by working with communities to develop economically feasible and environmentally sustainable ways of using natural resources, and helping to build the capacity of both community leaders and government field staff. It will also work with senior government staff at the regional and federal level to help inform policymaking and ensure that a sound understanding of field conditions is the basis of policy making.

Objectives of EWNRA: The prime objective that EWNRA has been established is to raise awareness and understanding of wetlands, wetlands associated resources and other natural resources in the country and to explore, through research and development projects, how these resources can be used in a sustainable way to reduce poverty and improve environmental conditions/management in order to meet the community and environmental needs.

In order to fulfil its vision and mission, EWNRA has adopted the following specific objectives:

- Assessing the benefits of wetlands and other natural resources to the community and seeking ways to enhance these benefits,
- Investigating the human impacts and threats on these resources,
- Developing skills and techniques to address these impacts and threats,
- Developing sustainable management techniques and

- Promoting community based natural resources management.

EWNRA's efforts to address natural resources issues is through the active participation of local communities and thereby contributing to improving their livelihoods and reducing poverty in the country, working hand in hand with all development partners or actors. Through this, EWNRA is committed to promote sustainable use of the natural resources in the country.

Current Activities

EWNRA is currently operating and implementing 8 projects in:

- Oromia Regional State – 3 zones 5 woredas (Metu, Hurumu, Omo Nada, Nonosele and Abbaya Woreda)
- SNNPRs -3 zones 8 woredas (Masha, Andracha, Gesha, South Bench, Yeki, Guraferda, North Bench and Sheko)
- Amhara Region – 1 zone and 2 woredas (Fogera rural and Woreta urban woredas but the later with rural kebeles)

In addition undertakes training and environmental advocacy activities nationally (focus is on wetlands and forest).

Personnel: Relevant Skills and Experience

In total EWNRA has 93 (20 female) employees. EWNRA has assigned 60 employees for projects implemented directly by itself, who are assigned in 5 offices – 11 (7F) in AA, 14 (4F) in Metu, 23 (2) in Masha, 9 (12), Abbaya and 3 (1F) in Fogera. Some 33 (4 female) staff members are working for WCC-PFM GCICB project that operates under the auspices of EWNRA (Sheko woreda, with the recent addition of Guraferda, Yeki and North Bench Woredas).

Part I. Community-Led Design

The development and empowerment of CBO's is considered to be a key element in order to sustain the project outcomes. CBOs can play an important role in organising local energy and initiatives, as well as providing organisational units which can efficiently manage different activities where groups of farmers / households need to collaborate. CBOs also provide mechanisms for discussion, agreement and conflict resolution. Hence the building of capacity in the CBOs is essential for effective achievement of project goals both during and beyond the project period.

Empowerment of CBOs involves creating leadership capacities, conflict resolution abilities, as well as ensuring transparent behaviour by CBO leaders and democratic operation of the organisation. These are all essential if the CBOs are to gain support from their members and to be sustainable in the long term.

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Since organizational development at community level is traditionally weak in the area, the project is facilitating the process of CBO establishment through a process of advice, discussion and support. CBOs are being established to assume the considerable range of new challenges of forest-based community development. These CBO's build both on existing local institutions for forest management and experiences accumulated in the NTFP-PFM R&D project.

Other types of CBO's include informal NTFP producers or processors groups, women's groups, etc., but also legalized CBO's, such as Associations, Cooperatives or PFM-groups. Several CBO's can be formed within one kebele as primary target groups, but an effort is being made to ensure that there is an umbrella type of CBO in each woreda, in order to ensure integration of the different groups and their respective activities.

The organizational models to be chosen for each CBO will depend on internal efficiency for effective management, the CBO's objectives and consequently the external requirements according to the policy framework for CBO's.

The current Project has followed a participatory approach in forest management planning with a simplified methodology applied to enable full understanding and ownership by the Participatory Forest Management (PFM) Group members. First a Participatory Forest Resource Assessment is carried out by members of the PFM group, with support of the PFM specialist and *woreda* government staff. In this assessment the general condition of the forest and the presence of key NTFPs and endangered tree species are assessed, as well as identifying all stakeholders. In the subsequent management planning, boundaries and different PFM Units are identified based on traditional names for those forest types. It is therefore very easy for villagers to recognise the different forest units. The management plan involves the whole area and includes agricultural fields and the settlement area. It is therefore not so much a forest management plan but rather a community-wide land use plan.

Using the GPS to delineate the PFM Management Units provides a digital geo-referenced map of the *kebele*. It can be overlain on topo-maps (Figure 2), landcover maps and watershed maps. Having a geo-referenced map of the *kebele* with the Management Units clearly portrayed, adds some measure of tenure security for communities in the face of possible land alienation (e.g. by investors). Similarly, it provides the basis for future land registration. Land Registration Teams at the *Woreda* Agricultural Office state that the current rope/ tape method of delineating plots would not be possible to use in forest areas, and the GPS is the cheapest option. By covering the whole of the *kebele* this permits an integrated approach to land use zoning covering the total natural resource base. Finally, the

PFM Management Unit system has found wide acceptance amongst Government *woreda* and Zonal DoA staff.

Figure 2. The Geo-referenced PFM Management Units over the 1:50,000 topo map sheet.

Part J. Additionality Analysis

Currently, coffee farmers are undertaking total weeding in their forest coffee plots which leaves no regeneration seedlings. This total weeding allows the maximum harvesting of coffee berries that have fallen to the ground. This will lead to the annual forest degradation through reduction in trees leading eventually to complete deforestation.

Currently, there are no legal requirements or regulations stipulating that farmers must not reduce the regenerative capacity of the forest in which they are growing coffee.

The current funding of the project by the EU supports the formation of the Woreda Participatory Forest Management Association and got level branches or PFM groups. It also facilitated the exploration of ways for communities to be in receipt of payment for environmental services in respect of the conservation of the coffee gene pool. However, there is no long term financial provision to support the additional on farm labour that will be required to maintain the same efficiency in harvesting coffee berries on the ground AND the retention and/or planting of indigenous tree seedlings to maintain the regenerative capacity of the forest.

Without the awareness creation and technical support of the WCC-PFM Project awareness creation and financial support the current weeding regime will continue leading to forest degradation and eventual deforestation.

Part K. Notification of Relevant Bodies and Regulations

The Project has lodged its PIN with the Ethiopian Environmental Protection Authority (EPA), which is the Designated National Authority (DNA) for the Clean Development Mechanism. The EPA has verbally indicated that they have no objection to the Project proceeding with the application.

The Project has received similar assurances from the Regional Administration of the Southern Nations, Nationalities and Peoples Regional State (See Annex 1).

Currently Ethiopia is in the process of developing its national REDD+ Strategy with World Bank support. The Project intends to abide with all Federal and Regional regulations with regard to the Forest Proclamations and to any regulations emanating from the strategic REDD+ planning. As yet, these have not yet been published.

Part L. Identification of Start-Up Funding

The Project is currently receiving financial support (EUR1.99 million) from the European Union for the Project – "A new approach to the conservation of wild *Coffea arabica* in south-west Ethiopia: developing the potential of participatory forest management (PFM), testing and dissemination". This funding includes support for developing payment for environmental services including reducing forest degradation through the sale of carbon offset certificates.

ANNEX 1. LETTER OF AUTHORISATION FROM SNNPRS ADMINISTRATION

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South Nations, Nationalities and Peoples' Regional State
Agriculture & Rural Development Bureau

ቁጥር 6342 /ኪዶ-25/2002
Ref.No
ቀን 5-1-2002
Date

To Ethio-wetland and Natural Resource Association
Addis Ababa

Subject:- **Providing support Letter**

Referring to the letter dated August 24, 2009 with reference number 199-20-09 Ethio-wetlands and Natural Resource Association register to provide No objection letter to carry out carbon trading in South West Ethiopia Natural forest area. It is known that the NTFP-PFM R& D project is under implementation in three zones of South West Ethiopia (Kaffa, Sheka and Bench Maji) according to the agreement made with the regional government.

Carbon Trading is one of the mechanisms in which the developed countries can compensate the developing countries for their carbon emission. In addition, it is a good mechanism to reduce degradation and deforestation of the Natural forests while benefiting the local communities at large contributing to livelihood improvements for sustainable forest conservation.

Despite the fact that carbon trading in its infant stage in our countries, It is time to move to promote carbon projects to make the region as well as the country beneficial from the carbon trading market of the world.

Therefore, we do not have any objection if the project is implemental according to the National and International laws.

Sincerely

CC.

Bureau of Agriculture and Rural development
Natural Resource Administration &
Environmental Protection Process
Hawassa

046-220-61-25/220-99-14
046-220-63-67/220-72-13
046-220-59-33/220-35-80

046-221-00-39
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046-220-57-16
046-220-99-15
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