

VCS/CCB BALE MOUNTAINS ECO-REGION REDD+ PROJECT MONITORING & IMPLEMENTATION REPORT

PREPARED BY

PROJECT PROPONENT

**OROMIA FOREST AND WILDLIFE
ENTERPRISE (OFWE),**



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FARM AFRICA & SOS SAHEL ETHIOPIA

END HUNGER >>> GROW FARMING
FARM AFRICA



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GHG Accounting/ Crediting Period	01- January-2012 – 31-December-2031; 20 years total period
Monitoring Period of this Report	01-January-2016 – 31-December-2019, 4 year of this period
History of CCB Status	Issuance date of earlier validation statements 23-03-2016, dates of previous attempts at verification 20-06-2017
Gold Level Criteria	Climate change adaptation benefits: The size of the project area of 261,053 ha and its location on the slopes of the Bale mountain massif have undoubtedly a severe influence for the hydrological system and thus influence the life of approximately 10 – 12 Million people depending on the water resources. The REDD+ project activity proves as its main aspect the positive climate change adaptations. Community benefits: Community receives 60% of carbon revenue while the share of the government is agreed to be 40%. The project has been working in a way it contributes to the national poverty-reduction strategies through developing sustainable livelihoods that recognizes the potential of forest resources to support the livelihood of rural communities. Exceptional Biodiversity Benefits: The Bale Mountains are unique in Africa and encompass Africa's largest alpine plateau which contains the largest populations of two of Africa's least known and yet most charismatic species like the Ethiopian wolf and the Mountain Nyala. The Bale Mountains Eco-Region also harbours an exceptionally high number of other species endemic to Ethiopia and, in some cases, endemic to the Bale Mountains themselves. Accordingly, the project has contributed to reduction of forest destruction by 62% which has a great implication to the conservation of flora and habitats of wild animals.

Table of Contents

I. Tables	4
Figure.....	4
Acronyms	5
1 Summary of Project Benefits	6
1.1 Unique Project Benefits.....	6
1.2 Standardized Benefit Metrics	7
2 General	11
2.1 Project Description	11
2.2 Project Implementation Status	18
2.3 Stakeholder Engagement.....	22
2.4 Management Capacity	27
2.5 Legal Status and Property Rights	29
3 Climate.....	33
3.1 Monitoring GHG Emission Reductions and Removals	33
3.2 Quantification of GHG Emission Reductions and Removals	74
3.3 Optional Criterion: Climate Change Adaptation Benefits	76
4 Community.....	79
4.1 Net Positive Community Impacts	79
4.2 Other Stakeholder Impacts	86
4.3 Community Impact Monitoring	86
4.4 Optional Criterion: Exceptional Community Benefits	87
5 Biodiversity	91
5.1 Net Positive Biodiversity Impacts.....	91
5.2 Offsite Biodiversity Impacts.....	97
5.3 Biodiversity Impact Monitoring	99
5.4 Optional Criterion: Exceptional Biodiversity Benefits	101
6 Additional Project Implementation Information.....	106
7 Additional project Impact Information.....	106
8. Appendices.....	107
Annex 108	

I. TABLES

Table 1 Selection criteria for VCS methodology	15
Table 2 Key Milestones and Dates in Project Implementation	18
Table 3 Potential project risks and mitigation strategies	21
Table 4 Participants of monitoring Team	27
Table 5 Participants of monitoring Team	73
Table 6 Deforestation and Emission over the period of 2016 and 2019 in the Project area	75
Table 7 Life time deforestation and emission (sum of the first and second verification period) ..	75
Table 8 Deforestation and Emission Analysis between 2016 and 2019 in the leakage belt	75
Table 9: Net Greenhouse Gas Emission calculated	76
Table 10 People's perception about delivery of project activities	82
Table 11 People's perception about socio-economic impacts of the REDD+ project	85
Table 12 Organizational capacity assessment result of CBOs	89
Table 13 Bale Forest carbon money received and distributed to community	90
Table 14: Basal area statistics	95
Table 15: People's perception about biodiversity benefits	96
Table 16: Net Positive impacts on the biodiversity	99
Table 17: List of fauna species in Bale eco-region at various level of threat	
http://www.animalinfo.org/country/ethiopia.htm	102
Table 18: Project Risks Table	107

FIGURE

Figure 1: Map of project and surrounding areas of BMERP	12
Figure 2: Location of BMERP area within Ethiopia	15
Figure 3 Communities' consultation and participation in Bale REDD+ project design process...	23
Figure 4 Sample signature of community's representative during FPIC consultation	25
Figure 5 Task force meeting at Kebele level	32
Figure 6 Taskforce members at controlling illegal actions in the forest	33
Figure 7 Organization structure of OFWE	73
Figure 8 Fuel saving stove distributed	78
Figure 9 biogas plants	78
Figure 10 Farmers tree nursery and wood lot	78
Figure 11a: Organization capacity status between the years 2016-2019	81
Figure 12: Coffee production using provided materials	83
Figure 13 tree felling in the years 2012, 2015 and 2019	93
Figure 14 Endemic Mountain Nyala	103
Figure 15 <i>Ethiopian lion with unique black mane – Hareenna forest area</i>	104

Acronyms

AFOLU	Agriculture Forest Other Land Use
BMERP	Bale Mountain Eco-Region REDD+ Programm
BOFED	Bureau of Finance and Economic Development
CCB	Climate, community & Biodiversity
CBO	Community Based Organization
CO ₂ e	Carbon dioxide equivalent
CRGE	Climate Resilience Green Economy
FPIC	Free Prior Informed Consent
GIS	Geographical Information System
PDD	Project Design Document
PFM	Participatory Forest Management
JFM	Joint Forest Management
KBA	Key Biodiversity Area
LCU	Land Use Cover
NRM	Natural Resource Management
OCAT	Organizational Capacity Assessment Tool
OFWE	Oromia Forest Wildlife Enterprise
OEFCOA	Oromia Environment Forest and Climate Change Authority
OFLP	Oromia Forest Landscape program
ORCU	Oromia REDD Coordination Report
CEFCC	Commission Of Environment Forest and Climate Change
GHG	Green House Gas
GPS	Global Positioning System
VCS	Verified Carbon Standard
VCU	Verified Carbon Units
WD	Wood Density

1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
1)Organizational capacity of REDD+ CBOs improved. For further information about OCTA see annex 22 see section 4.1.1	Using OCAT version II the average organizational capacity of each CBO was improved from 35.92 in 2016 to 57.01 in 2019. OCAT version revealed as there is a considerable change against the capacity measured during 2015 which was 64.34% improved to 81% (first verification period	4.1.1	OCAT version one 81 % which was 64.34 % at the end of 2015 OCAT version II 57 % whereas the target is to reach 60%. OCAT version 1 updated to 2 by including some more variables (women empowerment and business development) ,so that, the achievement in this monitoring period considered as project life time.
2) Deforestation area	Deforestation reduced by 56%	3.2.2	achievement up to 2019 is 59%
3) Incidence of forest fire	Incidence of fire decreased by 79%	5.1.3	The target is to reduce fire incidence by 100%. The average perception is 87% (the average of 95% 1 st implementation period and 79% of this period)

1.2 Standardized Benefit Metrics

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
GHG emission reductions & removals	Net estimated emission removals in the project area, measured against the without-project scenario	Not applicable		
	Net estimated emission reductions in the project area, measured against the without-project scenario	4,931,978 t CO ₂ e	3.1.2	10,464,247 t CO ₂ e
Forest ¹ cover	For REDD ² projects: Number of hectares of reduced forest loss in the project area measured against the without-project scenario	10,399 ha	3.1.2	22896 ha
	For ARR ³ projects: Number of hectares of forest cover increased in the project area measured against the without-project scenario	data not available		
Improved land management	Number of hectares of existing production forest land in which IFM ⁴ practices have occurred as a result of the project's activities, measured against the without-project scenario	data not available		
	Number of hectares of non-forest land in which improved land management has occurred as a result of the project's activities, measured against the without-project scenario	data not available		

¹ Land with woody vegetation that meets an internationally accepted definition (e.g., UNFCCC, FAO or IPCC) of what constitutes a forest, which includes threshold parameters, such as minimum forest area, tree height and level of crown cover, and may include mature, secondary, degraded and wetland forests (*VCS Program Definitions*)

² Reduced emissions from deforestation and forest degradation (REDD) - Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land and/or reduce the degradation of forest land where forest biomass is lost (*VCS Program Definitions*)

³ Afforestation, reforestation and revegetation (ARR) - Activities that increase carbon stocks in woody biomass (and in some cases soils) by establishing, increasing and/or restoring vegetative cover through the planting, sowing and/or human-assisted natural regeneration of woody vegetation (*VCS Program Definitions*)

⁴ Improved forest management (IFM) - Activities that change forest management practices and increase carbon stock on forest lands managed for wood products such as saw timber, pulpwood and fuelwood (*VCS Program Definitions*)

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
Training	Total number of community members who have improved skills and/or knowledge resulting from training provided as part of project activities	19500	Section 4.1.1 and Annex 32	22,946
	Number of female community members who have improved skills and/or knowledge resulting from training provided as part of project activities	9440	Section 4.1.1 and Annex 32	10,480
Employment	Total number of people employed in of project activities, ⁵ expressed as number of full-time employees ⁶	29	Section 3.1.3.1	56
	Number of women employed in project activities, expressed as number of full-time employees	3	Section 3.1.3.1	7
Livelihoods	Total number of people with improved livelihoods ⁷ or income generated as a result of project activities	19,438	Section 4.1.1 Annex 32	21,554
	Number of women with improved livelihoods or income generated as a result of project activities	8,942	Section 4.1.1 Annex 32	9,808
Health	Total number of people for whom health services were improved as a result of project activities, measured against the without-project scenario	36,366	Section 4.1.1	160,866
	Number of women for whom health services were improved as a result of			

⁵ Employed in project activities means people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out project-related work.

⁶ Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region or economic territory (adapted from UN System of National Accounts (1993) paragraphs 17.14[15.102];[17.28])

⁷ Livelihoods are the capabilities, assets (including material and social resources) and activities required for a means of living (Krantz, Lasse, 2001. *The Sustainable Livelihood Approach to Poverty Reduction*. SIDA). Livelihood benefits may include benefits reported in the Employment metrics of this table.

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	project activities, measured against the without-project scenario			
Education	Total number of people for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	not applicable		
	Number of women and girls for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	not applicable		
Water	Total number of people who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	not applicable		
	Number of women who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	not applicable		
Well-being	Total number of community members whose well-being ⁸ was improved as a result of project activities	38,938	Sum of Training and livelihood	38,938
	Number of women whose well-being was improved as a result of project activities	18,382	Sum of Training and livelihood	18,382

⁸ Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Health, Education, Water, etc.), but could also include other benefits such as empowerment of community groups, strengthened legal rights to resources, conservation of access to areas of cultural significance, etc.

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
Biodiversity conservation	Change in the number of hectares significantly better managed by the project for biodiversity conservation, ⁹ measured against the without-project scenario	10,399 ha	Annex 2	22,896 ha
	Number of globally Critically Endangered or Endangered species ¹⁰ benefiting from reduced threats as a result of project activities, ¹¹ measured against the without-project scenario	105	Section 5.4.1 and Annex 29 Record started in this reporting period	105

⁹ Biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation.

¹⁰ Per IUCN's Red List of Threatened Species

¹¹ In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit

2 GENERAL

2.1 Project Description

2.1.1 Implementation Description

In Ethiopia, major forest and agriculture sector emissions are associated with deforestation. Deforestation for farmland expansion is very high in the Oromia Regional state, where the largest remaining forest in Ethiopia exists. Bale Mountains Eco-region, which is the project area for the current REDD+, is one of the two areas in Oromia with large block of natural forests. Like most part of the country, the eco-region has experienced high level of deforestation and forest degradation. Bale Mountains Eco-region REDD+ Project (BMERP) was initiated to mitigate the prevailing deforestation in the area. The eco-region lies between 50°22'–80°08'N and 38°41'–40°44'E in Oromia Regional State in south-eastern Ethiopia. The access to the area is by road either using Addis Ababa-Nazareth-Asela-Goba road or Addis Ababa Shashemene-Assassa-Goba road.

The BMERP is a reducing emission from unplanned deforestation and forest degradation (REDD+) in the Bale massif, Ethiopia. The GHG emission considered is only CO₂ from above ground and below ground biomass pools only. The project period is 20 years, extending from 2012 to 2031. The historical deforestation rate was established through a multi-temporal image analysis of 10 years before the start date of the project in the Reference Region that covers 2.08 million ha. The historical deforestation rate estimated revealed the average annual deforestation rates of 1.1% for the Moist Evergreen forest stratum and 6.67% for the Dry Evergreen forest stratum for the period from 2000 to 2011.

The Project Boundary of BMERP is 333,924 ha. This project boundary constitutes the Project Area (PA) equal to 261,053 ha of moist and dry forests (238,200 ha of moist and 22,853 ha of dry forests), and 72,924 ha of non-forested land that constitutes the Project's Leakage Management Area (LMA). The PA purposely excluded forests within the Bale Mountains National Park (BMNP). The Project Boundary (PB), PA, Leakage Belt (LB) and Reference Region (RR) are shown in Figure 1. The LB covers all forest and non-forest areas within 6 km buffer around the PA, which are suitable for non-forest use and that, could be deforested by the surrounding community. This has a total area of 398,532 hectares, consisting of 220,010 ha of non-forest, 30,418 ha of dry forest and 148,102 ha of moist forest. Projection of the deforestation to the crediting period (2012-2031) under the baseline scenario (i.e. business as usual) reveals the likely deforestation of some 84,150 ha of forests (moist and dry forests combined). The deforestation of this much forests in the eco-region will result in the baseline emission of 38,321,332 tCO₂e. Deforestation monitored in both PA and leakage belt using the same methodology. If deforestation exceed beyond the perdition, it will be deducted from the avoided deforestation in the project area.

The objective of the BMERP is to prevent this high rate of deforestation and achieve a net anthropogenic GHG emission reduction, which is estimated (ex-ante) 25,776,421 tCO₂e. With the buffer for risk of 15%, equivalent of buffer credit of 3,866,463 tCO₂e estimated for the project, the net ex-ante anthropogenic GHG emission reduction under the project scenario will be 21,909,958 tCO₂e. The project offers significant ecological/biodiversity and climate benefit. It contributes to sustainable conservation of the Bale Mountains area as a global hotspot of endemism and high conservation values while improving the livelihoods of the local communities.

In this monitoring period the project developed organizational capacity assessment tool that identify community forest management cooperatives capacity gap and enable to provide appropriate capacity building measures. Hence, trainings provided for development agents and community as well as law enforcing sectors. To reduce fuel wood consumption the project distributed fuel-efficient stoves to the community. To tackle forest degradation on expense of coffee production and improve the biodiversity of the forest, the project introduces practice of coffee planting on cropland as agroforestry system (19.9 ha of crop land converted to coffee agroforestry system). In this reporting period the project manages to avoided 10399 ha of forest and able to reduce 4,931,978 tCO₂ equivalent emission (see appendix 2 project GHG emission calculation) with deducting 10% buffer credit 493,198 tCO₂. Now the total forest area of the project is become 245,200ha.

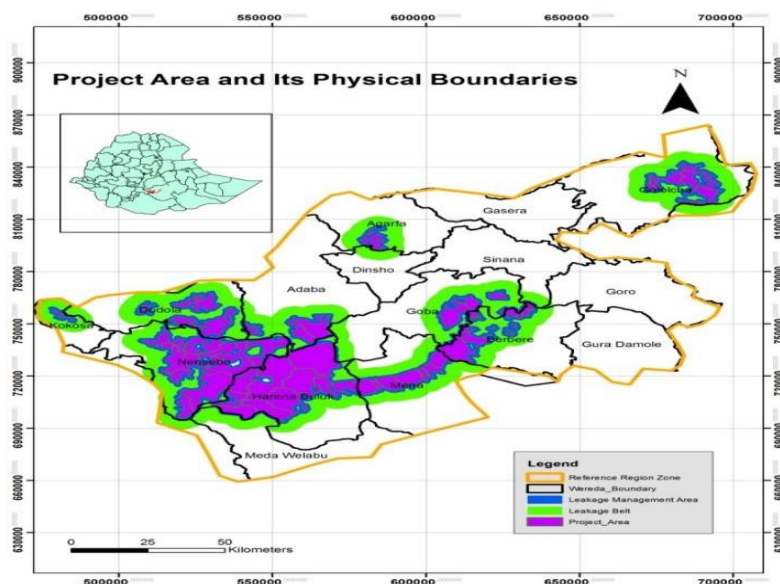


Figure 1: Map of project and surrounding areas of BMERP.

2.1.2 Project Category and Activity Type

The project is REDD+, AUDD (Avoiding unplanned Deforestation and Degradation) and not a grouped project

2.1.3 Project Proponent(s)

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2.1.4 Other Entities Involved in the Project

Farm Africa/SOS Sahel Ethiopia

Technical skills: Farm-Africa and SOS Sahel Ethiopia commenced the Participatory Forest Management Program (PFMP) in Ethiopia. Currently both organizations are implementing Bale Eco-region REDD+ program in the Bale Mountains massif at a landscape level and Central Rift Valley project in Oromia region. Together with SOS Sahel Ethiopia.

Functions in the project: Farm Africa/SOS Sahel Ethiopia through the Bale REDD+ phase two project are also supporting the government and the local communities, Joint Forest Management (JFM) cooperatives, in the implementation of the project activities, particularly in capacity building of both institutions.

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2.1.5 Project Start Date (G1.9)

The project started on 01-January-2012.

2.1.6 Project Crediting Period (G1.9)

The project started on 01January-2012 up to 31-December-2031 and GHG accounting period and project lifetime: 20 years from project start date. The project area will continue to be managed and monitored

through the regional programme called Oromia Forest and Landscape Programme (OFLP) well beyond 20 years. This project will be embedded as part of the wider regional landscape programme .

2.1.7 Project Location

The Bale Mountains Eco-region lies between 5°22'–8°08'N and 38°41'–40°44'E within the Oromia Regional State in the Southeast Ethiopia (Figure 2). The Bale Mountains Eco-region is one of the two highland divisions in Ethiopia, separated from the larger called western plateau of the Ethiopian highlands by the Great African Rift Valley, one of the longest and most profound chasms in Africa and the world. The main central area of the Bale Eco-region is a high plateau, much of which is over 3000 m asl with several peaks rising from it. The highest peak in the eco-region is Tullu Dimtu (4377m), the second highest point in Ethiopia. South of the plateau the land falls steeply to the Hareenna Escarpment and further into the Somali and Borana lowlandplains, and further into the Indian Ocean. The northern area is composed of high ridges and broad valleys that gradually descend to the extensive Arsi-Bale plateaus and further into the Central Rift Valley lowlands (Figure 2). The mountains chain and topography with its broad flat plateau has given the Bale eco-region spectacular scenery. The diversity of the landform has also resulted in a diverse soil formation and local climate (influenced by slope and aspect); hence diverse ecosystems and rich flora and fauna diversity. Moreover, the mountains massive of the eco-region play a vital role in climate control of the region by attracting large amount of orographic rainfalls.

The project location is bounded to the north and north-east by the Wabi Shebelle river, to the east by the agricultural plateau on which the towns of Robe and Goba are found, to the south by the lower limits of the forest zone (thus, above the Combretum-Terminalia woodland zone), and to the west by the agricultural plains that are the continuum of the Arsi-Bale plains. Administratively, the area comprises sixteen Woredas namely Agarfa, Dinsho, Adaba, Dodola, Goba, Sinana, Gololcha, Gasera, Delo Mena, Kokosa, Berber, Hareenna Buluk, Nensebo, Mada Walabu, Goro and Guradhamole. In these woredas there are six priority forest areas (PFAs): Aloshe Batu, Goro Bale, Harana Kokosa, Menna Angetu, Kubayu, and Adaba Dodola, which in total are 566,258 ha including the forests in the Bale Mountains National Park or 480,910 ha without the park forests. The total population of the woredas is about 1.6 million, 85% of which is rural and the rest urban.

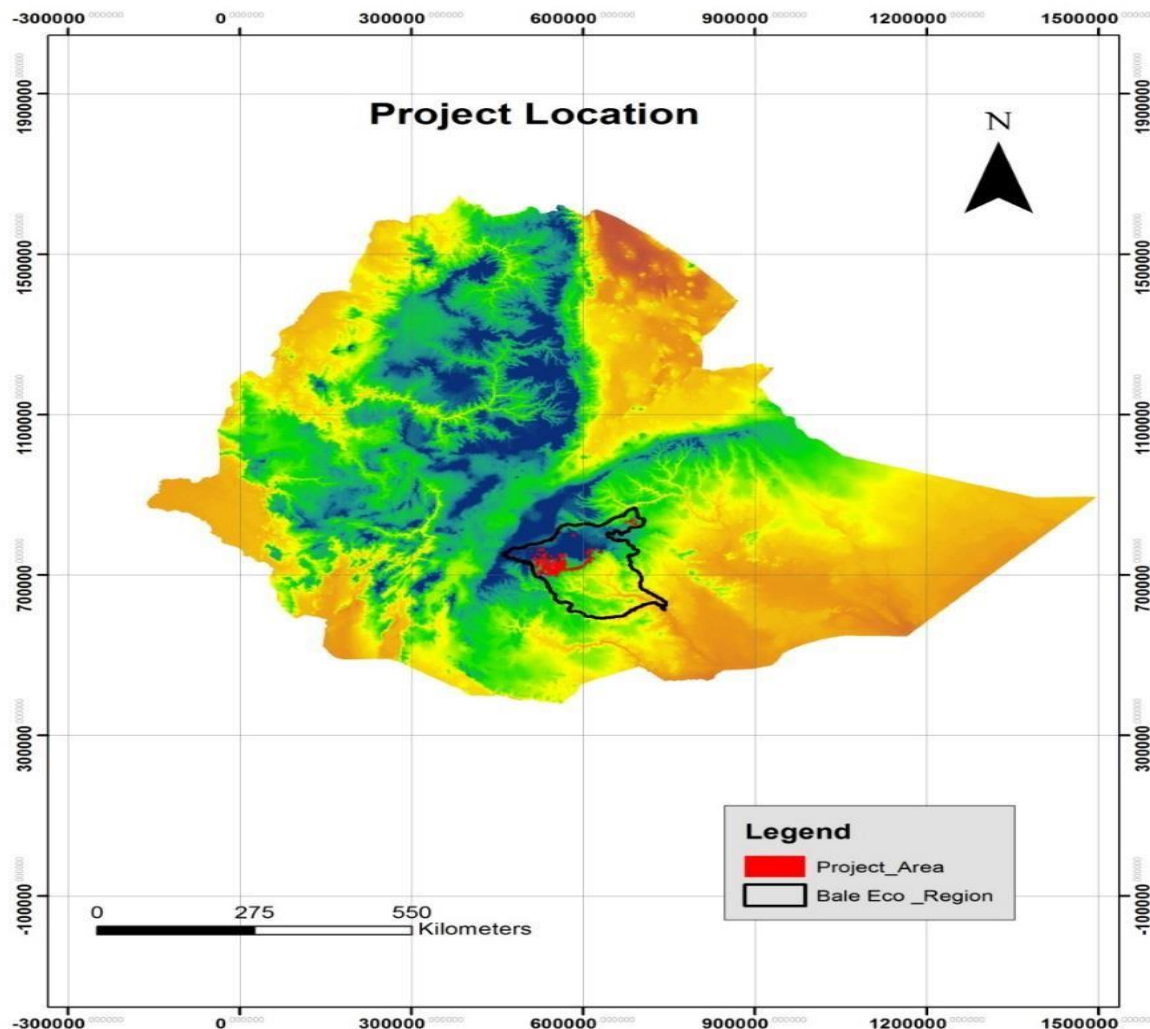


Figure 2: Location of BMERP area within Ethiopia

2.1.8 Title and Reference of Methodology

The VCS VM0015 v 1.1 methodology has been adopted after assessing options using eight criteria points as shown in Table1.

Table 1 Selection criteria for VCS methodology

	VM0006	VM0007	VM0009	VM0015
Scope	✓	✓	✓	✓
Baseline	✓**	✓	✓**	✓
Project boundaries	✓**	✓	✓	✓
Agents and drivers of deforestation	✓	✓	✓	✓
Activities in the project scenario	✓**	✓	X	✓
Leakage	✓	✓**	✓**	✓
Monitoring	✓	✓	✓	✓
Carbon stocks	✓	✓	✓	✓

(Note: “✓” mark represents that such item has no application constraints. When the “✓” mark is followed by asterisks (**) it means that the item has some constraints to be applicable to the Bale REDD Project, which are described below. The “X” mark means that the item is not applicable).

The BMERP meets the five applicability conditions of the VM0015, v1.1 methodology as follows:

- Baseline activities include unplanned agricultural and grazing activities, fuel wood collection, considered unplanned deforestation according to the most recent VCS AFOLU guidelines
- BMERP activity is classified as “Protection with controlled logging, fuel wood collection” one of the eligible categories defined in the description of the scope of the methodology (see table 1 and figure 2 – scope of methodology);
- The project area includes mainly old-growth and degrading forests of moist and dry evergreen montane forests meeting the definition of “forest according to Ethiopia’s definition of forest – see footnote 1”.
- At project commencement, the project area includes only land qualifying as “forest” for a minimum of 10 years prior to the project start date. The project has confirmed this through satellite images-based analysis starting from the year 2000.
- The project area does not include forested wetlands.

Thus, the project complies with the specifications of the chosen methodology and uses the four specified spatial domains: the reference region, the project area, leakage belt, and leakage management area, the latter three sub-regions of the reference region.

2.1.9 Other Programs (G5.9)

The Bale Mountain Eco-Region REDD+ project has not been and will not be seeking registration under any other GHG programs other than VCS and CCB. CCB verification is demonstrated positive climate, community and biodiversity impacts, but does not produce any registered emissions reductions or credits.

2.1.10 Sustainable Development

Bale Pilot REDD+ project has come to existence in 2013 to make significant contribution to enable Ethiopia to realize its Climate Resilient Green Economy strategy at grassroots level with the purpose of establishing REDD+ scheme in Bale Mountains through institutional support to the community and regional level.

The project has demonstrated a model for institution building to integrate PFM-REDD+ which has already been adopted by the national REDD+ programs of the Government of Ethiopia. Phase II is also designed with the objective of making Bale REDD+ project to continue becoming the knowledge hub for REDD+ best practices in the country. It generated lessons that strengthen and sustain REDD+ initiative by focusing on

sustainable forest management interventions like OFLP. To avoid double counting of carbon credits, the project reach consensus with OFLP to sale carbon credits that will generated until OFLP sign emission reduction purchase agreement (ERPA) with buyers.

As stated in the CRGE strategy of the country in a business-as-usual scenario – greenhouse gas emissions would more than double to 400 million tonnes of CO₂ equivalents (Mt CO₂ e) in 2030. More than 37% of the emission contributed from the forestry sector. To reduce the expected emission, forestry considered as one of the four development and planned to reduce 131 Mt CO₂e from forestry by Protecting and growing forests as carbon stocks, through reduce demand for fuelwood via efficient stoves, increase sequestration by afforestation/reforestation and forest management (see annex 32). Hence, as complementary to the country plan the Bale REDD+ project managed to avoid deforestation of 22,895 ha of forest from which enabled to reduce 10,464,247t CO₂ equivalent. This implies the project contribute in the achievement of 9% of the country emission reduction plan from the forestry sector (See annex 29).

The Oromia Forested Landscape Program (OFLP) also seeks to reduce deforestation by improving sustainable forest management throughout Ethiopia's Oromia Regional State, and lowering GHG emissions from land use, including from the livestock sector, by encouraging better herd management. OFLP developed to foster equitable and sustainable low carbon development through a series of: (i) on-the-ground activities that address deforestation, reduce land-use based emissions, and enhance forest carbon stocks; and (ii) state-wide and local enhancements to institutions, incentives, information, and safeguards management to upscale investment (enabling environment), including coordinating and leveraging multiple REDD relevant interventions across the regional state (see annex 31 OFLP PIM).

The OFLP institutional structure includes relevant institutions at national, state and sub-state levels with discrete accountabilities and decision-making roles based on existing mandates. ORCU is the OFLP implementing entity and administratively has been hosted by OEFCCA as the new administrative host. OEFCCA was set up by Proclamation 199/2008 on August 21, 2016, and is officially mandated to oversee the forest sector in Oromia. While ORCU reports administratively to the OEFCCA, it seeks strategic and tactical guidance from the Oromia Regional State Vice President, given the multi-sector nature of OFLP and land use challenges in the regional state. ORCU and OEFCCA will be supported by CEFCC which would carry out a fiduciary oversight role via its National REDD+ Secretariat in particular on MRV, project monitoring, safeguards, financial management and procurement; more specifically, the CEFCC will focus on providing operational guidance to the ORCU to carry out its own procurement, financial management, and safeguards compliance, providing quality control, guidance and resolving issues. The regional state's multi sector REDD+ Steering Committee and Technical Working Group would provide strategic guidance and technical inputs, respectively, to OFLP implementation. The OEFCCA and sector bureaus including the BoANR, OFWE and BoRL will implement and coordinate activities on-the-ground through their decentralized staff. For example, OEFCCA, BoANR, and BoRL have field staff, woreda experts, and kebele development agents (DAs) who cover forest, agriculture, water, and household energy. However, OEFCCA will, in the near-term, rely on DAs under the authority of the BoANR and BoRL to implement investment activities on the ground until such time as OEFCCA has its own core of DAs in place. OFWE has a similar structure with local extension agents with experience in PFM, but OFWE does not follow the woreda structure and instead follows its own district structure based on its forest concessions.

The overall carbon accounting framework for forest carbon and the National Forest Monitoring System (NFMS) as key source of information for forest monitoring, setting the FRL (baseline) and monitoring, reporting and verification (MRV) of emission reductions from sources and carbon removals from sinks as well as the safeguards information system.

Ethiopia's NFMS is designed to provide information relevant to MRV REDD+ activities and to support broader forest sector policies and program. Ethiopia's NFMS consists of two functions, MRV and Monitoring functions. The MRV function is for reporting GHG inventories and may be divided into three elements: Measurement, Reporting and Verification. The measurement part consists of GHG Inventories, the Satellite Land Monitoring System (SLMS) and the National Forest Inventory (NFI). The carbon accounting system

is imbedded in both reporting and verification part , for this purpose excel based registry format developed to register the carbon credits generated by different stakeholders in the country, see annex 34 carbon registration form. Hence, most REDD+ projects are at their early-stage registration activity was not started yet.

Moreover, Bale REDD+ has been contributing for other sustainable development plans of the country such as Growth and Transformation Plan (GTP). It is apparent that REDD+ project envisaged to ensure environmental sustainability through mitigating effect climate change, it has a direct effect in creating favorable environment for agricultural production, which is the main area of employment in third world country like Ethiopia. Enhancing the agricultural productivity is one of the main components of the countries GTP. Enhancing the income of community is also the other target of the GTP, hence, the revenue generated from the sale of forest carbon credit will contribute for this objective.

2.2 Project Implementation Status

2.2.1 Implementation Schedule (G1.9)

Bale REDD+ implanted by OFWE and forest community with strong facilitation role of Farm Africa and SOS Sahel Ethiopia. Forest dependent communities in Bale Eco-region who are not only the primary agents of deforestation and forest degradation but also the custodians of forest resources through PFM. These communities are organized into 64 forest management co-operatives and signed forest management agreements with the government. To ward this the project developed a capacity tracking instrument, the Organizational Capacity Assessment Tool (OCAT) and used it to assess CBOs' capacity gaps, and subsequently designed tailored training for capacity building. The community also benefitted directly from the project activities that aim at reducing deforestation and forest degradation such as fuel-efficient stoves and biogas technology dissemination. The project worked with communities to develop a working model of REDD+ benefit sharing mechanisms for the historic emission reduction payment from phase I (pre-2015). A major component of the project was focus on capacity building of Community Based Organizations (CBOs) to effectively secure resource access, democratic and inclusive natural resource governance, and benefit sharing mechanisms for carbon credits and finances generated.

The other target stakeholders that will be actively involved across all aspects of the project, were government agencies, particularly the new Oromia Environment, Forest and Climate Change Authority (OEFCCA), the Oromia Forested Land REDD+ Programme Co-ordination Unit (ORCU); the national REDD+ Secretariat; Mada Walabu University; the Ministry of Environment, Forest and Climate; donors, WBG and its unit that supports OFLP and other stakeholders that will benefit from the knowledge and experience generated by the project.

Table 2 Key Milestones and Dates in Project Implementation

Date	Milestone
2008	Early actions by OFWE and Farm Africa to determine project feasibility
June 2009 – December 2012	Establishment of PFM Cooperatives and Formal Agreements with OFWE for joint forest management
2010	To reduce burden of women on fuel wood collection, enhance the health status of community and reduce burden of forest for fuel wood every year
November 2011 - September 2014	PDD development process
October 2012	Begin investments and project activities financed by investment (see Appendix for implementation schedule)
January 01, 2012	Project Start date
January 01, 2012	Project Crediting Start

December 2014	Constitution of Bale Mountains Eco-region Trust Fund
May 2014	CCB and VCS validation
June 2014	First forward sale of Emissions Reductions (expected)
2015	1 st Verification, Monitoring and implementation report (MIR report)
2017	OCAT version 2 system development and capacity of forest cooperative assessment
2018	Developing Nesting/ integration of Bale REDD+ lessons in OFLP,
2018	Introduction of Coffee planting on farm land outside the forest and homestead
2018	Introduce coffee planting outside the forest on farmers agricultural plots as agroforestry system
2018	Develop community and private woodlots to reduce forest degradation caused by fuelwood collection,
2018	To enhance house, hold income from NTFP and reduce forest degradation for expansion of coffee plantation forest coffee value chain developed.
2018	Discussions with buyer on project commenced with various meetings, agreements and project documents shared
2019	Second period verification, Monitoring and implementation report (MIR report)
2019	Assessment of forest stock change (Basal area, number of seedling and sapling),
2019	Verified Emission Reductions Purchase Agreement (VERPA) for buyer one agreed
2020	Verified Emission Reductions Purchase Agreement (VERPA) for buyer two agreed
2020	Income from carbon credit sales received.
2020	Despite State of Emergency (SoE), community discussions underway and government agreement in place on how and when funds will be disturbed
2020	GHG emission calculation Quantity of avoided emission of CO ₂ due to project intervention,
2020	Hiring of verification body Commissioning of Bale REDD+ second period verification
2021	Verification underway

2021	Issuance of 250,000CO ₂ e carbon credit for sale
2021	Forest coffee value chain developed
2021	Distribution of Forest carbon revenue to community.
2021	Signing of Forest for Sustainable Development project agreement with Donor
2022	Bale REDD+ Lessons sharing with regional government
2022	BER project included into wider monitoring of OFLP MRV system
2022	Issuance of 250,000CO ₂ e carbon credit for sale
2023	Issuance of 250,000CO ₂ e carbon credit for sale

2.2.2 Methodology Deviations

No monitoring deviations have been described by the project proponent.

2.2.3 Minor Changes to Project Description (*Rules 3.5.6*)

Minor deviation in deforestation monitoring period is occurred though it does not has any serious impacts. Deforestation monitoring has planned to be carried out annually, however, it is pushed to the fourth year because, it is difficult to detect those small and scattered deforestation on annual basis. This is a case where the deforested areas are found below the spatial resolution of remote sensing. Therefore, deforestation monitoring has been done at the fourth year and divided by four to estimate the annual rate of deforestation in the project area. Apart this minor deviation, the procedure that has been employed in the PDD is also strictly followed in the monitoring process. This minor deviation does not bring any impact on applicability of the methodology, additionality or appropriateness of the baseline scenario. Therefore, the project is remaining in compliance with the applied methodology of VCS. Also, as indicated in section 2.1.10 the Bale Mountains REDD+ project will not be operation as independent project, it will be integrated in the OFLP project, all GHG emission reduction from the project after 2020 will be accounted for OFLP. However, for this monitoring period no monitoring deviation.

2.2.4 Project Description Deviations (*Rules 3.5.7 – 3.5.10*)

No monitoring deviations have been described by the project proponent.

2.2.5 Grouped Projects

The project is not grouped.

2.2.6 Risks to the Project (G1.10)

The project identified the potential risks such as fire, weak law enforcement, weak institutional capacity to implement REDD+ project. As part of mitigation measures fire brigades have established and firefighting equipment distributed to the communities in Bale REDD+ phase one project. Human induced risks such as weak institutional capacity and weak law enforcement were also identified that would affect the climate,

community and biodiversity benefits. To mitigate such risks measures like provision of series of awareness-raising meetings and community engagement in Participatory Forest Management (PFM) have been strategized and successfully implemented by different stakeholders.

Table 3 Potential project risks and mitigation strategies

Identify Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed to mitigate the risk
Fire	Damage the biodiversity	• Firefighting equipment /tools made available for each JFM CBOs; • Capacity building of forest CBOs' to better manage the risks of forest fire ;
Weak law enforcement	Deforestation, deforestation and disturbance of biodiversity	Oromia regional government has given attention to forest protection law enforcement, to stop illegal activities inside the forest; The Climate Resilient Green Strategy (CRGE) and the Growth & Transformation plan of Ethiopia has given due attention to forestry sector (REDD+ is one of the four fast track implementation activities of the Ethiopian CRGE Strategy); JFM CBOs (local community organization) are given mandate to locally enforce their internal bylaw to protect forest; The project established close working relationships with judiciary to enforce law.
Weak institutional capacity to implement REDD+ project	Accelerate deforestation and degradation that result in biodiversity damage, ecosystem change and GHG emission	Frequent training in areas of REDD+ project implementation provided to OFWE, OEFCCA staffs and the local communities; REDD+ unit established in OFWE HQ and in the Bale and Arsi branches; Oromia Environment Forest Climate Change Authority established at regional level under the Federal Climate Change Commission Federal level REDD+ secretariat established to provide support to regions for the implementation of REDD+ pilot projects Farm Africa and SOS sahel Ethiopia with comprehensive experience in the forest carbon backstopped implementation of the project.

2.2.7 Benefit Permanence (G1.11)

To address the permeance, the project has been managed through JFM modality with full engagement of organized community living in and around the forest with OFWE. More over the BMERP proponent is the Oromia Forest and Wildlife Enterprise (OFWE), an autonomous fully government-owned enterprise, established with regulation number 122/2009 issued in July 2009 by the Oromia State Council under the Federal Democratic Republic of Ethiopia (see annex 33). The Oromia Forest and Wildlife Enterprise owns concession for all of the forests and regionally administered the forest beyond the project lifetime for 99 years.

Linked to this, the Oromia regional government has signed an agreement with the World Bank to develop a region wide programme titled 'Oromia Forest Landscape Programme' (see: <https://projects.worldbank.org/en/projects-operations/project-detail/P156475>) The same set of activities in forest management, identification and management of non-timber forest products, strengthening and establishing of CBOs, incorporating activities in alignment with regional development plans and national targets on NRM will be part and parcel of the project. The incorporation was agreed on the basis that the BER project started as a pilot project and has generated some key lessons that supported the design of

the OFLP, See annex 31. Integration of Bale REDD+ project in to the bigger OFLP was one of the activity in Bale REDD+ II , accordingly the integration discussed and document prepare and endorsed by OFLP. see annex 35 bale REDD+ lessons integration document. So the project will continue its forest management, monitoring and financing with its project proponent OFWE under the umbrella of the OFLP. Moreover, the project implementer has submitted a project proposal entitled Forest Sustainable Development Programme to the Royal Norwegian Embassy (RNE) to continue supporting key stakeholders to conserve and manage Bale Eco Region sustainably this is under review and most likely to be approved.

2.3 Stakeholder Engagement

2.3.1 Stakeholder Access to Project Documents (G3.1)

The Bale Mountains Eco-region REDD+ project comprises multiple stakeholders from the Federal to local grassroots level. At the federal level the Commission of Environment Forest and Climate Change (CEFCC) and the national REDD secretariat housed in the (CEFCC), Oromia Environment Forest and Climate Change Authority (OEFCCA) are among the most pertinent stakeholders. Therefore, consultation process for Bale REDD+ project was conducted between different stakeholders at different levels: Federal, Regional, Zone and woreda government levels and at local levels with the community. The government level consultation was conducted in Addis with the presence of federal and regional government stakeholders while zone level consultation was conducted in the Bale Zone. The grassroots level consultation and participations were conducted in each village at which accessible to communities. Bale REDD+ project which is pioneering REDD+ initiative in Ethiopia was discussed widely at national scale that attracted the interests of all stakeholders. At the Oromia regional state, the project was approved by the Regional State of Oromia because the project site belongs to this regional state.

Bale REDD+ project implementation has been done at different level from grass root up to region and federal level. Hence, the main project implementation modality is JFM which demand 50-50 involvement of government and community. Almost all project activities were conducted at JFM CBOs level and together with OFWE staff at district level which are answerable to OFWE branch office. The role of the branch office is regulatory and supportive. While OFWE regional level conduct monitoring and have been accomplishing activities like deforestation analysis, policy level dialogue and external communication with validator, verifier and carbon market actors. So that documentation of activities done at all levels as per their role. While communication of the achievements of all done using workshops, meetings and report.

The project implementation communication undergone as follows

- The field office compiles the reports from districts and prepare quarter report, see annex 36 sample quarter report
- Community feedback collected biannually by field team and the report submitted to Farm Africa head office, (see annex 37 sample community feedback).
- The progress of the project discussed with in the staff biannually (see annex 38 discussion meeting minute).

2.3.2 Dissemination of Summary Project Documents (G3.1)

Farm Africa together with the national REDD+ secretariat established REDD+ learning network aiming to exchange experiences and learnings of REDD+ activities in Ethiopia. So that the overall Bale REDD+ project implementation achievement disseminated to stakeholders through this network, in the last meeting held on December 12,2020 the achievement of this monitoring period discussed (see annex 39 National REDD+ LN minute) .

At country level the annual report prepared and submitted to donor and BOFED with financial audit based on the agreement. The overall progress lesson learned and challenges presented to national REDD+ network members who are directly implementing REDD+ activities at different REDD+ projects in other parts of the country. In this workshop detail technical aspects of REDD+ and PFM. This workshop also cascaded to community level with the presence of zonal and district stakeholders, the achievement of national REDD+ network meeting were presented in these meetings.

Dissemination of project implementation

- The field office prepares quarterly reports and submit to head office and disseminate the copy of the report to zonal stakeholders (BOFED, Cooperative promotion office, OFWE, OEFCCA and agricultural office) see annex 40 annual progress report
- The annual project progress report submitted to donor and BOFED every year (see annex 41 donor report)
- The overall achievement and implementation process of the project presented to REDD+ network members (see annex 39 REDD+ network meeting minute)

2.3.3 Informational Meetings with Stakeholders (G3.1)

In the forest management agreement OFWE and forest managing community agreed to have a regular meeting, so that the status of Bale REDD+ project updated using this meeting since February 14,2020. The achievements of this monitoring period was also informed for zonal stakeholders on the August 29-31 ,2020. More over All CBOs have their own regular meeting calendar which is known by every committee and whole CBO members (some CBOs would meet every week, other every two weeks and soon. The community meeting mainly transmitted through word of mouth and some time if urgent meeting necessitated they will call

2.3.4 Community Costs, Risks, and Benefits (G3.2)

Communities who are living in and around the project are the major stakeholders of the project. For this reason, participation and commitment of the local communities in the project areas was carried out in 64 REDD+ kebeles and agreed through the process of FPIC that was led by Farm Africa/SOS Sahel Ethiopia. During FPIC assessment of the likely economic, social, cultural and environmental impact, including potential risks and fair and equitable benefit sharing in a context that respects the precautionary opinion that community discussed and provide consent on it.

In some of the kebeles, high number of community members attended the meeting that made event was very special in its kind where such high number of community members attended the meeting



Figure 3 Communities' consultation and participation in Bale REDD+ project design process

2.3.5 Information to Stakeholder on Verification Process (G3.3)

As Bale REDD+ project which is pioneering REDD+ initiative in Ethiopia vast community and stakeholders awareness creation trainings were conducted and REDD+ issues were discussed widely at national regional and community level. In this work shop the steps of REDD+ project development and performance-based payments procedures were explained. The requirement of project validation and verification through third party clarified. Generally, Stakeholders and community were well aware of Why verification is, when

it will be conducted, who the verifier are and what to be verified, at the onset of REDD+ development and also refreshed in this reporting period. The result of validation and verification disseminated for community using meetings and workshops

2.3.6 Site Visit Information and Opportunities to Communicate with Auditor (G3.3)

Communities and other stakeholders were informed about validation /verification body's site visit in advance through meetings. The tasks of validation/verification body were explained to the community and stakeholders, up on arrival of the validator /verifier the role of the project was to facilitate logistics and bring them together. If the validator wants translator during communication, it is his mandate to higher translator who knows the local language. During project validation, the validator come with serious of check lists to lattice the project development with the VCS/CCBA guidelines. This is done in office with project developers, after completing the office work the validator went to field to check the forest carbon inventory and how the emission factor developed, he visited both dry and moist part of the forest. In the first verification, the verifier visited the project area with his translator and discussed with the community based on the project implementation report with public comments. He discussed with the community about the type of trainings/ benefits they got from the project, discussed how they participate on the project activity and visited fuel efficient stove beneficiaries to see how they installed and used the stoves. He also came with coordinate points to check the forest and non-forest land uses. Finally, the verifier also made discussion with stakeholders involved in the project implementation.

Due to COVID-19 restriction the second verification was conducted remotely as well as with field visit. The verifiers reviewed the documents and identified issued that should be verified by site visit and that could be discussed remotely with skype zoom meeting. As per the zoom discussion the auditor visited the project site hired translator and discuss with community on how the project implementation done, what they benefited from the project and challenge they face. Also, as usual the auditor came with GPS coordinators to check forest and non-forested land uses.

2.3.7 Stakeholder Consultation (G3.4)

After extensive discussion on the project's contents and ideas, in many places communities satisfied to the consultation which was carried out and expressed their interest of accepting the project and willing to work with the project. After each meeting, a voluntary vote was taken to allow participants to express their approval or rejection of the REDD+ project. Community consultation is an on-going process, and the project continues working with the local relevant community groups needs to be consulted about the BMERP. As a witness for their willingness they nominated five community representatives per kebele to sign the consent document on behalf of wider community (Figure 3).



Figure 4 Sample signature of community's representative during FPIC consultation

2.3.8 Continued Consultation and Adaptive Management (G3.4)

The communication and consultation about the project implementation continued between the project proponent OFWE and community through the regular meeting. The inputs of the consultation were considered in the project implementation, for instance, during project implementation the role of women was not as such considerable so that the issue of gender empowerment was taken as a big concern and the forest managing CBOs were forced to change their bylaw which state that at least 3 women should be member of executive committee which have 7 members and also agreed, if the chairman is man the vise should be women. This is result of adaptive management.

2.3.9 Stakeholder Consultation Channels (G3.5)

Majority of community consultation undertaken directly on the presence of majority of the community members, however, some consultations were undertaken through their legitimate representatives. The consultation with representative further cascaded to community immediately through meetings.

2.3.10 Stakeholder Participation in Decision-Making and Implementation (G3.6)

Joint forest management in nature demand the involvement of stakeholders from the project star up to implementation all decisions were made with the consensus of both parties (Forest managing CBOs and OFWE). As stated in section 2.5.3 the project is implement based on joint forest management agreement (JFMA) between the OFWE and community forest management group. The JFMAs set out the rights, benefits, and responsibilities of the cooperatives and the relevant forest enterprise. Under the JFMAs the cooperatives enjoy the following benefits:

- Recognition of the right to live in the forest (if they are currently doing so).
- Sustainable utilization of forest resources based on the forest management plan.
- A share of the benefits from ecosystem services (including carbon sequestration). This will be based on a Supplementary agreement that is not yet executed.
- Benefit sharing from plantation and natural forests.

The cooperatives also have a number of responsibilities including, inter alia, responsibilities to:

- Fully implement the joint Forest Management Plan.
- Produce and implement a Forest Management Action Plan annually.
- Ensure that destructive activities such as forest fires, clearance and settlement do not occur within the forest.
- Seek prosecution for individuals who destroy the forest.
- Prevent new house construction, coffee planting and agricultural expansion inside the forest.
- Ensure that the forest is able to naturally regenerate and that seedlings are planted when necessary.
- Protect the forest and seek legal redress from individuals, who without customary use rights, have utilized the resource without having entered into an agreement with the Cooperative.
- Ensure that beehive construction is not destructive and does not use endangered trees.
- Ensure that all fires are controlled and managed when used in the forest for cooking, burning crop residues, smoking beehives etc.

The enterprise branches have the following responsibilities under the JFMAs:

- Build the capacity or provide technical assistance to the cooperative in order to realize sustainable forest development, protection and utilization.
- Assist and monitor the implementation of the joint Forest Management Plan.
- Ensure that the rights of the cooperative are not violated by any individual, group or organization by supporting the cooperative in any way possible.
- Ensure that benefits from ecosystem services (including carbon sequestration, payments for environmental services, trophy hunting) is shared with cooperative based on a supplementary agreement being made between the two parties.

2.3.11 Anti-Discrimination Assurance (G3.7)

Discrimination based on gender, race, religion, sexual orientation or other habits or sexual harassment with respect to the project will be solved using grievance readdressing mechanism see annex 14 . However, there was no record of discrimination against gender, race, religion in yhis monitoring period.

2.3.12 Grievances (G3.8)

The success of the REDD+ project depends on ability of stakeholders to effectively and amicably resolve any problems and issues that arise during implementation of the project. For this reason, the project has facilitated the development of grievance handling procedures to address grievance raised during project implementation and any issue associated with discrimination based on gender, race, religion, sexual orientation or other habits (Annex 14). Towards this, the structure for the grievance addressing mechanism is deliberately integrated into the structure of the JFM/PFM cooperatives by having a traditional conflict resolving elders committee. This committee plays a strong role in dealing with first level conflicts at each cooperative level. This mechanism has not been fully tested as the verified forest carbon of Bale was not sold up to 2019, so during this period no grievance was recorded in every CBO. Hence, orally all CBOs raised the issue of forest carbon money in training and community meetings. Their main question has been the status of the verified carbons and if any funds/income has been identified. They were continually briefed of the status, the challenges of the voluntary carbon market, and the long process for securing the finances.

2.3.13 Worker Training (G3.9)

The success of participatory forest management depends on the capacity of each CBO's to deliver what is intended to do. To capacitate these CBOs, the project regularly assesses their capacity gap based on a tool called Organizational Capacity Assessment Tool (OCAT). See Annex 22 OCAT guideline. Then necessary trainings were provided to fill the skill gap identified.

2.3.14 Community Employment Opportunities (G3.10)

The employment opportunity and worker safety is also backed by the Ethiopian laws. For instance, the Ethiopian Labor Proclamation No. 377/2003 entitled “Labor Proclamation” is the main legislative standard for the Ethiopian labor law and ensures worker-employer relations (Annex 21). This proclamation governs relationship between worker-employer based the basic principles of rights and obligations with a view to enabling workers and employers to maintain industrial peace and work in the spirit of harmony and cooperation towards the all-round development of their country. The OFWE which is the proponent of this project is strictly governed by the Labor Laws of Ethiopia.

In the case of BMERP, the hiring of the local people and OFWE personnel is prioritized to carry out the functions envisaged by the project. At initial stages, hiring was carried out by contracting directly between the project management and those hired labor in accordance with Ethiopian law. The law effect on all job opportunities of both permanent (managerial, forest extension, expertise, sales, office work and etc), and temporary (contract and daily Laboure). There is no job segregation and different salary/payment scale between women and men. Additionally, wherever it is appropriate, the hiring process is supposed to be done by the PFM cooperatives or other implementing partners.

The project is co-implemented by local community living with the forest and the public enterprise which is very aware and capable of implementing the labor law of the country. The enterprise supports local communities to fully understand and comply with their rights and obligations.

2.3.15 Relevant Laws and Regulations Related to Worker's Rights (G3.11)

Ethiopian Labor Proclamation No. 377/2003

2.3.16 Occupational Safety Assessment (G3.12)

The project conducted awareness creation about the general climate change & its impact on local community, role of forest in mitigating climate change, what the BMERP is doing, how the implementation of the project is carried out, any risk associated with the project implementation and safety requirements. Particularly, during the FPIC process, the OFWE has conducted comprehensive trainings and discussions with different community groups. As per the law and workers' safety requirement, a number of equipment were purchased by OFWE and being used by concerned workers. The Ethiopian labor law under its section three subtitle 12 clearly indicates the safety issues of the worker. Accordingly, it is the obligation of the employer to take all the necessary occupational safety and health measures and to abide by the standards and directives to be given by the appropriate authorities in respect of these measures (Ethiopian Labor law: proclamation No. 377/2003)The OFWE has developed its own worker safety guideline (Annex1).

2.4 Management Capacity

2.4.1 Required Technical Skills (G4.2)

Manuals were prepared to maintain key technical skills required to implement the project successfully. To serve as a reference book and sustain the forest carbon assessment skill forest carbon assessment manual prepared and distributed to all stakeholders including university found in the ecoregion (Appendix10). The project also adopted and have been implementing community-based monitoring guideline prepared by other stakeholder working in the eco region (Annex 22).

2.4.2 Management Team Experience (G4.2)

Different individuals with various educational background who are working as staff of OFWE, Farm Africa and SOS Sahel Ethiopia were involved in the process of Bale REDD+ project verification. Senior staff have facilitated method of data collection, quality control and quality check responsibilities. The junior technical staff have been facilitating data collection and analysis responsibilities (Table 4).

Table 4 Participants of monitoring Team

Name	Profession & Status	Organizational responsibility	Roles and responsibility in monitoring

Ararsa Ragasa	MSc in Forestry	OFWE Deputy/General Director	Data quality assurance
Nura Aman	MBA in Global Management	REDD+ project coordinator	Data Quality control
Yasmin Abdulwasi	MA in Environment and Development	Director of operation and delivery	Data Quality control and Quality assurance
Merga Diyesa	MSc in GIS & RS	GIS specialist	GIS data collection and analysis
Seyoum G/kidan	BSc in forestry	Forest specialist (team leader)	Coordinating data collection
Sahlemariam Mezimur	BSc in forestry	Sustainable timber harvesting specialist	Socio-economic and biodiversity data analysis
Abebe Tesfaye	MSC in NRE and policy	Institutional building specialist	Socio-economic and biodiversity data analysis
Beriso Lenchamo	BSc in NRM	Monitoring and Evaluation	Socio-economic and biodiversity data analysis

2.4.3 Project Management Partnerships/Team Development (G4.2)

The project had been undertaken by joint forest management system which is a community and government partnership aimed to ensure the co-existence between the community and the forest by fully engaging local communities in decision making over their forests and share benefit from any commercial use of forest while enjoying traditional use rights. The BMERP has been working to improve government and community partnerships on one hand and facilitate the development of community based local institution on the other to result in an improved forest ecosystem and landscape management in the Bale Eco-Region (BER). About 64 local PFM cooperatives have been established and their capacities strengthened. No partnership gap identified during the validation process.

2.4.4 Financial Health of Implementing Organization(s) (G4.3)

BMERP has been developed and implemented by Farm Africa/SOS Sahel, and by the on-going support of OFWE. These have already invested considerable part of the fund donated from Royal Norwegian Embassy. Farm Africa has its own financial manual and conduct annual audit by external consultant. (See annex 25 & 26)

2.4.5 Avoidance of Corruption and Other Unethical Behavior (G4.3)

OFWE has the policy of zero tolerance to corruption and has an anti-corruption unit that independently check and control the way it manages its operation and financial resources. In this monitoring period there was no corruption, fraud, *bribery* and *embezzlement* incident observed.

2.4.6 Commercially Sensitive Information (Rules 3.5.13 – 3.5.14)

There is no commercially sensitive information excluded.

2.5 Legal Status and Property Rights

2.5.1 Recognition of Property Rights (G5.1)

Ethiopia is the Federal State that comprises of three organs of government such as legislative, executive and judiciary. The parliament in the country is responsible of making legislation while the power of executive is vested upon the prime minister and the judiciary organ is mandated of interpreting the law of the country. The federal government oversees 9 National Regional states and 2 chartered cities' administrations. The regions are further divided into administrative zones which are in turn divided into districts (woredas). The districts are made up of neighborhood peasants associations (kebeles).

The 1995 Constitution of the Federal Democratic Republic of Ethiopia empowers community through stressing the right of people of the country to participate in any development activities in their vicinity and assigns extensive power to the regions that can establish their own government and carry out functions of government through an executive committee and regional sectoral bureaus. This structure of council, executive, and sectoral public institutions is replicated to the next administrative level of district/woreda. In Ethiopia the ownership of land and other natural resources is vested in the people and the State that is stated in the 1995 Constitution of the Federal Democratic Republic of Ethiopia (Annex 15). Article 40(3) of the Constitution provides that "The right to ownership of rural and urban land, as well as of all natural resources, is exclusively vested in the State and in the peoples of Ethiopia. Land is a common property of the Nations, Nationalities and Peoples of Ethiopia and shall not be subject to sale or to other means of exchange." There are different ways to interpret this ownership by the State and the peoples of Ethiopia. The best interpretation is that the Constitution has considered State and people as two distinct entities. Land is the joint property of these two entities, but the State administers land on behalf of the people. This is supported by Article 40(6) of the Constitution that indicates the State administers the land on behalf of the people. "Without prejudice to the right of Ethiopian Nations, Nationalities, and Peoples to the ownership of land, government shall ensure the right of private investors to the use of land on the basis of payment arrangements established by law. Particulars shall be determined by law."

A number of laws have been enacted that further confirm the State's ownership of all lands in Ethiopia. The most relevant is the Federal Rural Land Administration and Land Use Proclamations Proclamation № 456/2005 which indicates that the Ethiopian government is the owner of all rural lands. Rural lands also include forests (Annex 16). The right to use land can be transferred by the State to individual users, communities, and others. The right to use land and other natural resources can also be separated. Forests (trees) are considered natural resources which can be sold independently from the land. All-natural forests are considered to be government owned, but they can also be owned by communities when the government transfers a forest to them. Plantations are government owned when planted by the government and community owned when planted by the community on land transferred to them by the government. Using these articles as a preamble more than 64 forest-based community organizations established and have been exercised their rights. They have shared benefit gained from trophy hunting , plantation also ready for sharing benefit gained from forest carbon sale.

2.5.2 Free, Prior and Informed Consent (G5.2)

The term FPIC is an abbreviation that stands for Free, Prior and Informed Consent. The FPIC was carried out to secure the local community consent for the proposed REDD+ project. During the FPIC planning phase, facilitators were selected from the locality, and trained on core principles of FPIC, what FPIC does mean and their roles as facilitators. After the training the facilitators sent back to their respective kebeles/community where they were assigned to conduct the FPIC process. Therefore, the key elements of the FPIC process that was used in the case of BMER were understood as described below:

- Free: implies no coercion, intimidation or manipulation;

- Prior: implies consent has been sought sufficiently in advance of any authorization or commencement of activities and respect of time requirements of indigenous consultation/ consensus processes;
- Informed: implies that information is provided that covers (at least) the following aspects:
 - Nature, size, pace, reversibility and scope of any proposed project or activity; o Reason/s or purpose of the project and/or activity; o Duration of the above; o Locality of areas that would be affected; o Preliminary assessment of the likely economic, social, cultural and environmental impact, including potential risks and fair and equitable benefit sharing in a context that respects the precautionary principle;
 - Personnel likely to involve in the execution of the proposed project (including indigenous peoples, private sector staff, research institutions, government employees, and others); and
 - Procedures that the project may entail.

Consent: -Consultation and participation are crucial components of a consent process. Consultation should be undertaken in good faith. The parties should establish a dialogue allowing them to find appropriate solutions in atmosphere of mutual respect in good faith, and full and equitable participation. Consultation requires time and an effective system for communicating among interest holders. Indigenous/local peoples should be able to participate through their own freely chosen representatives and customary or other institutions. The inclusion of a gender perspective and the participation of indigenous women are essential, as well as participation of children and youth as appropriate. This process includes the option of withholding consent. Consent to any agreement should be interpreted as indigenous peoples having reasonably understood it.

The Bale REDD+ project is deployed on the forest of given as concession to OFWE with assuring the respect of community customary right through FPIC process, so that the project has not encroached uninvited on private property, community property, or government property.

By gaining rights over the forest through the signed forest management agreement, the community are also granted share of carbon credit related benefits. This has confirmed during the extensive FPIC consultation and participation activities conducted throughout the project sites. During the process of FPIC, issue of the Bale REDD+ like potential risks, impacts, benefits and activities related to the REDD+ project were sufficiently discussed. The FPIC process was conducted as a process of establishing conditions under which people exercise their fundamental rights to negotiate the terms of externally imposed policies, programs, and activities that directly affect their livelihoods or well-being, and to give or withhold their consent to them.

2.5.3 Property Right Protection (G5.3)

The Oromia Regional State through OFWE has already entered into legal contract (agreement) with the local community for indefinite period of time to jointly manage and benefit from the forests through the new form of management arrangement called Joint Forest Management (JFM). This agreement clearly stipulated rights and obligations of each part. As part of the rights granted to the community they obtained a legal respect of continue living in and around the forest in harmony with the forest while managing sustainability and continue benefit from it including the carbon credit to generate. Through this agreement community has gained a confirmation that they will not be subject to any involuntary relocations. This was based on the very principle of JFM to ensure the co-existence between the community and the forest by fully engaging local communities in decision making over their forests, participate in forest management in partnership with government and share benefit from any commercial use of forest while enjoying traditional use rights.

In the new Ethiopia forest Proclamation No. 1065/2018 called Forest Development, Conservation and Utilization proclamation section three article 7 which describes the rights and incentives of community forest developers, in this article sub article 1-h clearly stated that community forest developers have the right to get compensation in case of expropriation of possession for public interest, See annex 24. Hence, the communities' customary forest use right is respected and the Bale REDD+ project activities are not forced rights holders to relocate activities important to their culture or livelihood.

2.5.4 Identification of Illegal Activity (G5.4)

The forests in the eco-region were exposed to a near open access situation due to lack of dedicated local institutions, weak forestry government's sector, poor law enforcement and lack of empowering and engaging local community in management as well as benefit sharing generated from forest products. As a result the forests have suffered from illegal timber harvest and sale as well as farmland encroachment. Following establishment of the OFWE as the public enterprise with clear mandate and approach to engage, empower and work in partnership with local communities. The PFM has introduced and allowed the legal transfer of forest management responsibility and use right to community living in and around the forests. This model has proven effective in reducing deforestation significantly while making forestry play considerable role in rural development and boosting household income.

The same has envisaged for the Bale eco-region where this REDD+ project has been implementing to generate incentive to strengthen sustainable forest management by avoiding illegal activities. Moreover, as outlined in the project activities the capacity of the organized local communities and that of OFWE need to further strengthen to sustain the control of illegal practices. In addition there are federal and regional level anti-corruption and bribery laws that can re-enforce any illegal activities by any agents, while law enforcement agencies have been well oriented to avoid any further illegal activities within the project boundaries.

Ethiopian Federal Constitution (1994) declared that all land; including forests belongs to the government and the people of Ethiopia while the regional states are mandated to manage land/forest within their administrative boundaries. Accordingly, in Oromia Regional state, the forest areas are given to OFWE on concession basis in order to enhance the forest development, conservation and sustainable utilization. Therefore, many forests areas in the region including the Bale Eco-region are co-managed by OFWE and the local community through Participatory Forest Management (PFM) regimes. In Bale Mountains Ecoregion, the PFM started as pilot in Adaba Dodola in 1999, and further expanded to the rest of the Ecoregion since 2007. Therefore through PFM approach, appropriate monitoring and evaluation protocol is designed for the project to track any problems encountered and to ensure timely avoidance of illegal activities.

Moreover, the efforts of avoiding illegal activities is backed by legal provision. For instance, the Federal Forest Proclamation (542/2007) states that forests shall be protected from fire, unauthorized settlement, deforestation, undertaking of mining and other similar activities. It also highlights the need for community participation and benefit sharing mechanism from sustainable forest management. The proclamation states that "Conditions shall be facilitated whereby inhabitants within a state forest shall continue living in the forest, while participating in the development and conservation of the forest, in a manner that shall not obstruct forest development; or, based on a study and in consultation with the appropriate body, they shall evacuate the forest area and settle in other areas suitable for living". The proclamation stated that forests be managed and utilized only in accordance with approved management plans. This proclamation clearly prohibits harmful practices and activities such as: cutting trees, settling temporarily or permanently, grazing domestic animals, carrying out hunting activity, carrying cutting saws and any other tools used for cutting trees; and keeping beehives or extracting honey inside forests without seeking permissions from appropriate government authority.

Similarly, Oromia Forest Proclamation (72/2003) also prohibits the following activities without appropriate permission: cut any trees, make charcoal, settle in the forests, keep domestic animals in the forest, hunt, keep beehives or harvest honey, and take natural resources. Specifically, this Proclamation prohibits cutting and utilizing of some endangered forest tree species such as *Hagenia abyssinica*, *Cordia africana*, *Podocarpus falcatus*, *Prunus africanus*, and *Juniperus procera*.

2.5.5 Ongoing Disputes (G5.5)

It has been discussed and agreed that as much as possible conflicts and problems should be transparently, and quickly be managed and/or resolved through this traditionally well accepted procedure. It has emphasized that the elders committee established in CBOs structure should be available to hearing of complaints and providing a platform for discussion and resolving of the conflict within a month time period. Project stakeholders can raise complaints and grievances to the elderly committee or its member either verbally or in writing. However, resolution reached, whether resolved or not, should be communicated to the parties involved in writing. The elderly committee is made aware the requirement for keeping records of every complaint and keep track of the status. In case conflicts could not be resolved at the level of the elderly committee, subsequent procedure for grievance resolution will follow the formal judiciary procedure of the country moving from district level courts to subsequent higher level as long as the grievance remains unsolved .

In the years between 2017-2018 due to political unrest major problems like, illegal settlement, illegal agriculture land expansion and illegal forest resources utilization were happened by people living in and out side the project area. This created dispute between PFM CBOs and illegal doers. To control the dispute, the project has communicated with relevant government stakeholders at regional, zonal and woreda levels. Following this, law enforcement workshop organized at zone level and the workshop resulted in the establishment of taskforce at zone, woreda/district and kebele levels. These tasks forced did a coordinated job and manage to settle the dispute by convicting those who mobilize illegal doers. The taskforce also provided awareness creation to the members of the CBO and this contributed to solve the dispute between illegals in the forest and PFM CBO.



Figure 5 Task force meeting at Kebele level



Figure 6 Taskforce members at controlling illegal actions in the forest

2.5.6 National and Local Laws (G5.6)

The Ethiopian forest law proclamation number 1065/2018 was the only law that came to effect after bale REDD+ validation which is relevant to the REDD+ project activity, article 15/4 stated that “management of the forest shall be in manner to generate revenue from eco-tourism, carbon trade and other related ecosystem service” (See annex 24). To serve as center of excellence for the country endeavor of REDD+ implementation, Bale REDD+ II project developed and funded by Royal Norwegian Embassy on March 2016 (see annex 29 Bale REDD+ II project agreement). The project intends to support the sustainability of a PFM-REDD+ approach in Ethiopia, established and supported national REDD+ actors’ network to served as an active platform to share lessons and knowledge generated from Bale.

3 CLIMATE

3.1 Monitoring GHG Emission Reductions and Removals

3.1.1 Data and Parameters Available at Validation

Data / Parameter	Deforestation Dry evergreen Forest
Data unit	Hectares
Description	The annual area of Dry evergreen forest converted to non-forest vegetation.
Source of data	Analysis of Landsat images of 2000, 2005, 2009 and 2011 available in GIS data files and Methodological LUC (Annex 9)
Value applied	10,738.9 Ha/year Average annual deforested area on the historical reference period (2000-2011).

Justification of choice of data or description of measurement methods and procedures applied	Deforestation will be measured using the same steps of the Methodological steps used and presented in the LUC (Annex 9) (and Forest Cover Benchmark Map (2011) to obtain annual increments in classes of non-forest land in the period 2001-2011. Using the same land use matrix with Remote Sensing and GIS Techniques, the analysis for land cover change was performed using medium resolution imagery with some high resolution imagery for and ground truthing data for verification
Purpose of the data	Determination of baseline scenario
Comments	See Methodological LUC Annex 9

Data / Parameter	Deforestation moist Forest
Data unit	Hectares
Description	The annual area of moist forest converted to non-forest vegetation.
Source of data	Analysis of landsat images of 2000, 2005, 2009 and 2011 available in GIS data files and Methodological LUC (Annex 9)
Value applied	5,429.6 Ha/year Average annual deforested area on the historical reference period (2000-2011).
Justification of choice of data or description of measurement methods and procedures applied	Deforestation was measured using the steps described on the Methodological LUC Annex9, including the Forest Cover Benchmark Map (2011) to obtain annual increments in classes of non-forest land in the period 2000-2011 (time-steps 2000-2005-2009-2011). Using the land use matrix with Remote Sensing and GIS Techniques. The analysis for land cover change was performed using medium resolution imagery with some high resolution imagery for and ground truthing data for verification.
Purpose of the data	
Comments	See Methodological LUC Annex 9

Data / Parameter	Carbon stock in Dry Forest aboveground biomass
Data unit	tons C/ha or tons CO ₂ e/ha
Description	Dry Afromontane forest is one of the forest strata identified in the Bale Eco-region. The above ground biomass refers to the carbon stock in the woody live vegetation in this forest stratum.
Source of data	Forest inventory for DBH in combination with global allometric equation and national Wood Density data.
Value applied	99.71 tC/ha
Justification of choice of data or description of measurement methods and procedures applied	Forest inventory was conducted to determine the biomass carbon stocks. A nested 1 ha plot size was laid and dendrometric parameter of trees within the plots (DBH) was measured including tree species identification. Then Chaves et al., 2005 allometric equation was applied with national/Regional WD value to estimate biomass, with carbon stocks per tree estimated to be approximately 0.5 of the biomass based on IPCC good practice guide.
Purpose of the data	Determination of baseline scenario

Comments	See Bale Forest carbon stocks assessment manual (Annex 10)
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Data / Parameter	Carbon stock in Moist Forest aboveground biomass
Data unit	tons C/ha or tons CO ₂ e/ha
Description	tons of carbon per hectare in aboveground biomass within the Moist Forest class (stratum) in the BALE Eco-Region
Source of data	Forest inventory conducted as above
Value applied	176.54 tC/ha
Justification of choice of data or description of measurement methods and procedures applied	Forest inventory was conducted to determine the biomass carbon stock in the moist forest stratum of the eco-region. A nested 1 ha plot size was laid and dendrometric parameter of trees within the plots (DBH) was measured including tree species identification. Then Chaves et al., 2005 allometric equation was applied with national/Regional WD value to estimate biomass, with carbon stocks per tree estimated to be approximately 0.5 of the biomass based on IPCC good practice guide..
Purpose of the data	Determination of baseline scenario
Comments	See Bale Forest Inventory Report and Bale carbon stocks assessment manual. (Annex 10)

Data / Parameter	Mean Wood density of species
Data unit	gram/cubic centimeter (g/cm ³)
Description	Average basic wood density for major species in Bale eco-region
Source of data	Data on basic wood density of tree species in Bale eco-region was obtained from secondary sources, mainly national research report as described in. (Annex 13)
Value applied	0.6gm/cm ³
Justification of choice of data or description of measurement methods and procedures applied	Data on basic wood density of major tree species in Bale eco-region was obtained, and averaged to develop an average basic wood density to be used in the allometric equation. Although the average wood density value obtained was 0.669 (ca. 0.67 g/cm ³), we applied a conservative value of 0.6 gm/cm ³ in the allometric equation. (Annex 13)
Purpose of the data	To calculate baseline emission
Comments	

Data / Parameter	An allometric equation for forest type j, linking above ground biomass (in kg tree ⁻¹) to diameter at breast height (DBH) and possible tree height (H)
Data unit	None

Description	Global allometric equation developed by Chave et al., 2005 for dry and moist tropical forest (forest type) was used to calculate AGB (kg/tree) using wood density and DBH parameters only. Height was not considered
Source of data	Chave et al., 2005 (scientific article) (Appendix10)
Value applied	
Justification of choice of data or description of measurement methods and procedures applied	
Purpose of the data	Determination of baseline scenario
Comments	An allometric equation for forest type j, linking above ground biomass (in kg tree ⁻¹) to diameter at breast height (DBH) and possible tree height (H)

Data / Parameter	DBH
Data unit	Centimeter
Description	Diameter at breast height of individual trees within sample plots
Source of data	Field direct measurement
Value applied	
Justification of choice of data or description of measurement methods and procedures applied	Measure the diameter of trees at breast height (DBH) or 1.3 meters of all trees with DBH ≥2 cm using caliper and diameter tape. Detail of the measurement procedure is provided in forest carbon measurement manual (Annex 10)
Purpose of the data	Determination of baseline scenario
Comments	

Data / Parameter	Community forest income change
Data unit	
Description	Household economic data collection using randomly selected sample households and compare this with baseline income level from NTFP especially Coffee
Source of data	House hold survey and secondary data like reports
Value applied	USD 568

Justification of choice of data or description of measurement methods and procedures applied	Comparative analysis of household income
Purpose of the data	To determine the project efficiency
Comments	The base line which is taken on 2017 was USD 523 and increased to 568 USD which is 9% increased see annex 28

Data / Parameter	Number of sample unit to be measured in LU/LC class cl that is allocated proportional to the size of the class. If estimated $ncl < 3$, set $ncl = 3$
Data unit	No
Description	The total number of sampling units taken from the forest to estimate CO ₂ per hectare of the forest. The decision on the number of plots depends on vegetation type, logistics, accuracy level, manpower and cost. The number of samples for each stratum is selected proportional to its size. See (Annex 3)
Source of data	(Annex 3)
Value applied	17 sample plot from dry forest 62 plots from moist forest
Justification of choice of data or description of measurement methods and procedures applied	The total number of plots to be measured was determined using a tool developed by Winrock International for generating number of plots (http://www.winrock.org/Ecosystems/tools.asp).
Purpose of the data	Determination of baseline scenario
Comments	Number of sample unit to be measured in LU/LC class cl that is allocated proportional to the size of the class. If estimated $ncl < 3$, set $ncl = 3$

Data / Parameter	Total area of projected baseline deforestation during the fixed baseline period of Bale REDD+ project
Data unit	Hectares
Description	The annual forest area expected to be converted into other non-forest land uses within the 20 years project period (from 2012-

	2031) in project area (PA), Leakage Belt (LK) and Reference Region (RR)
Source of data	Projection based on average historical deforestation based on the analysis of land sat image of 2000, 2005, 2009 and 2011 as described in the Methodological LUC Annex 9
Value applied	A total 289082.8 ha of forest predicted to be deforested within 20 years 287752.170
Justification of choice of data or description of measurement methods and procedures applied	Historic deforestation (2000-2011) was assessed using the steps described in the Methodological framework presented in the LUC Annex 9 (and Forest Cover Benchmark Map (2011) to obtain average deforestation rate. The established average deforestation rate for each stratum was then applied to the base map to estimate future deforestation for the years 2012-2031.
Purpose of the data	Determination of baseline scenario
Comments	

Data / Parameter	Average carbon stock per hectare in the aboveground biomass carbon pool of initial forest class icl (Moist forest stratum)
Data unit	tons C/ha
Description	tone of carbon stock per hectare in above ground biomass
Source of data	Original forest inventory was conducted and data collected by OFWE, Farm Africa, SOS Sahel Ethiopia and NCRC
Value applied	Average above ground biomass 176.54 tC/ha
Justification of choice of data or description of measurement methods and procedures applied	Stratified sampling technique was applied, in which moist forest formed one of the strata. Nested 1 ha size plot was used and a total of 62 sample plots inventoried. Dendrometric parameter, principally DBH (cm), of trees falling in the sample plots were measured. Biomass per tree was estimated using Chaves et al., 2005 allometric equation (for moist tropical forest in this case), summed to per plot and hectare basis. Then, plot biomass was averaged to a per hectare biomass by strata. For estimating carbon stock, the carbon fraction of 50% based on IPCC good practice guide was applied.
Purpose of the data	Determination of baseline scenario
Comments	

Data / Parameter	Average carbon stock per hectare in the aboveground biomass carbon pool of initial forest class icl (Dry forest stratum)
Data unit	tons C/ha

Description	tone of carbon stock per hectare in above ground biomass
Source of data	Original forest inventory was conducted and data collected by OFWE, Farm Africa, SOS Sahel Ethiopia and NCRC
Value applied	Average above ground biomass 99.71 t C/ha
Justification of choice of data or description of measurement methods and procedures applied	Stratified sampling technique was applied, in which dry forest stratum was one. A nested 1 ha plot size was used for the inventory. A total of 17 plots were inventoried. Dendrometric parameter, principally DBH (cm), of all trees falling within the plots were measured. Biomass per tree was estimated using Chaves et al., 2005 allometric equation (for dry tropical forest), summed to per plot and hectare basis. Then, plot biomass was averaged to a per hectare biomass. For estimating carbon stock, the carbon fraction of 50% based on IPCC good practice guide was applied.
Purpose of the data	Determination of baseline scenario
Comments	

Data / Parameter	Average carbon stock per hectare in the below ground biomass carbon pool of initial forest class icl (Dry and moist strata)
Data unit	Tons C/ha
Description	Tone of carbon stock per hectare in above ground biomass
Source of data	Forest inventory conducted NCRC, OFWE, Farm Africa and SOS Sahel Ethiopia
Value applied	For moist forest 42.37 t/ha, and for Dry forest 26.92 t/ha.
Justification of choice of data or description of measurement methods and procedures applied	Below ground biomass and carbon stock were derived from Above ground biomass and carbon stock, were measured as described above. The Below ground biomass and carbon were calculated applying the IPCC good practice guide: which indicates root: shoot of 24% for moist forest and 27% for dry forest.
Purpose of the data	Determination of baseline scenario
Comments	

Data / Parameter	Cumulative actual carbon stock change due to un avoided unplanned deforestation at year t in the project area
Data unit	tCO ₂ -e
Description	Total amount of CO ₂ e GHG emitted from the project during the project life time

Source of data	Predicted deforestation (activity data) multiplied by the emission factor obtained from forest inventory
Value applied	627245.54 tCO ₂ -e (average of 20 years)
Justification of choice of data or description of measurement methods and procedures applied	The average carbon stock per hectare by forest stratum (emission factor in CO ₂ e) was obtained from forest inventory and was multiplied by predicted deforestation by forest strata and cumulated over the project life time to provide ex ante cumulative carbon stock change from unavoided unplanned deforestation.
Purpose of the data	Determination of baseline scenario
Comments	See Annex 3

Data / Parameter	Total actual carbon stock change due to un avoided unplanned deforestation at year t in the project area
Data unit	tCO ₂ -e
Description	Total CO ₂ -e emitted during the project life time
Source of data	Emission factor (obtained from forest inventory) & activity data per year and per forest stratum as obtained from projected deforestation
Value applied	12544910.88 tCO ₂ -e
Justification of choice of data or description of measurement methods and procedures applied	The emission factor established for each forest stratum based on forest inventory was multiplied by the activity data per year and forest stratum and the resulting value summed up to the project life time.
Purpose of the data	Determination of baseline scenario
Comments	See Annex 3

Data / Parameter	Cumulative net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity
Data unit	tCO ₂ -e
Description	The total amount of anthropogenic gas emission reduced due to project intervention for the given period of time.
Source of data	Forest inventory for emission factor, and projected deforestation and project claimed performance factor
Value applied	25776421.4 (cumulative over the project period)

Justification of choice of data or description of measurement methods and procedures applied	The emission factor was multiplied by activity data and the result was reduced by the factor of performance factor to estimate net emission reduction due to the project.
Purpose of the data	Determination of baseline scenario
Comments	See Annex 3

Data / Parameter	Net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity at year t
Data unit	tCO ₂ -e
Description	Mean anthropogenic gas emission reduced due to project intervention per year (average of 20 years).
Source of data	Emission factor from forest inventory, projected activity data from historic deforestation and performance factor by the project
Value applied	128,8821 (average of 20 years)
Justification of choice of data or description of measurement methods and procedures applied	Emission factor was established for the different forest stratum based on forest inventory, this was multiplied by activity data projected based on historic deforestation and finally the product of the two multiplied by the project claimed performance factor.
Purpose of the data	Determination of baseline scenario
Comments	See Annex 3

Data / Parameter	Risk factor used to calculate VCS buffer credits
Data unit	%
Description	This refers to risk elements that may affect forest carbon stock and is used to estimate buffer credits based on VCS non-permanence risk tool.
Source of data	Project social, political, economic and environmental situation assessment or analysis (elements required in the VCS non-permanence risk tool)
Value applied	15%

Justification of choice of data or description of measurement methods and procedures applied	Risk factors derived based on the guideline in the VCS-approved AFOLU Non-Permanence Tool
Purpose of the data	Determination of baseline scenario
Comments	See Annex 11 and 12

Data / Parameter	Root-shoot ratio appropriate for species, group of species or forest type
Data unit	%
Description	The ratio of the amount of belowground biomass (root) divided by above ground tree biomass.
Source of data	IPCC good practice guide
Value applied	24% for moist forest and 27% for dry forest
Justification of choice of data or description of measurement methods and procedures applied	The root-shoot ratio for calculating below ground biomass of the forest strata was obtained from IPCC good practice guide. Different value was used for the different stratum available in the project forest
Purpose of the data	Determination of baseline scenario
Comments	See Annex 3

Data / Parameter	Start date of the historical reference period
Data unit	Year
Description	The year 2000 is the start year of historical reference period which is 2000-2011
Source of data	See SM 04 (10-15 years before project start date was used as a reference to determine the historic reference period, based on IPCC guide
Value applied	
Justification of choice of data or description of measurement methods and procedures applied	

Purpose of the data	
Comments	Done once at the project start

Data / Parameter	Duration of the historical reference period
Data unit	Years
Description	2000-2011 (12 years)
Source of data	Remote sensing image analysis
Value applied	
Justification of choice of data or description of measurement methods and procedures applied	
Purpose of the data	
Comments	Done only once at project start

Data / Parameter	Number of Buffer credits deposited in the VCS Buffer at time t
Data unit	tCO ₂ e
Description	The amount of tCO ₂ e GHG set aside as buffer to make up the risk identified for the project.
Source of data	Risk assessment for the project
Value applied	193,323 tCO ₂ e (average of 20 years)
Justification of choice of data or description of measurement methods and procedures applied	The net emission reduction calculated for the project was multiplied by the buffer risk (15%) to obtain buffer credit by each year. The annual value is cumulated to total project life time buffer credit.
Purpose of the data	To calculate the number of buffer credit deposited annually
Comments	This baseline data

Data / Parameter	Number of Verified Carbon Units(VCUs) to be made available for trade at time t
Data unit	tCO ₂ e
Description	The net tCO ₂ e GHG available after reduction of buffer for risk
Source of data	Carbon assessment

Value applied	1,095,498
Justification of choice of data or description of measurement methods and procedures applied	The net VCU available for trade is obtained after reducing the buffer for risk value from the ex-ante net emission reduction by the project. The verified Carbon Units (VCTs) are calculated by subtracting the number of Buffer Credits (BCt) deposited in the VCS Buffer at time <i>t</i> ; from the <i>Ex ante</i> estimated net anthropogenic greenhouse gas emission reduction by the project
Purpose of the data	To calculate annual average VCU
Comments	

3.1.2 Data and Parameters Monitored

Data / Parameter	Area of dry ever green and moist forest deforested in 20 years within the leakage belt in the baseline case
Data unit	Hectares /year
Description	The annual leakage belt forest converted to non- forest land use
Source of data	Analysis of Landsat images of 2000, 2005, 2009 and 2011 available in GIS data files and Methodological LUC (Annex 9)
Description of measurement methods and procedures to be applied	Prediction of forest area changed to non forest area in leakage belt done based on the historical deforestation analysis in the leakage belt Deforestation measured using the same steps of the Methodological steps used and presented in the LUC Annex 9. Based on the historical land-use and land-cover change analysis (detailed in the Methodological Annex) a historical rate for each forest strata were estimated, using an historical reference period of 2000-2011 (see VM0015, v1.1, Table 8).
Frequency of monitoring/recording	Every 5 years
Value monitored	571.8ha/year of dry evergreen forest and 1011.8 ha/year of moist forest
Monitoring equipment	ARCGIS, Medium resolution LND SAT image

QA/QC procedures to be applied	See QA QC protocols in Annex6 of Bale forest carbon assessment manual
Purpose of the data	Calculation of leakage.
Calculation method	See Methodological LUC Annex for Imagery, Soft wares and methods used. The validation of deforestation complemented by observation, verification and in situ monitoring
Comments	No change to the baseline data

Data / Parameter	Area dry evergreen and moist forest deforested in 20 years within the project area in the baseline case
Data unit	Hectares
Description	The annual area of dry ever green and moist forest converted to non-forest land use with in the project area
Source of data	Analysis of Landsat images of 2000, 2005, 2009 and 2011 available in GIS data files and Methodological LUC (Annex 9)
Description of measurement methods and procedures to be applied	Deforestation measured using the same steps of the Methodological steps used and presented in the LUC Annex for the PDD.
Frequency of monitoring/recording	Every five years
Value monitored	Average 726.48 ha/year of dry evergreen and average 3481 ha/year of moist forest
Monitoring equipment	ARCGIS, Medium resolution LND SAT image
QA/QC procedures to be applied	See QA QC protocols in Annex6 of Bale forest carbon assessment manual
Purpose of the data	Calculation of baseline emissions.
Calculation method	See Methodological LUC Annex for Imagery, Software and methods used. The validation of deforestation will be complemented by observation, verification and in situ monitoring
Comments	No change to the baseline data

Data / Parameter	Area dry evergreen and moist forest deforested in 20 years within the reference region in the baseline case
Data unit	Hectares

Description	The annual area of dry ever green and moist forest converted to non-forest land use in the reference region
Source of data	Analysis of Landsat images of 2000, 2005, 2009 and 2011 available in GIS data files and Methodological LUC (Annex 9)
Description of measurement methods and procedures to be applied	Deforestation measured using the same steps of the Methodological steps used and presented in the LUC annex 9.
Frequency of monitoring/recording	Five years
Value monitored	6,472 ha/year of dry evergreen and 4,559 ha/year moist forest
Monitoring equipment	ARCGIS, Medium resolution LND SAT image
QA/QC procedures to be applied	See QA / QC protocols document in Annex 10 of Bale forest carbon stocks assessment manual
Purpose of the data	Calculation of baseline emissions.
Calculation method	See Methodological LUC Annex for Imagery, Soft wares and methods used. The validation of deforestation will be complemented by observation, verification and in situ monitoring
Comments	No change to the baseline data

Data / Parameter	Plot area
Data unit	Meter square (m ²)
Description	This is a sample of forest from which forest biomass data was collected. A size of 10,000 m ² or equivalent to 1 ha size was applied.
Source of data	The size and shape applied was based on Pearson et al, (2005) as recommended also by VM0015 v1.1.
Description of measurement methods and procedures to be applied	The plot area has major influence on the sampling intensity, time and resources spent in the field measurements. The area of a plot depends on the stand density , accordingly 17 sample plots from dry evergreen and 62 sample plots were from moist forest were taken.
Frequency of monitoring/recording	None
Value monitored	1ha (10000 m ²)
Monitoring equipment	Measuring tape

QA/QC procedures to be applied	See QA / QC protocols document in Annex 10 of Bale forest carbon stocks assessment manual
Purpose of the data	Calculation of baseline emissions.
Calculation method	The design of the sampling framework and execution of the field measurements followed the guidance of appendix 3 of the VM0015 v 1.1 and chapter 4.3 of GPG LULUCF, (2003) as well as the sourcebook for LULUCF (Pearson et al, 2005).
Comments	No change to the baseline data

Data / Parameter	Total forest area in dry evergreen forest within the reference region at the project start date
Data unit	Hectare
Description	The dry evergreen montane forest is a complex vegetation type occurring within an altitudinal range of 1500-2700 m, with average annual temperature and rainfall of 14-25° C and 700-1100 mm, respectively Lowland and highland dry forest are included in one class. These are located on the north side of the Bale Mountain.
Source of data	Analysis of land sat images and SPOT imagery (2011) interpretation
Description of measurement methods and procedures to be applied	The afro-alpine grassland and Erica shrub land covers were defined primarily by elevation, being above ~3,400 meters, and visual interpretation from SPOT imagery (2011). Both strata of forest were primarily located above 1,500 m of elevation and were identified by their canopy characteristics and location on the northern (e.g. dry) and southern (e.g. moist) flanks of the Bale Mountain. Precipitation, derived from the Tropical Rainfall Monitoring Mission (TRMM) was a factor included in classifying images
Frequency of monitoring/recording	Once project life time
Value monitored	22,853 ha
Monitoring equipment	ARCGIS, Medium resolution LND SAT image
QA/QC procedures to be applied	See QA / QC protocols document in Annex 21 of Bale forest carbon stocks assessment manual
Purpose of the data	Calculation of baseline emissions.
Calculation method	See Methodological LUC Annex for Imagery, Soft wares and methods used. The validation of deforestation will be

	complemented by observation, verification and in situ monitoring
Comments	No change to the baseline data

Data / Parameter	Total forest area in moist forest within the reference region at the project start date
Data unit	Hectare
Description	Mainly highland forest above 1,500 m elevation and located exclusively on the south face of Bale Mountain.
Source of data	Analysis of land sat images and SPOT imagery (2011) interpretation
Description of measurement methods and procedures to be applied	The afro-alpine grassland and Erica shrub land covers were defined primarily by elevation, being above ~3,400 meters, and visual interpretation from SPOT imagery (2011). Both strata of forest were primarily located above 1,500 m of elevation and were identified by their canopy characteristics and location on the northern (e.g. dry) and southern (e.g. moist) flanks of the Bale Mountain. Precipitation, derived from the Tropical Rainfall Monitoring Mission (TRMM) was a factor included in classifying images.
Frequency of monitoring/recording	Once project life time
Value monitored	238,200 ha
Monitoring equipment	ARCGIS, Medium resolution LND SAT image
QA/QC procedures to be applied	See QA / QC protocols document in Annex 21 of Bale forest carbon stocks assessment manual
Purpose of the data	Calculation of baseline emissions.
Calculation method	See Methodological LUC Annex for Imagery, Soft wares and methods used. The validation of deforestation will be complemented by observation, verification and in situ monitoring
Comments	No change to the baseline data

Data / Parameter	Total forest area of projected baseline deforestation during the fixed baseline period of Bale REDD+ project
Data unit	Hectare

Description	The annual area of forest area expected to be converted into other non-forest land uses within the 20 years project period (from 2012-2031) in project area (PA), Leakage Belt (LK) and Reference Region (RR)
Source of data	Projection based on average historical deforestation based on the analysis of land sat image of 2000, 2005, 2009 and 2011 as described in the Methodological LUC Annex (SM.04)
Description of measurement methods and procedures to be applied	Historic deforestation (2000-2011) was assessed using the steps described in the Methodological framework presented in the LUC Annex for the PDD (and Forest Cover Benchmark Map (2011) to obtain average deforestation rate. The established average deforestation rate for each stratum was then applied to the base map to estimate future deforestation for the years 2012-2031.
Frequency of monitoring/recording	Each renewal of fixed baseline period
Value monitored	A total 289,083 ha of forest predicted to be deforested within 20 years
Monitoring equipment	ARCGIS, Medium resolution LND SAT image
QA/QC procedures to be applied	See QA / QC protocols document in Annex 10 of Bale forest carbon stocks assessment manual
Purpose of the data	Calculation of baseline emissions.
Calculation method	See Methodological LUC Annex for Imagery, Soft wares and methods used. The validation of deforestation will be complemented by observation, verification and in situ monitoring
Comments	No change to the baseline data

Data / Parameter	Average carbon stock per hectare in the above-ground biomass carbon pool of initial forest class icl (Moist forest stratum)
Data unit	tons C/ha
Description	tone of carbon stock per hectare in above ground biomass
Source of data	Original forest inventory was conducted and data collected by OFWE, Farm Africa, SOS Sahel Ethiopia and NCRC
Description of measurement methods and procedures to be applied	Stratified sampling technique was applied, in which moist forest formed one of the strata. Nested 1 ha size plot was used and a total of 62 sample plots inventoried. Dendrometric parameter, principally DBH (cm), of trees

	falling in the sample plots were measured. Biomass per tree was estimated using Chaves et al., 2005 allometric equation (for moist tropical forest in this case), summed to per plot and hectare basis. Then, plot biomass was averaged to a per hectare biomass by strata. For estimating carbon stock, the carbon fraction of 50% based on IPCC good practice guide was applied.
Frequency of monitoring/recording	Every five years
Value monitored	Average above ground biomass 176.54 tC/ha
Monitoring equipment	Conducting forest inventory
QA/QC procedures to be applied	See QA QC protocols in Annex 10 of Bale forest carbon assessment manual. Or supplementary material 03b
Purpose of the data	Calculation of baseline emission
Calculation method	Individual tree biomass was calculated using Chave et al., 2005 allometric equation, for moist tropical forest. For wood density average value for species in the eco-region was applied (SM 32). Individual tree biomass is summed up to plot biomass. Then, plot biomass measurements were averaged to stand biomass per hectare.
Comments	No change to the baseline data

Data / Parameter	Average carbon stock per hectare in the above-ground biomass carbon pool of initial forest class icl (Dry forest stratum)
Data unit	tons C/ha
Description	tone of carbon stock per hectare in above ground biomass
Source of data	Original forest inventory was conducted and data collected by OFWE, Farm Africa, SOS Sahel Ethiopia and NCRC
Description of measurement methods and procedures to be applied	Stratified sampling technique was applied, in which dry forest stratum was one. A nested 1 ha plot size was used for the inventory. A total of 17 plots were inventoried. Dendrometric parameter, principally DBH(cm), of all trees falling within the plots were measured. Biomass per tree was estimated using Chaves et al., 2005 allometric equation (for dry tropical forest), summed to per plot and hectare basis. Then, plot biomass was averaged to a per hectare biomass. For estimating carbon stock, the carbon fraction of 50% based on IPCC good practice guide was applied.

Frequency of monitoring/recording	Every five years
Value monitored	Average above ground biomass 99.71 t C/ha
Monitoring equipment	Conducting forest inventory
QA/QC procedures to be applied	See QA QC protocols in Annex 10 of Bale forest carbon assessment manual. Or supplementary material 03b
Purpose of the data	Determination of baseline scenario
Calculation method	Individual tree biomass was calculated using Chave et al., 2005 allometric equation for dry tropical forest. For wood density average value for species in the eco-region was applied (SM 32). Individual tree biomass is summed up to plot biomass. Then, plot biomass measurements were averaged to stand biomass per hectare.
Comments	No change to the baseline data

Data / Parameter	Average carbon stock per hectare in the below ground biomass carbon pool of initial forest class icl (Dry and moist strata)
Data unit	tons C/ha
Description	tone of carbon stock per hectare in below ground biomass
Source of data	Forest inventory conducted NCRC, OFWE, Farm Africa and SOS Sahel Ethiopia
Description of measurement methods and procedures to be applied	Below ground biomass and carbon stock were derived from Above ground biomass and carbon stock, were measured as described above. The Below ground biomass and carbon were calculated applying the IPCC good practice guide: which indicates root: shoot of 24% for moist forest and 27% for dry forest.
Frequency of monitoring/recording	Every five years
Value monitored	For moist forest 42.37 t/ha, and for Dry forest 26.92 t/ha.
Monitoring equipment	See QA QC protocols in Annex 10 of Bale forest carbon assessment manual
QA/QC procedures to be applied	See QA QC protocols in Annex 10 of Bale forest carbon assessment manual
Purpose of the data	Determination of baseline scenario
Calculation method	After calculating the above ground biomass, it is assumed that below ground biomass of a tree consisted 27% and

	24% of the total above ground biomass for the dry and moist forests, respectively.
Comments	No change to the baseline data

Data / Parameter	Total baseline carbon stock changes for the above-ground biomass pool in the project area
Data unit	t C/ha
Description	Total CO ₂ -e emitted during the project life
Source of data	Emission factor (obtained from forest inventory) & activity data per year and per forest stratum as obtained from projected deforestation
Description of measurement methods and procedures to be applied	The average above ground carbon stock per ha calculated for each forest stratum (176.54 tC/ha for moist forest and 99.71tC/ha for dry forest see annex 3 worksheet (Mean C stock per ha) based on forest inventory was multiplied by the activity data per year and forest stratum and the resulting value summed up to the project life time above ground carbon stock change .
Frequency of monitoring/recording	Once project life time
Value monitored	13,739,808
Monitoring equipment	See QA QC protocols in Annex 10 of Bale forest carbon assessment manual
QA/QC procedures to be applied	See QA QC protocols in Annex 10 of Bale forest carbon assessment manual
Purpose of the data	Determination of baseline scenario
Calculation method	The activity data multiplied for the emission factor developed for each stratum
Comments	No change to the baseline data

Data / Parameter	Total baseline carbon stock changes for the below -ground biomass pool in the project area
Data unit	t C/ha
Description	Total CO ₂ -e emitted during the project life
Source of data	Emission factor (obtained from forest inventory) & activity data per year and per forest stratum as obtained from projected deforestation

Description of measurement methods and procedures to be applied	The average above ground carbon stock per ha calculated for each forest stratum (42.37 tC/ha for moist forest and 26.92 tC/ha for dry forest see annex 3 worksheet (Mean C stock per ha) based on forest inventory was multiplied by the activity data per year and forest stratum and the resulting value summed up to the project life time above ground carbon stock change .
Frequency of monitoring/recording	Once project life time
Value monitored	3,341,023
Monitoring equipment	See QA QC protocols in Annex 10 of Bale forest carbon assessment manual
QA/QC procedures to be applied	See QA QC protocols in Annex 10 of Bale forest carbon assessment manual
Purpose of the data	Determination of baseline scenario
Calculation method	The activity data multiplied for the emission factor developed for each stratum
Comments	No change to the baseline data

Data / Parameter	Cumulative actual carbon stock change due to un avoided unplanned deforestation at year t in the project area
Data unit	tons C/ha
Description	Total amount of CO ₂ e GHG emitted from the project during the project life time
Source of data	Predicted deforestation (activity data) multiplied by the emission factor obtained from forest inventory
Description of measurement methods and procedures to be applied	The average carbon stock per hectare by forest stratum (emission factor in CO ₂ e) was obtained from forest inventory and was multiplied by predicted deforestation by forest strata and cumulated over the project life time to provide ex-ante cumulative carbon stock change from un-avoided unplanned deforestation.
Frequency of monitoring/recording	Annually
Value monitored	627,245 tCO ₂ -e (average of 20 years)
Monitoring equipment	Conducting forest inventory, remote sensing GIS and land sat

QA/QC procedures to be applied	See QA QC protocols in Annex6 of Bale forest carbon assessment manual (Appendix 9)
Purpose of the data	Determination of baseline scenario
Calculation method	Multiplying the activity data with the average emission factor of each stratum
Comments	No change to the baseline data

Data / Parameter	Total actual carbon stock change due to un avoided unplanned deforestation at year t in the project area
Data unit	t CO ₂ -e
Description	Total CO ₂ -e emitted during the project life time
Source of data	Emission factor (obtained from forest inventory) & activity data per year and per forest stratum as obtained from projected deforestation
Description of measurement methods and procedures to be applied	The emission factor established for each forest stratum based on forest inventory was multiplied by the activity data per year and forest stratum and the resulting value summed up to the project life time.
Frequency of monitoring/recording	Annually
Value monitored	12,544,911
Monitoring equipment	Conduct forest inventory, remote sensing image analysis
QA/QC procedures to be applied	See QA QC protocols in Annex6 of Bale forest carbon assessment manual
Purpose of the data	Determination of baseline scenario
Calculation method	Multiplication of emission factor by forest stratum with projected annual activity data per stratum, then adding the annual value to the total project life time.
Comments	No change to the baseline data

Data / Parameter	Cumulative actual carbon stock change due to un avoided unplanned deforestation at year t in the project area
Data unit	tCO ₂ -e
Description	Total amount of CO ₂ e GHG emitted from the project during the project monitoring period (2016-2019)
Source of data	Actual deforestation (activity data) and emission factor obtained from forest inventory

Description of measurement methods and procedures to be applied	Deforestation of 4 years was analyzed using Landsat image, the Emission factor was taken from initial forest inventory (Appendix1a and 2,3)
Frequency of monitoring/recording	Five years
Value monitored	3,787,520
Monitoring equipment	Landsat image, GPS, ENVI5.0
QA/QC procedures to be applied	QA QC protocols of PDD was followed
Purpose of the data	Calculation of project emissions
Calculation method	Emission factor per forest strata multiplied by actual deforestation of each forest strata
Comments	The monitoring was initial supposed to be carry out every 5 year but due to lack of market for the first verified carbon the monitoring was carried out at year 4 which did not bring any change

Data / Parameter	Cumulative Anthropogenic Green House Gas Emission reduction attributable to AUD project activity
Data unit	tCO ₂ -e
Description	Quantity of CO ₂ e GHG emission avoided in the project area during project's implementation period
Source of data	Forest carbon inventory data (excel sheet named as "Mean C after uncertainty" Annex 3)
Description of measurement methods and procedures to be applied	Mean tCO ₂ e/ha of each forest stratum obtained from forest carbon inventory Avoided deforestation in each forest strata
Frequency of monitoring/recording	Five years
Value monitored	4,931,978 tCO ₂ e
Monitoring equipment	Excel sheet
QA/QC procedures to be applied	See QA QC protocols in Annex10 of Bale forest carbon assessment manual
Purpose of the data	Calculation of project emissions

Calculation method	Mean tCO ₂ e/ha of each forest stratum obtained from forest carbon inventory multiplied by avoided deforestation in respective forest stratum
Comments	See Annex 3

Data / Parameter	Net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity at year t
Data unit	tCO ₂ -e
Description	Mean anthropogenic gas emission reduced due to project intervention per year
Source of data	Emission factor from forest inventory, projected activity data from historic deforestation and performance factor by the project
Description of measurement methods and procedures to be applied	Emission factor was established for the different forest stratum based on forest inventory, this was multiplied by activity data projected based on historic deforestation and finally the product of the two multiplied by the project claimed performance factor.
Frequency of monitoring/recording	Annually
Value monitored	1,288,821 (average of 20 years)
Monitoring equipment	Forest inventory, and remote sensing image analysis
QA/QC procedures to be applied	See QA QC protocols in Annex10 of Bale forest carbon assessment manual
Purpose of the data	Determination of baseline scenario
Calculation method	Emission factor multiplied by activity data multiplied by the performance factor per year.
Comments	No change to the baseline data

Data / Parameter	Mean Wood density of species
Data unit	Gram/cubic centimeter (g/cm ³)
Description	Average basic wood density for major species in Bale eco-region
Source of data	Data on basic wood density of tree species in Bale eco-region was obtained from secondary sources, mainly national research report as described in PDD supplementary material 32.

Description of measurement methods and procedures to be applied	Data on basic wood density of major tree species in Bale eco-region was obtained, and averaged to develop an average basic wood density to be used in the allometric equation. Although the average wood density value obtained was 0.669 (ca. 0.67 g/cm ³), we applied a conservative value of 0.6 gm/cm ³ in the allometric equation. see supplementary material 32
Frequency of monitoring/recording	Once project life time
Value monitored	0.6gm/cm ³
Monitoring equipment	Forest inventory equipment
QA/QC procedures to be applied	Literature review
Purpose of the data	Determination of baseline scenario
Calculation method	Density of tree species found in the Bale forest was identified from literature and their average was computed to use it for tree carbon calculation.
Comments	No change to the baseline data

Data / Parameter	Ex ante estimated effectiveness index
Data unit	%
Description	The effectiveness of project activities in addressing deforestation.
Source of data	Project self assessment
Description of measurement methods and procedures to be applied	Project proponent assessed its project implementation potential based on performance history
Frequency of monitoring/recording	Annually
Value monitored	The project assumes an effectiveness index of 50% during the initial years of implementation and will increase gradually to 80%. The average is 68.75%
Monitoring equipment	Not applicable
QA/QC procedures to be applied	Not applicable
Purpose of the data	Determination of baseline scenario

Calculation method	Capacity assessment
Comments	No change to the baseline data

Data / Parameter	Sum of ex-ante estimated leakage emission at year t
Data unit	tCO ₂ -e
Description	Ex-ant estimation of CO ₂ e emission from deforestation in the leakage belt+
Source of data	Forest inventory to establish emission factor and projected deforestation based on historic deforestation analysis for activity data in the leakage belt
Description of measurement methods and procedures to be applied	Forest inventory was conducted to establish emission factor, while historic deforestation rate was analyzed to establish activity data for the leakage belt as in the project area.
Frequency of monitoring/recording	Annually
Value monitored	13,718,648
Monitoring equipment	forest inventory and remote sensing
QA/QC procedures to be applied	See QA QC protocols in Annex10 of Bale forest carbon assessment manual
Purpose of the data	Determination of baseline scenario
Calculation method	
Comments	No change to the baseline data

Data / Parameter	An allometric equation for species, or forest type j, linking above ground biomass (in kg tree ⁻¹) to diameter at breast height (DBH) and possible tree height (H)
Data unit	None
Description	Global allometric equation developed by Chave et al., 2005 for dry and moist tropical forest (forest type) was used to calculate AGB (kg/tree) using wood density and DBH parameters only. Height was not considered
Source of data	Chave et al., 2005 (scientific article) See PDD SM 03b
Description of measurement methods and procedures to be applied	The allometric question developed using destructive method by cutting all trees in one hectare and dry biomass of the whole tree calculated to find the carbon stock per hectare of a given forest. For forests where

	such study not conducted adopt the equation that developed in similar forests.
Frequency of monitoring/recording	Only once at project start
Value monitored	Dry forest Above ground bio mass= $WD \cdot \exp(-0.667 + (1.784 \cdot \ln(D)) + (0.207 \cdot (\ln(D))^2 - (0.0281 \cdot (\ln(D))^3))$ Moist forest above ground biomass= $WD \cdot \exp(-1.499 + (2.148 \cdot \ln(\text{Diameter})) + (0.207 \cdot (\ln(\text{Diameter}))^2 - (0.0281 \cdot (\ln(\text{Diameter}))^3))$
Monitoring equipment	Excel sheet
QA/QC procedures to be applied	Literature review
Purpose of the data	Determination of baseline scenario
Calculation method	Using different software like SPSS or C++
Comments	No change to the baseline data

Data / Parameter	Total number of sample units to be measured (in all LU/LC classes)
Data unit	Number
Description	The total number of sampling units taken from the forest to estimate CO2 per hectare of the forest. The decision on the number of plots depends on vegetation type, logistics, accuracy level, manpower and cost. See (Annex 3)
Source of data	(Annex 3)
Description of measurement methods and procedures to be applied	The total number of plots to be measured was determined using a tool developed by Winrock International for generating number of plots (http://www.winrock.org/Ecosystems/tools.asp).
Frequency of monitoring/recording	Every 10 years
Value monitored	69
Monitoring equipment	
QA/QC procedures to be applied	GPS data collection was monitored by OFWE and Bale REDD+ field office. The collected data was checked by GIS specialist before commencing the classification.

Purpose of the data	To calculate baseline data
Calculation method	
Comments	No change to the baseline data

Data / Parameter	Number of sample unit to be measured in LU/LC class cl that is allocated proportional to the size of the class. If estimated $ncl < 3$, set $ncl = 3$
Data unit	Number
Description	The total number of sampling units taken from the forest to estimate CO ₂ per hectare of the forest. The decision on the number of plots depends on vegetation type, logistics, accuracy level, manpower and cost. The number of samples for each stratum is selected proportional to its size. See (Annex 3)
Source of data	(Annex 3)
Description of measurement methods and procedures to be applied	The total number of plots to be measured was determined using a tool developed by Winrock International for generating number of plots (http://www.winrock.org/Ecosystems/tools.asp).
Frequency of monitoring/recording	Every 10 years
Value monitored	17 sample plot from dry forest 62 plots from moist forest
Monitoring equipment	
QA/QC procedures to be applied	GPS data collection was monitored by OFWE and Bale REDD+ field office. The collected data was checked by GIS specialist before commencing the classification.
Purpose of the data	To calculate baseline data
Calculation method	
Comments	No change to the baseline data

Data / Parameter	Risk factor used to calculate VCS buffer credits
Data unit	%
Description	This refers to risk elements that may affect forest carbon stock and is used to estimate buffer credits based on VCS non-permanence risk tool.

Source of data	Project social, political, economic and environmental situation assessment or analysis (elements required in the VCS non-permanence risk tool)
Description of measurement methods and procedures to be applied	Risk factors derived based on the guideline in the VCS-approved AFOLU Non-Permanence Tool
Frequency of monitoring/recording	Every 5 years
Value monitored	10%
Monitoring equipment	Risk factors derived based on the guideline in the VCS-approved AFOLU Non-Permanence Tool
QA/QC procedures to be applied	As per VERRA non permanence risk assessment tool
Purpose of the data	To determine project emission
Calculation method	See Annex 11 and 12
Comments	

Data / Parameter	Root-shoot ratio appropriate for species, group of species or forest type
Data unit	%
Description	The ratio of the amount of belowground biomass (root) divided by above ground tree biomass.
Source of data	IPCC good practice guide
Description of measurement methods and procedures to be applied	The root-shoot ratio for calculating below ground biomass of the forest strata was obtained from IPCC good practice guide. Different value was used for the different stratum available in the project forest
Frequency of monitoring/recording	Only once at project start
Value monitored	24% for moist forest and 27% for dry forest
Monitoring equipment	
QA/QC procedures to be applied	
Purpose of the data	To determine project emission
Calculation method	
Comments	No change to the base line data

Data / Parameter	Start date of the historical reference period
Data unit	Year
Description	The year 2000 is the start year of historical reference period which is 2000-2011
Source of data	See PDD SM 04 (10-15 years before project start date was used as a reference to determine the historic reference period, based on IPCC guide
Description of measurement methods and procedures to be applied	
Frequency of monitoring/recording	Once at the project start
Value monitored	
Monitoring equipment	
QA/QC procedures to be applied	
Purpose of the data	To determine project emission
Calculation method	
Comments	No change to the base line data

Data / Parameter	Duration of the historical reference period
Data unit	Years
Description	2000-2011 (12 years)
Source of data	Annex 9
Description of measurement methods and procedures to be applied	Land sat analysis for the years 2000,2005,2011 to set up the historical deforestation trend
Frequency of monitoring/recording	One project life time
Value monitored	Historical deforestation rate 1.1% to 6.6%, average of 3.7%
Monitoring equipment	Remote sensing and GIS
QA/QC procedures to be applied	See QA QC protocols in Annex10 of Bale forest carbon assessment manual
Purpose of the data	To determine project emission

Calculation method	
Comments	No change to the base line data

Data / Parameter	t-student value for 95% confidence level
Data unit	Unit less
Description	Student t- value was obtained from t-table to calculate CI
Source of data	t-table
Description of measurement methods and procedures to be applied	Student t-table value was obtained by taking the degree of freedom (n-1) for the sample number used in each forest stratum
Frequency of monitoring/recording	
Value monitored	2.00 for moist forest and 2.11 for dry forest strata
Monitoring equipment	
QA/QC procedures to be applied	
Purpose of the data	To determine project emission
Calculation method	
Comments	No change to the base line data

Data / Parameter	Variable included in the deforestation model
Data unit	
Description	Variables that were identified to drive and/or hinder deforestation were identified through field assessment and expert consultation, and applied for modelling future location of deforestation
Source of data	Annex 9
Description of measurement methods and procedures to be applied	About eight variables were employed for modelling of deforestation in Bale mountains eco-region. These variables were entered to dinamica software to run modelling.
Frequency of monitoring/recording	Each renewal of fixed baseline period
Value monitored	Eight (settlement, roads, protected area, natural coffee area, distance to deforestation, elevation ,slope, population growth)

Monitoring equipment	Using Dynamica software
QA/QC procedures to be applied	
Purpose of the data	To determine baseline emission
Calculation method	
Comments	No change to the base line data

Data / Parameter	Carbon fraction for tree tr, of species, group of species or forest type j
Data unit	%
Description	IPCC good practice guide for carbon fraction, which is 50% of oven dry weight of a tree was used
Source of data	IPCC good practice guide
Description of measurement methods and procedures to be applied	IPCC good practice guide was applied
Frequency of monitoring/recording	Once project life time
Value monitored	0.5, i.e. 50% of oven dry weight
Monitoring equipment	None
QA/QC procedures to be applied	None
Purpose of the data	To determine baseline emission
Calculation method	Total above ground biomass per hectare of all sample plots were estimated and their average dry weight computed using allometric equation. This value was multiplied by 0.5 to obtain carbon stock
Comments	No change to the base line data

Data / Parameter	Community forest income change (income from NTFP)
Data unit	US\$/hh/yr
Description	Household economic data collection using randomly selected sample households and compare with baseline income level
Source of data	House hold survey

Description of measurement methods and procedures to be applied	Structured house hold survey questioners developed and sample households selected to fill the questioners
Frequency of monitoring/recording	Every 3 years
Value monitored	35
Monitoring equipment	Survey questioner and excel sheet
QA/QC procedures to be applied	See QA QC protocols in Annex10 of Bale forest carbon assessment manual
Purpose of the data	To determine baseline emission
Calculation method	The current house hold income minus (17908 ETB equal to 447 USD) the baseline household income (16,475 ETB which is equal to 412 USD) see annex 28
Comments	

Data / Parameter	Community forest management institution capacity assessment 2019
Data unit	%
Description	Capacity is assessed regularly using a method developed by the project called Organizational Capacity Assessment Tool (OCAT). The assessment comprises the following parameters: forest protection, forest development, forest utilization, cooperative financial management and leadership. The tool applies scale-based assessment and overall average indicates status of the CBO. Based on the identified gaps, capacity building activities were provided
Source of data	Assessment of capacity of Forest management cooperatives
Description of measurement methods and procedures to be applied	Using established survey questions included in the OCAT tool, all necessary data were assessed from each forest managing institution and analyzed using the developed Organizational Capacity Assessment Tool (OCAT) software
Frequency of monitoring/recording	Annually
Value monitored	81 %
Monitoring equipment	OCAT tool

QA/QC procedures to be applied	See QA QC protocols in Annex10 of Bale forest carbon assessment manual
Purpose of the data	Calculation of project performance
Calculation method	Survey
Comments	

Data / Parameter	Monitor community attitude and perception on the project
Data unit	%
Description	Using established participatory rural appraisal (PRA) techniques Communities' attitude toward the project assessed
Source of data	Survey on Community living in and around the forest
Description of measurement methods and procedures to be applied	Different PRA tools deployed to assess communities' perception and attitude on parameters such as activity implementation, socio- economic impact and biodiversity impact.
Frequency of monitoring/recording	Three years
Value monitored	55% perceive high 31% medium 14 % perceive low see section 4.1.1
Monitoring equipment	PRA tools
QA/QC procedures to be applied	Cross checking of the survey data with reports
Purpose of the data	To monitor project performance
Calculation method	Community score for the questions developed and the total score divided by the number of sample
Comments	

Data / Parameter	Biodiversity condition of the area
Data unit	Species richness stem /ha Number of trees, sapling and seedlings
Description	Biodiversity potential of the forest assessed using sample plots distributed in the forest and species
Source of data	Field inventory

Description of measurement methods and procedures to be applied	Species abundance or richness of indicator plants seedling sapling and trees per hectare assessed in a way that 51 sample plots randomly distributed, a concentric circular sample plots established . In the larger circle of 15m radius, all trees DBH above 5 centimeter was measured and recorded , in 5m radius saplings(1-5 cm DBH) were counted recorded and within 2m radius all seedlings (root collar diameter <1cm) were counted. See annex 27
Frequency of monitoring/recording	Every three years
Value monitored	46,434, 381 trees, 5620 sapling and 40433 seedlings per ha counted
Monitoring equipment	GPS, measuring tape and string
QA/QC procedures to be applied	Field level development agents and forest experts collect data and district experts conduct a quality check on some plots.
Purpose of the data	To monitor project performance
Calculation method	The data feed to the excel sheet and the result compared with the baseline data
Comments	The inventory conducted in three years interval

Data / Parameter	Area within the Project Area affected by catastrophic events in class icl at year t
Data unit	Hectare
Description	Area affected by natural catastrophes
Source of data	Field observation and remote sensing
Description of measurement methods and procedures to be applied	When catastrophe happen the area will be measured and the amount of damage surveyed
Frequency of monitoring/recording	Annually
Value monitored	No
Monitoring equipment	GIS, remote sensing and actual field visit
QA/QC procedures to be applied	

Purpose of the data	To measure the effect of catastrophe
Calculation method	
Comments	No change to the base line data

Data / Parameter	Areas affected by forest fires in class icl in project area and leakage belt at year t
Data unit	Hectare
Description	Burnt area and extent of carbon loss
Source of data	Burnt area and extent of carbon loss
Description of measurement methods and procedures to be applied	The forest area damaged by the forest measured and the effect will be surveyed
Frequency of monitoring/recording	After fire incidence
Value monitored	No
Monitoring equipment	GIS remote sensing and different forestry tools
QA/QC procedures to be applied	
Purpose of the data	Project performance
Calculation method	
Comments	No fire incidence happened in this implementation period

Data / Parameter	Deforested dry evergreen forest and moist forest in the project area
Data unit	Hectares
Description	Dry ever green and moist forest converted to non-forest land uses
Source of data	Freely available Landsat image of 30m resolution of 2019
Description of measurement methods and procedures to be applied	Deforestation measurement was conducted following same procedure of deforestation analysis for baseline data (Annex 9)
Frequency of monitoring/recording	Five years
Value monitored	1,641 ha for dry evergreen and

	6,464 ha for moist forest
Monitoring equipment	ENVI4.3, ARC GIS, GPS
QA/QC procedures to be applied	GPS data collection was monitored by OFWE and Bale REDD+ field office. The collected data was checked by GIS specialist before commencing the classification.
Purpose of the data	Calculation of project emissions
Calculation method	Landsat Image 2019 was analyzed and compared with baseline forest area (Annex 1)
Comments	

Data / Parameter	Avoided deforestation in dry evergreen forest and moist forest in the project area
Data unit	Hectares
Description	Dry ever green and moist forest converted persisted
Source of data	Freely available Landsat image of 30m resolution of 2019
Description of measurement methods and procedures to be applied	Forestland area change detected and the result was compared with predicted baseline of deforestation
Frequency of monitoring/recording	3 years
Value monitored	1,771 for ha dry forest 8,629 ha for moist forest
Monitoring equipment	ENVI4.3, ARC GIS
QA/QC procedures to be applied	GPS data collection was monitored by OFWE and Bale REDD+ field office. The collected data was checked by GIS specialist before commencing the classification.
Purpose of the data	Calculation of project emission
Calculation method	Predicted deforestation baseline minus actual deforestation recorded
Comments	See Annex 1

Data / Parameter	Dry evergreen and moist forest deforested in leakage belt
Data unit	Hectares

Description	Leakage belt forest area converted to non- forest land-use
Source of data	Landsat image of 2019
Description of measurement methods and procedures to be applied	Deforestation was measured following same procedure used in PDD (Annex 9)
Frequency of monitoring/recording	3 years
Value monitored	1,072 ha for dry evergreen 3,460 ha for moist forest deforested
Monitoring equipment	Landsat image of 30m resolution, Envi4.3 , ARC GIS,GPS
QA/QC procedures to be applied	GPS data collection was monitored by OFWE and Bale REDD+ field office. The collected data was checked by GIS specialist before commencing the classification.
Purpose of the data	Calculation of project emissions
Calculation method	Image 2019 analyzed and compared with baseline data (Annex 1)
Comments	

Data / Parameter	Monitoring actual changes in carbon stocks in the Project Area and leakage belt
Data unit	tCO ₂ e
Description	Dry ever green and moist forest converted to non-forest land uses and multiplied by emission factor per hectare of each stratum
Source of data	Freely available Landsat image of 30m resolution of 2019 and excel sheet
Description of measurement methods and procedures to be applied	Deforestation measurement was conducted following same procedure of deforestation analysis for baseline data (Annex 9)
Frequency of monitoring/recording	Five years
Value monitored	5,872,098
Monitoring equipment	ENVI4.3, ARC GIS, GPS, excel sheet

QA/QC procedures to be applied	GPS data collection was monitored by OFWE and Bale REDD+ field office. The collected data was checked by GIS specialist before commencing the classification.
Purpose of the data	Calculation of project emissions
Calculation method	Landsat Image 2019 was analyzed and compared with 2015 forest area (Annex 1), the difference is the deforestation which was multiplied by the emission factor per ha
Comments	

Data / Parameter	Number of Buffer credits deposited in the VCS Buffer
Data unit	tCO ₂ e
Description	Quantity of verified Carbon unit deposited for risks
Source of data	Calculated avoided cumulative emission of 2016-2019 Non permanence assessment data (Annex 2 and Annex 12)
Description of measurement methods and procedures to be applied	Avoided cumulative emission calculated for 2016-2019
Frequency of monitoring/recording	Five years
Value monitored	493,198 tCO ₂ e
Monitoring equipment	Microsoft excel
QA/QC procedures to be applied	GPS data collection was monitored by OFWE and Bale REDD+ field office. The collected data was checked by GIS specialist before commencing the classification.
Purpose of the data	Calculation of project emissions
Calculation method	Avoided cumulative emission data of 2016-2019 multiplied by non-permanence factor (10%)
Comments	

Data / Parameter	Number of Verified Carbon Units(VCUs) to be made available for trade in three years
Data unit	tCO ₂ e

Description	Tradable tCO ₂ e GHG available
Source of data	Cumulative Anthropogenic Green House Gas Emission reduction in the project area Number of Buffer credits deposited in the VCS
Description of measurement methods and procedures to be applied	Mean tCO ₂ e/ha of each forest stratum obtained from forest carbon inventory (Annex 3) Actual deforestation occurred in each forest strata between 2016 and 2019 10% deposited buffer credit over a period of 2016 to 2019
Frequency of monitoring/recording	3 years
Value monitored	4,438,780 tCO ₂ e
Monitoring equipment	Microsoft excel
QA/QC procedures to be applied	
Purpose of the data	Calculation of project emissions
Calculation method	Quantity of buffer credits deposited subtracted from cumulative emission
Comments	

3.1.3 Monitoring Plan

In the monitoring plan of the Bale Mountains Eco-region REDD+ project it is stated that, Oromia Forest and Wildlife Enterprise responsible to collect monitoring data, analyze, process and report. Parameters to be monitored were identified as biomass inventory, social, biodiversity impact assessments, recording activity implementation, and any other data required to be monitored under the methodology VM0015, V1.1. The monitoring period for different parameters were clearly identified in the monitoring plan part of the Project Design Document (PDD). The communities JFM CBOs have also assumed to be responsible to carry out project actions where appropriate. In the context of implementing and monitoring of Bale REDD+, Oromia Forest and Wildlife Enterprise (OFWE) comprised sub divisions known as branches and districts that have been responsible to implement REDD+ project activities and monitoring of the progress (Figure 4).

3.1.3.1 organizational structure

The project proponent OFWE head quarter based in Addis and have eight branches in all concession sites. Bale REDD+ project area falls in two branches, Bale and West Arsi branches. These branches are further divided in to districts, accordingly the project forest have been under the management of five districts three

in Bale (Delomena, Alose Batu and Kubayu) and two in West Arsi (Adaba Dodola and Harena Kokosa) see figure 7.

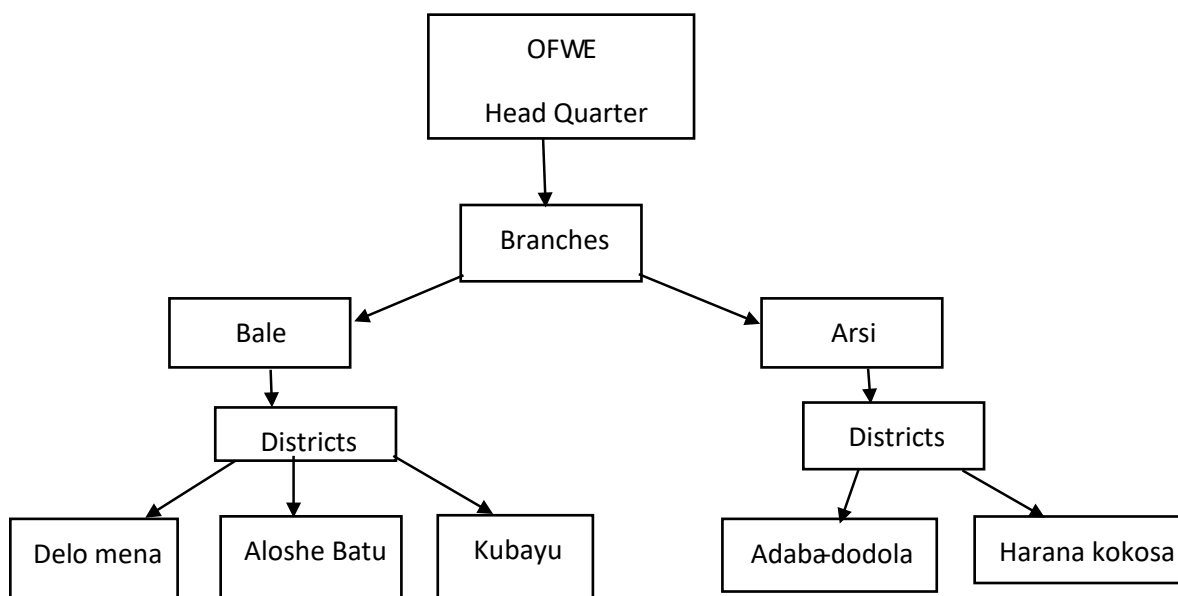


Figure 7 Organization structure of OFWE

Different individuals with various educational background who are working as staff of OFWE, Farm Africa and SOS Sahel Ethiopia were involved in the process of Bale REDD+ project verification. Senior staff have facilitated method of data collection, quality control and quality check responsibilities. The junior technical staff have been facilitating data collection and analysis responsibilities (Table 5). In addition to the monitoring team 29 employees (26 male and 3 female) has been directly involved in the project activities implementation as full time worker hired by Bale REDD+ project, whereas, 27 (23 male and 4 female) full time workers were implemented in Bale REDD+ piloting project, which make the total project life time full-time workers 56 (7 female).

Table 5 Participants of monitoring Team

Name	Profession & Status	Organizational responsibility	Roles and responsibility in monitoring
Ararsa Ragasa	MSc in Forestry	OFWE Deputy/General Director	Data quality assurance
Nura Aman	MBA in Global Management	REDD+ project coordinator	Data Quality control
Yasmin Abdulwasi	MA in Environment and Development	Director of operation and delivery	Data Quality control and Quality assurance
Merga Diyesa	MSc in GIS & RS	GIS specialist	GIS data collection and analysis
Seyoum G/kidan	BSC in forestry	Forest specialist (team leader)	Coordinating data collection
Sahlemariam Mezmur	BSC in forestry	Sustainable timber harvesting specialist	Socio-economic and biodiversity data analysis
Beriso Lenchamo	BSC in NRM	Monitoring and Evaluation	Socio-economic and biodiversity data analysis

3.1.3.2 monitoring description

Climate impact Monitoring: This climate impact monitoring plan has developed in relation to VM0015 of REDD+ Methodological Module which is a method for monitoring of greenhouse gas emissions and removals. The module focuses on establishing the procedures for monitoring deforestation, degradation, natural disturbance, and project emissions in the project area and leakage belt (see annex 1 and 9). The monitoring conducted as per the methodological procedure of VM0015 and requirement.

Community Impact monitoring: Community's impacts monitoring is centered on the monitoring of indicators that reflect socio-economic impacts of the community. These data collected through the Participatory Rural Assessment (PRA) and Theory of Changes that looks at the logical relationship between activities, outputs, outcomes and community impacts to measure the qualitative impacts against the baseline. The data collected from twenty kebeles (31% of the total 64 CBOs) found in five districts out of 11 which is 45% of the total district. A total of 100 community members 20 from each district selected for project impact assessment. The social indicators monitoring was address community's knowledge and attitudes related to the project implementation like community's awareness about climate change and REDD+ Project, Communities' engagement in forest protection, women's participation in PFM and REDD+ activities and CBOs' capacity of conflict management. Moreover, people's perception about the supply of materials used to improve coffee quality, awareness creation about climate change and REDD+ project, distribution of Fuel-efficient stoves, trainings, finance and materials support provided to REDD+ CBOs', business development service, established rural saving and created institutions and forest use property rights were investigated through PRA and FGD (see annex 6). The institutional impact was measured by organizational capacity assessment tool (OCAT) developed by the project, the assessment cover all 64 forest CBO enrolled by the project (see annex 4).

Biodiversity Impact Monitoring: The biodiversity impact measured at landscape level using Landsat images and transect walks to monitor the deforestation and threats to biodiversity as a result of project activities implementation throughout the project areas. The forest stock (number of trees, sapling and seedling) monitoring was conducted using the PFRA methodology that is adopted for participatory forest management. In such assessment the project monitored changes in the forest conditions indicators like basal area, regeneration and other ecological indicators (see annex 7 and 6).

3.1.4 Dissemination of Monitoring Plan and Results (CL4.2)

As indicated in section 3.1.1 the monitoring plan of parameters available at validation was well stated in the PDD and disseminated via VCS web site for public comment. The result of the monitoring was disseminated to stakeholder and community through meetings and workshops as stated in section 2.3.1 and 2.3.2 for community since February 12, 2020 and for zonal stakeholders on August 29-31, 2020.

3.2 Quantification of GHG Emission Reductions and Removals

3.2.1 Baseline Emissions

Forest Carbon stock inventory was conducted and the average biomass per hector calculated. The average biomass per/ha used to calculate the emission factor in tCO₂e/ha. On other hand, using Landsat images, historical deforestation between 2000 and 2011 was assessed to determine the annual rate of deforestation that used to calculate expected deforestation to happen in each year of the 20years period of carbon credit. The predicated area of deforestation of each year was multiplied by the calculated emission factor to quantify ex ante emission of 20 years under the scenario of business as usual (Annex 3).

3.2.2 Project Emission

Using Landsat images, amount of deforestation occurred was analyzed in the project area. The forest area difference between the year 2016 and 2019 is the total deforestation in the project implementation

period (see annex 2). Multiplying the occurred deforestation by the emission factor will result in project emission see table 6 below.

Table 6 Deforestation and Emission over the period of 2016 and 2019 in the Project area

Forest types	Occurred Deforestation in ha	Emission factor ton Co2/ha	Total emission in tCo2
A	B	C	D= B*C
Moist	6,464	510.91	3,302,522
Dry	1,641	295.55	484,998
Sum	8,015		3,787,520

Table 7 Life time deforestation and emission (sum of the first and second verification period)

Annex 2 worksheet project life deforestation and emission

Forest types (A)	Occurred Deforestation in ha (B)	Emission factor ton Co2/ha € (C)	Total avoided emission in tCo2 D= B*C
Humid	13,720	510.91	7,009,685
Dry	2,133	295.55	630,408
Both types	15,853		7,640,093

3.2.3 Leakage

Using Landsat images, amount of deforestation occurred was analyzed in the leakage belt areas. The size of occurred deforestation deducted from the predicted deforestation baseline to determine the avoided deforestation over the project period. Finally, avoided deforestation was multiplied by the emission factor to quantify the amount of carbon emission avoided (Table 5 & Annex 2). The result indicates emission in the leakage belt was less than what was estimated as baseline data.

Table 8 Deforestation and Emission Analysis between 2016 and 2019 in the leakage belt

Forest types A	Baseline Deforestation in ha b/n 2016 & 2019 B	Occurred Deforestation in ha C	Avoided deforestation in ha D=B-C	Emission factor ton Co2/ha E	Total emission removal F=D*E
Humid	3,953	3,460	493	510.91	251,879
Dry	2,724	1,072	1,652	295.55	488,249
Sum	6,677	4,532	2,145		740,128

3.2.4 Net GHG Emission Reductions and Removals

To calculate the net emission reduction, project emission in the project area and emission in leakage belt were added and the sum of the two was deducted from the predicted baseline emission. In this calculation emission in the leakage belt was considered as zero because the project designed in a way not to claim the credit generated from the leakage belt area (Annex 2). Using the result of the non-permeance risk assessment which is 10%, 493,198 tCO₂e will be reserved for buffer credit so that the net vintage will be 4,438,780 tCO₂e. see Annex 11 non-permanent risk assessment

Table 9: Net Greenhouse Gas Emission calculated

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)	Buffer credit 10% (tCO ₂ e)	Credit for vintage (tCO ₂ e)
2016	2,238,496	946,880	0	1,291,616	129,162	1,162,454
2017	2,198,501	946,880	0	1,251,621	125,162	1,126,459
2018	2,159,884	946,880	0	1,213,004	121,300	1,091,704
2019	2,122,617	946,880	0	1,175,737	117,574	1,058,163
Total				4,931,978	493,198	4,438,780

3.3 Optional Criterion: Climate Change Adaptation Benefits

While the economic and social impacts of climate change at the national level are difficult to estimate, the World Bank's study of the Economics of Adaptation to Climate Change indicates that climate change has the potential to reduce Ethiopia's GDP growth by 2-6% by 2015, with losses in the worst-case scenario rising to 10% by 2045. Some predictions and climate modelling at national level reported the following for Ethiopia ((Ethiopia Climate Resilient Green Economy, 2010).

- A rise in temperature of about 1.2OC by 2020s from 1961-2000 average
- A rise in temperature of 1.5-5.1 OC by 2090s from 1970-1999 average
- A decrease in the frequency of cold nights (linked to frost in dry season) significantly in all seasons
- A declining trend in the February to April short rains
- A slight increases in the June to August long rains, as well as in October and November
- An increase in flood events
- Losses of ecosystems/habitats and biodiversity, and the environmental services of forest areas;
- Lower river flows during dry season, which affects downstream community and hydropower generation;
- Increased drought and incidences of forest fires;
- Risk of the expansion of desertification in the highlands;
- Impacts on human health, due to increase in pollution, vectors and disease causing agent.

Generally, there is less confidence in rainfall projections and less convergence between models. But, regional differences, which may mean some regions might experience decreasing rainfall in certain seasons. The models broadly agree that more rain will fall in 'heavy events' – in increased volumes over shorter periods of time.

Given the dependence on rain-fed agriculture, these trends could have a negative impact on food security. The World Bank's study of the Economics of Adaptation to Climate Change (World Bank, 2010) indicates that climate change has the potential to reduce Ethiopia's GDP growth by 2-6% by 2015, with losses in the worst-case scenario rising to 10% by 2045.

The rising temperatures, changes in intensity and pattern of rainfall, increased incidences of flooding and landslide are factors stimulate the loss of ecosystems and the decline of local species in addition to making subsistence farming and/or family farming unattractive. Longer dry seasons and decrease in water supply to the pastoralist communities downstream may also lead to increase in duration of stay, and the number of human and livestock population that seasonally migrate to the highland forest. This in turn threatens plant and wild animal species, degrade forest quality that eventually lead to loss of the forest habitat, and livelihoods of the local forest dependent communities.

For instance, some preliminary studies indicated that the wild population of coffee might be lost from the Bale Mountains over the coming 4-5 decades. This may also significantly hamper the quality and quantity of coffee produced locally.

All Bale Eco-region carbon project activities are geared towards sustainable forest and land management that reduces deforestation, while improving livelihoods through increasing revenue for the community. Forests influence local microclimates, moderating extremes of temperature, which also has impacts on moisture regime. Vegetation cover also reduces runoff and flooding, and increase percolation of rainwater, which instead contribute to ground water recharge. These roles of forest are beneficial for the community and biodiversity.

The Bale Eco-region carbon project encourages and supports the local community to develop different organizational skills to improve forest and agricultural land management that optimizes conservation and sustainable use to adapt to climate change. These activities, aimed at mitigation and adaptation of local climate changes, included:

- Strengthening and empowering forest management cooperatives and their members;
- Strengthen and enhance the value chains of non-timber forest products and agricultural products through strengthening associations, cooperatives and unions;
- Develop plans for land reclamation and reforestation;
- Promoting multi-story agroforestry practices;
- Disseminate more sustainable silvo-pastoral practices (e.g. zero-grazing, cut-and carry, land zoning);
- Support developments of other PES like watershed protection services to generate additional revenue to support local climate-resilient developments initiatives;

3.3.1 Activities and/or processes implemented for Adaptation (GL1.3)

Apart forest protection, REDD+ project did different adaptation activity that help to conserve the forest as well as support community to adapt changes that could happen due to conservation. The project reduced the fuel collection burden of women by distributing fuel-efficient stoves. 6 biogas plants were established for their multi-function to the farmers such as providing clean energy and organic fertilizer. The woodlots established in the project area reduce the burden from the forest, help women as fuel wood source and in some case served as income source.



Figure 8 Fuel saving stove distributed



Figure 9 biogas plants



Figure 10 Farmers tree nursery and wood lot

4 COMMUNITY

4.1 Net Positive Community Impacts

4.1.1 Community Impacts (CM2.1)

Without project scenario: In the current scenario the poor livelihoods situation of the Bale Mountains communities is a significant root cause of deforestation. The communities residing in and around the Bale Mountains forests are totally dependent on small-scale agriculture and livestock rearing. Therefore, they are forced to clear forestland to feed themselves and their families. As populations continue increasing this need for land also increases at alarming rates. Further they also cut forest trees for timber and fuel wood. Without the project activities, expansion of agriculture and overgrazing by cattle is expected to continue since unsustainable use of natural resources including non-timber forest products (NTFPs) such as coffee and honey could not meet the demands of the community due to low market prices. Other external influences such as population increase, and drought, also continues to contribute to increasing deforestation and forest degradation. Fire is another incident that occurs regularly in the Bale eco-region. This requires much work in building capacity and awareness to create a system that will mitigate / reduce the incidence of fire. In addition, the weak law enforcement and exclusion of local communities from managing and using the forest resources opens the way for illegal settlement in the forest and conversion to other land uses which also allowed the unsustainable exploitation of natural forest resources to continue. As a consequence there was increasing conflict between the original inhabitants of local communities and new settlers arriving from different parts of the country, as the new settlers try to convert the forestland to agricultural land at the 'expense of local peoples' forest based livelihoods. These new settlers also break the longer standing natural and less destructive relation between the environment and local community which weakens them as a group and compromises their traditional ways of life. Another line of action of the project is based on strengthening the JFM CBOs representative institutions. The goal is to improve the performance of the Bale Mountains forest management cooperatives before implementing many of the planned actions. Among the activities planned are those that will lead to stop drivers of deforestation as well as the acquisition of office equipment to support the CBOs in their implementation. In this area, on average, a household has an average of six family members. During the implantation period, a total of 19500 (Female 9440) community member were involved in different capacity building trainings. Please see annex 27. The project has contributed to providing inputs and other material support combined with skills trainings in coffee, cookstove and others in order to improve and strengthen the livelihoods of about 19438 individuals (Female 8942). The project introduced 6061 fuel efficient cookstoves per households focusing to reduce indoor pollution and reduce firewood collection of 36,366 community members. As the pilot phase of the cookstove roll out created demand, the second phase was to subsidize and also introduce the production of these stoves for consumption of local communities. This was also identified as an income generating activity.

The community impacts that have been achieved by implementing of the Bale Mountains Eco-Region REDD+ project have monitored based on the theory of change that describes the logical relationships between project's activities, outputs, outcomes and impacts. The monitoring data collected using different methods of data collection like Participatory Rural Assessment (PRA) and Focus Group Discussions and the findings are summarized in the following subheadings.

➤ Institutional and Social benefits

Community Group	Bale Eco- region forest managing group
Impact	Institutional and Social benefits

Type of Benefit/Cost/Risk	Actual benefit
Change in Well-being	<i>Organizational capacity changed from 35.92 to 57.01</i>

Towards improving the institutional and social development, trainings on various topics were identified and provided to forest managing CBOs. In light of this capital and social development efforts, people perception about the impact was monitored using PRA technique. Accordingly, the majority of participants which was (55%) perceived that the supports were found high and (31%) perceived that the provided supports were medium, while the rest 14% perceive the project implementation low (Tables 7 & Annex 6).

Apart from the PRA technique, the OCAT used to monitor and analysis institutional capacity of each CBO's. Basically, the OCAT version one designed to comprises five indicators of organizational capacity such as leadership, finance and assets management and the other three forest management elements such as protection, development and utilization. OCAT version two also comprises five indicators (Leadership, Property management, Forest management, Business development and Women empowerment). In this version business development and women empowerment was emphasized. In OCAT version two, data analysis indicates that the average organizational capacity of each CBO was improved from 35.92 in 2016 to 57.01 in 2019. In this analysis women empowerment was found 6.25 out of 20 scores in 2016 and it is improved to 11.29 in 2019 (Figure 20a). Also, the organizational capacity assessed using OCAT version I revealed as there is a considerable change against the capacity measured during 2015 which was 64.34% improved to 81% (first verification period (Figure 5b)).

The OCAT was designed to identify the existing gaps of the CBOs not only in governance and leadership of the cooperative but the inclusion of forest-based expertise that would enable them to be accountable and responsible for forest management together with OFWE. Although the governance structure was in place, the development and improvement of the OCAT tool allowed the project proponent to continually develop and adapt training materials and training sessions that would address the objectives of the cooperatives. The 64 CBOs are one of the few CBOs across the entire region that is well versed on basic business management, awareness of climate change, importance of forest and forest management and coordination. This has been seen in the number of illegal forest activities being reported, decision making, and negotiations with government stakeholders.

In addition to the OCAT other tools have been developed. The criteria for Benefit Sharing Mechanism (BSM) has not been developed in the past. This tool was designed in consultation with key stakeholders and awareness of the tool shared with community members. This tool outlined how the cooperatives will be evaluated against their performance and what the reward for the performance will be. Such tools have been lesson learning opportunities to refine and adapt the process. This would then be taken up as a lesson for the national REDD+ secretariat who will tailor this to the wider regional REDD+ initiatives.

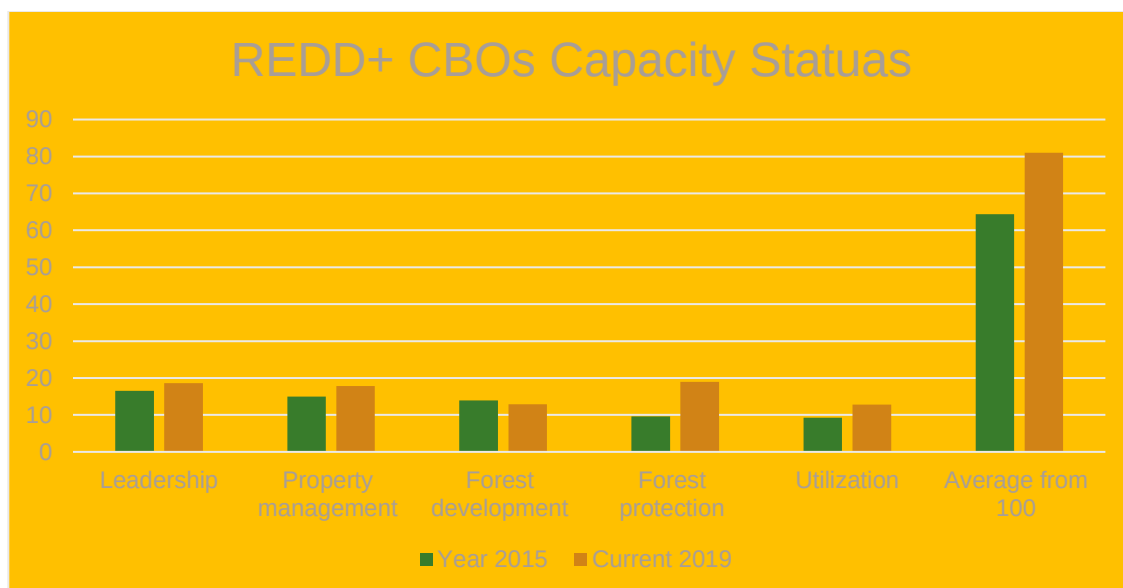


Figure 11a: Organization capacity status between the years 2016-2019

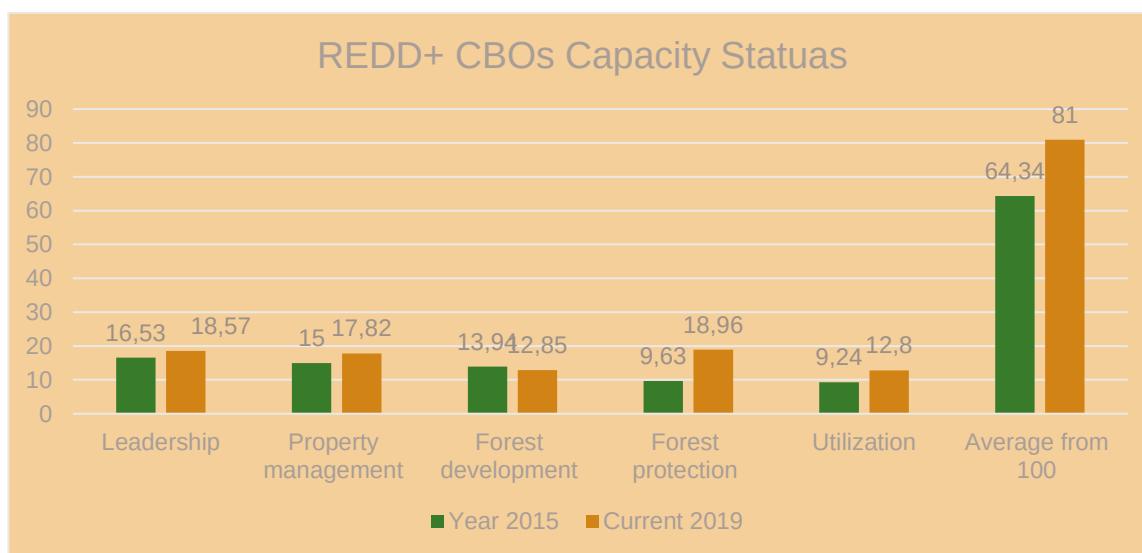


Figure 5b: Organization capacity status between 2016-2019

The overall institutional and social impacts improvement is described in terms of aspects like accumulation of various assets such as constructed offices and forestry equipment. Besides to this, a gender equity was properly addressed by having proper provisions in the community's bylaw.

Accordingly, it is stated that out of seven executive committee members at least three members would be represented by females' representative. Furthermore, it is explicitly indicated that if the chairperson of CBO is male the deputy should be a female and vice-versa. Moreover, communities' forest uses rights and carbon benefit sharing modality recognized through having agreement with government. Additionally, to enhance bargain power of primary forest managing CBOs, a forest union that comprises primary comparatives was established as a strong institution that represents CBOs and discuss with government and any other parts on any issues that matters to its members.

Table 10 People's perception about delivery of project activities

Sn	Parameters	Total	High		Medium		Low	
		Participants	No.	%	No.	%	No.	%
1	Supply of coffee quality materials	100	54	54%	40	40%	6	6%
2	Awareness creation on Climate and REDD+	100	77	77%	17	17%	6	6%
3	Fuel efficient stoves distribution	100	46	46%	47	56%	7	7%
4	REDD+ CBOs capacity building supports	100	73	73%	20	20%	7	7%
5	Consolidating community based MRV	100	79	79%	15	15%	6	6%
6	REDD+ benefit sharing mechanism development (benefit sharing criteria)	100	32	32%	40	40%	28	28%
7	Discussion on nesting integration of Bale REDD+ to OFLP	100	24	24%	41	41%	35	35%
8	Overall perception		384	55%	219	31%	97	14%

➤ Income increase from Non-Timber forest products

Community Group	Bale Eco- region forest managing group
Impact	Income increase from NTFPs
Type of Benefit/Cost/Risk	Actual benefit
Change in Well-being	14% Community perceived that the income from NTFP is high and 53 % perceived that the income change is moderate while the rest 33 % perceive as the income change is low.

Prior to the intervention of REDD+ project in the Bale Mountains Eco-region, people used to collect both ripen and unripen coffee cherries and dried on bare ground. This was resulted in low quality and lower price that affected the income of households. To compensate lower income, many farmers obliged expanding of size of coffee areas by converting forest lands to coffee plantation which was a driver of deforestation. To combat this driver of deforestation, the Bale REDD+ project in collaboration with a project called 'Private Sector Participation in Biodiversity Conservation of the Bale Eco-Region' which was funded by conservation international has strategized to improve quality of forest coffee with assumption of generating better income instead of coffee expansion through removing the forest. On top of this, the project has delivered mesh wires, hessian sacks and plastic covers that used to improve the quality of forest coffee.

Additionally, farmers trained on how to improve the quality of their coffee products. Towards this efforts, people's perception was monitored and 57 % of the PRA participants perceived that supply of coffee quality improving materials was found high while (40%) perceived it was medium and (6%) mentioned that the supply of materials was low (Table 8 and Annex 6).



Figure 12: Coffee production using provided materials

Materials supports and quality improvement were not an end to project. Rather the end goal was to enable farmers to access good market and generate better incomes that positively impacts their livelihoods. Towards this coffee producers, like in Delo Mena district could able to export more than 9.3 tons of clean coffee and sold for better price that had implication for increase of households' incomes. In light of this, the trend of income increase from NTFPs was asked to rate by the each PRA team and (14%) of the PRA participants indicated that income increase from coffee was found high and (53%) of the participants mentioned that income increase was moderate while (33%) mentioned that the income increase was found low (Table 8 and Annex 6).

4.1.2 Negative Community Impact Mitigation (CM2.2)

The Bale eco-region represents the largest area of Afro-alpine habitat on the African continent. It is endowed with high biodiversity resources that resulted in the designation of its central areas as national parks, called the Bale Mountains National Park (BMNP). It comprises diverse vegetation formation and ecosystems ranging from afro-alpine grasslands, Erica forest, Afromontane high forests (both dry and moist), wetlands and tropical savanna. The forests together with the Afro-alpine plateau are host to globally unique and diverse fauna and flora, including a significant number of rare and endemic species.

A unique characteristic of the Bale Mountains eco-region is the clear vertical stratification of natural vegetation divided into distinct zones along an altitudinal gradient starting from the top of the mountain at 4377m.a.s.l. Each of these zones has their own characteristics flora and fauna. (See PDD section 1.3)

There are no anticipated negative environmental or biodiversity impacts from project implementation. The Bale Mountains Eco-region REDD+ Project is not expected to have negative offsite biodiversity impacts. It is actually expected to result in increased conservation value to an area that is globally significant. The project secure the protection of the natural forests and hence the natural resources within the Bale Mountains conserved. The forest management plans that are developed through the PFM process ensure that each forest compartments have a carefully designed plan that ensure a positive impact in the forest and hence the biodiversity.

The overall project area includes the entire Bale massif except the National Park. Hence none of the areas that are significant in biodiversity conservation are left out in this process. In addition, the work done support the effort of the National Park by introducing a sustainable natural resources management system around the park and hence reducing / removing threats that were faced by the area.

The project has promoted economic development based on sustainable use of natural resources which includes value addition on local products such as forest coffee, honey and market identification. There was

monitoring system to ensure that the REDD+ project generates positive impacts and has system to manage any potential negative impacts to communities, such as illegal logging, deforestation etc. If any unexpected negative impact is identified, the issue is discussed between OFWE and the affected community representatives to address and solve the issue immediately.

4.1.3 Net Positive Community Well-Being (CM2.3, GL1.4)

Without project scenario: The poor livelihoods situation of the Bale Mountains communities is a significant root cause of deforestation. The communities residing in and around the Bale Mountains forests are totally dependent on small-scale agriculture and livestock rearing. Therefore, they are forced to clear forestland to feed themselves and their families. As populations continue increasing this need for land also increases at alarming rates. Further they also cut forest trees for timber and fuel wood. Without the project activities, expansion of agriculture and overgrazing by cattle is expected to continue since unsustainable use of natural resources including non-timber forest products (NTFPs) such as coffee and honey could not meet the demands of the community due to low market prices and poor production system. Other external influences such as population increase, and drought, also continues to contribute to increasing deforestation and forest degradation. Fire is another incident that occurs regularly in the Bale eco-region. This requires much work in building capacity and awareness to create a system that will mitigate / reduce the incidence of fire. In addition, the weak law enforcement and exclusion of local communities from managing and using the forest resources opens the way for illegal settlement in the forest and conversion to other land uses which also allowed the unsustainable exploitation of natural forest resources to continue. As a consequence, there was increasing conflict between the original inhabitants of local communities and new settlers arriving from different parts of the country, as the new settlers try to convert the forestland to agricultural land at the expense of local peoples' forest-based livelihoods. These new settlers also break the longer standing natural and less destructive relation between the environment and local community which weakens them as a group and compromises their traditional ways of life. Another line of action of the project is based on strengthening the JFM CBOs representative institutions. The goal is to improve the performance of the Bale Mountains forest management cooperatives before implementing many of the planned actions. Among the activities planned are those that will lead to stop drivers of deforestation.

The community impacts that have been achieved by implementing of the Bale Mountains Eco-Region REDD+ project have monitored based on the theory of change that describes the logical relationships between project's activities, outputs, outcomes and impacts. The monitoring data collected using different methods of data collection like Participatory Rural Assessment (PRA) and Focus Group Discussions and the findings are summarized in the following subheadings.

➤ **Overall institutional, social and economic benefits**

Community Group	Bale Eco- region forest managing group
Impact	Overall institutional, social and economic benefits
Type of Benefit/Cost/Risk	Actual benefit
Change in Well-being	56% of Community perceive that socio-economic impact of the project activity is high, 26% perceive as it is moderate and the rest 28% perceive as it is low.

Increase of the households' incomes from NTFPs and small business activities have contributed towards better livelihood of the project's beneficiaries. As a result, the community members could manage to send their children to school. This progress was perceived as high by (40%) of the PRA participants while (44%) responded that children's access to school was improved moderately while the rest 16% perceive as low.

Increased household income reduces community's vulnerability to climate change and enhance their confidence to escape the food shortage that usually happened during dry season especially in low land part of the project area. In this area the women saving and credit association provide loan for women's to run small business that help to cover their daily household expenditures for food. Moreover, (28%) of the PRA participants mentioned that housing conditions of the beneficiaries were found highly improved while (52%) indicated that improvement of housing condition was moderate while the rest (20%) perceive low. (Table 10). Further explanation was made through focus group discussion mentioning that many community members have changed the roofing style of their houses from thatched covers to the corrugated iron sheets. The women in the project area adopt improved fuel-efficient stove which enable them to save time spent for fuel wood collection, improve their health condition and enable them to perform two activities at a time, which in turn help them to abate the vulnerability to climate change. In this regard, the adoption of fuel-efficient stove was perceived as high by 80% of respondents, medium 15% and low by 5%. The project also invested in wood lot development intending to reduce the burden from the forest through addressing house hold fuel demand and also serve as source of household income especially on highland part of the project where NTFP is limited. The progress of wood lot development was perceived as high by 14%, medium by 20% and low by 66% of the respondent. The progress of wood lot development perceived low because the activity done mainly part of the forest that had high fuel wood pressure. One of the major social benefit of PFM is to resolve/ minimize the conflict that arise from natural resource use. The project builds the conflict management of forest CBOs through training and through learning by doing. In relation to this, PRA participants was requested to provide their view toward conflict resolution and (42%) of them perceived that community's capacity of conflict management enhanced highly while (28%) indicated it was moderate and the remaining (30%) mentioned that the capacity was low (Tables 10 & Annex 6).

Table 11 People's perception about socio-economic impacts of the REDD+ project

Sn.	Parameters	Total	High		Medium		Low	
			No.	%	No.	%	No.	%
1	Income increase from coffee& honey	100	14	14%	53	53%	33	66%
2	Community awareness about climate change and REDD+	100	65	65%	21	21%	14	14%
3	Community engagement in forest protection	100	75	75%	15	15%	10	10%
4	Women's participation in PFM& REDD+ activities	100	66	66%	21	21%	13	13%
5	Forest related conflict management capacity	100	42	42%	28	28%	30	30%
6	Improved housing conditions	100	28	28%	52	52%	20	20%
7	Children access to school	100	40	40%	44	44%	16	16%
8	Adoption of fuel-efficient stoves	100	80	80%	15	15%	5	5%
9	Forest woodlots development	100	14	14%	20	20%	66	66%
10	Overall perception			56%		26%		28%

4.1.4 Protection of High Conservation Values (CM2.4)

Special attention was given to HCV areas specific to meeting community needs, including areas with Coffee (coffee Arabica) which is naturally growing in the Bale Mountains Natural forest and contributes a lot to the household economy in the area. The project supported the local community owning the wild coffee in the BMERP area to sustainably use the coffee for their livelihood improvement. The implementation of REDD+

project by nature is in favor of biodiversity conservation. The project implementation focused on community participation in the conservation and monitoring of the forest through participatory forest management approach. So that, Implementation of sustainable forest management contributed to maintain all the HCV of the eco-region. Project activities like wood lot establishment and promoting agro-forestry outside of the forest areas to produce non-timber forest products, implementing sustainable NTFPs (coffee and honey) production practices, distribution of fuel-efficient stoves to reduce volume of wood demand and the like were in favor of HCV that do not affect the wellbeing of community. The project activity gave special attention to address drivers that can severely affect biodiversity of the forest such as forest fire control through training and material supported to local communities. see PDD section 1.3

4.2 Other Stakeholder Impacts

4.2.1 Mitigation of Negative Impacts on Other Stakeholders (CM3.2)

Adjacent to the BMERP, there are pastoral community who depends on livestock as a means of livelihoods. Traditional during dry season the community brings their livestock to the edge of forest for grazing. Under the project scenario the pastoral community continues using the area on the sustainable basis in the way that they still do not affect the resources negatively. This was stated in the participatory forest management (PFM) plan where the offsite stakeholders who had the traditional use right on the forest will be considered as secondary members. PFM is a system that deployed in all project implementation period which was believed to bring no negative impact on community in and around the forest. Furthermore, there was monitoring system to ensure that the REDD+ project generates positive impacts and has a system to manage any potential negative impacts to offsite communities, such as illegal logging, deforestation etc. It was also discussed that ,If during the process any unexpected negative impact identified. The issue would be discussed between OFWE and the affected community representatives to address and solve the issue immediately. see PDD section 6.2

4.2.2 Net Impacts on Other Stakeholders (CM3.3)

The Bale Mountains Eco-region REDD+ Project was not expected to have negative social & economic impacts on other stakeholders. The implementation strategy of the project was Participatory Forest Management (PFM) which make ensure participation of all identified stakeholders that supposed to be affected by the project activities. The activities have been carefully designed so that elite capture, one of the frequently identified potential threats, is properly addressed. Hence, PFM is implemented in the reference area and is based on a participatory mapping exercise carried out with the different community members to identify and understand the various relationships that exist in the Bale Mountains Eco-Region – both within and outside the project area. This has ensured that all communities have a net benefit as a result of the REDD+ activities.

4.3 Community Impact Monitoring

4.3.1 Community Monitoring Plan (CM4.1, CM4.2, GL1.4, GL2.2, GL2.3, GL2.5)

Community's impacts monitoring is centered on the monitoring of indicators that reflect socio-economic impacts of the community. These data collected through the Participatory Rural Assessment (PRA) and Theory of Changes that looks at the logical relationship between activities, outputs, outcomes and community impacts to measure the qualitative impacts against the baseline. The monitoring conducted in July 2020. The community impacts monitoring parameters comprise of the socio-economic and institutional indicators. The social indicators monitoring addressed community's knowledge and attitudes related to the project implementation like community's awareness about climate change and REDD+ Project, Communities' engagement in forest protection, women's participation in PFM and REDD+ activities and CBOs' capacity of conflict management. Moreover, people's perception about the supply of materials used

to improve coffee quality, awareness creation about climate change and REDD+ project, distribution of Fuel-efficient stoves, trainings, finance and materials support provided to REDD+ CBOs', (see table 10 and annex 6) business development service, established rural saving and created institutions and forest use property rights were investigated through PRA and FGD.

The economic parameters include households' income from the forest based natural products such as coffee and honey. These monitoring data indicators collected through conducting household survey to quantify socio-economic changes in project area. Therefore, the survey covered a range of issues like income, education, social capital and resource availability. To avoid attributes of others intervention, the project proponents made same assessment to outside stakeholders adjacent to the project area. Then the project proponent conducted a statistical analysis to determine whether the outside stakeholders' socio-economic variables are significantly worse off than the residents throughout the Bale Mountains Eco-region REDD+ Project area.

Apart from the household survey data collection, people's perception about the socio-economic parameters monitored through PRA techniques and focus group discussions. These parameters comprise of people's perception about trend of coffee quality improvement, trend of income increase from coffee and honey, community's improved housing condition, children access to school, adoption of fuel-efficient stoves, woodlot development and income generating aspects (see table 10).

Institutional impact monitoring covers indicators such as organizational capacity of the forest managing CBOs inline to sustainable forest manage to meet the goal of REDD+ project. Towards this, the Bale Mountains REDD+ Project has developed spread sheet based Organizational Capacity Assessment Tool (OCAT) that uses to assess the capacity status of each forest CBOs in terms of five key pillars of the organizational capacity indicators such as the leadership, finance and assets management, forest protection, forest development and sustainable forest utilization in which altogether scored out of the 100. This assessment will be carried out every year by OFWE and Oromia Cooperative Promotion Agency who are working at grassroots level. The result of the monitoring is found in Annex 4.

4.3.2 Monitoring Plan Dissemination (CM4.3)

The monitoring result communicated to stakeholders and community through meetings and workshops, for community since February 14/2020, for zonal stakeholders since August29-31/2020 and for National REDD+ network on December 12/2020.

4.4 Optional Criterion: Exceptional Community Benefits

The project demonstrably qualifies for Gold Level for its exceptional community benefits, because the comprehensive set of community approaches are effectively bringing benefits to the poorer sections of the local community, in a country which is itself one of the poorest in the world. The following issues are addressed in turn below.

- Project zone is in a low human development area

Ethiopia's HDI value for 2013 is 0.435 which is in the low human development category positioning the country at 173 out of 187 countries and territories, according to the UNDP Human Development Report. The BMERP area does qualify as the group of rural areas that includes Bale, the project zone.

- Benefits for people in the lowest category of well-being

The experiences drawn from an earlier and on-going participatory forest management (PFM) practices reveal that deforestation can only be better counteracted if the needs and the rights of the local people are considered. PFM as part of the REDD+ activities ensures the poorest households and marginalized groups such as women headed households are included within the CBOs that implement the project activities along with OFWE. In this implementation period the project assessed the perception of the community toward the increment their income from NTFP, they were asked to rate the trend of income improvement and about (14%) of the participants indicated that income increase was found high and (53%) mentioned that the

income increase was moderate and (33%) mentioned that the income increase was found low due to international buyers unavailability (Table 4 of annex 6).

- Removal of barriers to prevent such benefits going to poorer households

The barriers to the local community were identified as the low participation of the rural women and the poor of poor. However, the project designed strategy to increase women participation where even, the project revised the forest CBOs bylaw to mandatorily include female members in executive committee also the project conducted women only meetings, including FPIC. In this implementation period the participation of women enhanced, as indicated in annex 6 table 4, the 66% of the community perceived as women participation in PFM high, 21% medium and the rest 13 % low.

4.4.1 Short-term and Long-term Community Benefits (GL2.2)

The project has engaged the local communities living in and surrounding the forest in design and implementation of REDD+ strategies. It is based on clear understanding of forest-related dependencies of communities and the potential impact that REDD-plus activities could have on the livelihoods of community. The environmental, economic and social co-benefits from the REDD+ putted short term and long-term benefits to the community.

The local community greatly benefit from REDD-plus and governance reform processes that are in line with, and contribute to national poverty-reduction strategies through developing sustainable livelihoods that recognize the potential for community-based options for sustainable management of forests. It can also benefit from the REDD+ activities designed to offset the on-going deforestation and forest degradation in the area. The community were benefit from equitable distribution from emissions reductions payments. In this reporting period the project managed to generate 3,915,582.31 Euro from forest carbon sale, from this sale 60 % of it (2,349,349 Euro) was distributed to 64 forest managing CBOs as per the benefit sharing criteria they developed (See annex 42 a, 42 b, 42 c with in community benefit sharing). This is to test out the first phase. Going forward OFWE is solely responsible to transfer revenues into the cooperative's accounts. In addition to this, better watershed management practices through improved forest management can have a positive impact on productivity of surrounding agricultural fields. The community can benefit from provision of improved agricultural extension services, better education and health as well.

4.4.2 Marginalized and/or Vulnerable Community Groups (GL2.4)

Community Group	Women
Net positive impacts	REDD+ strengthened conservation, sustainable management and restoration of forest resources which have considerable positive impact on the daily life of women. For instance, their access to fuel wood improved and have got fuel efficient stove from the project with subsidies. They are now highly engaged in the CBO governance, the CBO bylaw modified in such way that if the chairman is male the vice has to be women and from 7 executive member at least 3 has to be women. see annex 6 table 4.
Benefit access	improved their access to resources.
Negative impacts	No negative impact yet.

4.4.3 Net Impacts on Women (GL2.5)

The project has empowered women in governance and improved their access to resources. The contributions to marginalized groups through the planned activities of conservation, sustainable management and restoration of forest resources strengthened through REDD-plus interventions.

4.4.4 Benefit Sharing Mechanisms (GL2.6)

Benefit sharing agreements for the jointly managed forest is also cleared defined and as related to carbon credit is also negotiated. Through this negotiation, the CBOs are entitled to directly benefit from the sale of carbon credits as the joint owners of the forest. The outcome of the negotiation has confirmed the lion share of the carbon credit to be channeled to the community i.e. 60% to community and 40% to OFWE. Further more community discussed on how to allocate the 60% share to 64 REDD+ CBOs. Hence, with participation of relevant stakeholders (OFWE, COP and OEFCCA) including community 4 criteria were identified. According to these criteria 50% the money earned will be allocated for avoided deforestation so that CBOs will get their share as per their performance of avoiding or reducing deforestation in their management area. 20% allocated to member size, hence CBOs those have high members would have more money than CBOs that has low members. 18% of the money will be allocated for forest size, so that CBOs with large forest would get better money that those which have small forest from this allocation. Finally CBOs will share as per their result of OCAT score from 12% of money allocated. The criteria were selected by community and OFWE.

The carbon money disbursement was lagged/ delayed because of COVID-19 and redundant political instability in the country in general and in the eco-region in particular. However now, the expected /up to date money from forest carbon sale money (3,925,000 Euro) was transferred to OFWE account. The project has undertaken necessary preconditions for the disbursement of the money received, for instance, auditing conducted in all forest CBOs so as to ease the follow up of the use of carbon money. Government officials at different level aware about the money to be transferred to community. Forest carbon money disbursement lunching workshop conducted at regional level with the presence of Royal Norwegian Embassy representative, vise president of Oromia regional state, world bank, Commission of Environment Forest and Climate Change, National REDD+ secretariat, OFLP, Regional and zonal EFCCA, cooperative promotion office and other stakeholders.

The same workshop cascaded to Bale and West Arsi zones with the presence of zonal, woreda administrators and leaders of forest CBOs. On this workshop participates were aware the process of the REDD+ development & carbon market, the way benefit sharing agreed, the way the money will be handled, how grievance will be addressed. As the way forward, the role and responsibility of government stakeholders in the smooth implementation of the money at CBO level discussed. Finally, the actual money that each CBO could receive as per the agreed criteria informed.

Table 12 Organizational capacity assessment result of CBOs

No	Criteria	Weight (%)	Source
1	Avoided deforestation	50	Land sat image
2	Size of forest Area at verification	18	Forest map
3	Number of Members of CBO	20	CBOs

4	OCAT score	12	OCAT result
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OFWE displayed the total money received with the corresponding currency rate, the share that community would get see table 12. As indicated in the table 725,300 Euro was saved in the account for issuance and registration fee of the remaining carbon credits (this is informed to community). The share that each CBOs would get also displayed and they were asked if they have any question about the amount distributed, however, there was no enquiry forwarded from participant, See annex 43 with in community benefit sharing excel). The participants agreed as the money released as soon as CBOs held general assembly meeting and collect if there is grievance from member and also discuss on the way they use the money.

Table 13 Bale Forest carbon money received and distributed to community

Date received	Amount received, in Euro	Deduction	Net to be shared b/n OFWE & CBOs	Exchange Rate	Amount in Ethiopian birr
10-Aug-20	971.38	0	971.38	41.93	40,730.16
12-Aug-20	229,908.30	0	229,908.30	41.734	9,595,061.96
7-Sep-20	228,908.19	0	228,908.19	42.956	9,832,980.21
24-Dec-20	3,455,794.82	725,300.00	2,730,494.82	47.533	129,787,791.13
Total	3,915,582.31	725,300.00	3,190,282.69		149,256,563.46
			OFWE share (40%)		59,702,625.38
			CBOs' share (60%)		89,553,938.08

The participants confirm their agreement by signing on the minute prepared by their language (afan Oromo) and translated minute in English, See annex 42 a,42b,42c.

4.4.5 Governance and Implementation Structures (GL2.8)

The Bale mountains Ecoregion REDD+ project had been managed with clear partnership JFM agreement between community and OFWE. (Figure 4) governance and implementation structure of Bale REDD+ project

4.4.6 Smallholders/Community Members Capacity Development (GL2.9)

Assuring sustainable forest management demand continues support and capacity building of small holders forest managing community members. Hence, capacitating forest managing CBO members is one the project main activity. To undertake reasonable capacity building activity capacity a tool called OCAT (Organizational Capacity Assessment Tool) was developed and implemented. The capacity building was done based on the biannual capacity assessment result conducted using this tool. The tool has five components identified with OFWE and other stakeholders these are, leadership, property management, forest management, business development and gender. Each component has 10 question which had value assigned from 0,1 and 2, if the CBO address the question very well it will score 2, if moderately score a and if not addressed the score will be 0. The tool summarizes the result by component for each CBO and for the whole 64 CBO too. Based on the result the project will provide the capacity filling activity accordingly.

See Annex 23 OCAT guideline. The project planned to improve this capacity of CBOs from 35.92% to 60% based on OCAT-II . As a result of the capacity building activity done through training, material support and experience sharing and mentoring provided by the community facilitators and government extension workers, the average capacity of the 64 forest management CBOs improvement measured in OCAT-II has increased from 35.92% to 57.01%, see annex 4.

5 BIODIVERSITY

5.1 Net Positive Biodiversity Impacts

5.1.1 Biodiversity Changes (B2.1)

The change in community perception in biodiversity assessed by using the PRA tool through assessing the effect of the project activity towards biodiversity

Change in Biodiversity	Reduced deforestation trend in the project area
Monitored Change	The deforestation reduced by 56% against the baseline scenario
Justification of Change	Deforestation was reduced because community's awareness enhanced and they were actively involving in sustainable forest management. Project deforestation report Annex 1

Change in Biodiversity	Improvement of natural forest regeneration
Monitored Change	There is significant change in regeneration status of the forest , see Annex 7 forest assessment and also the community perception assessed and about (46%) of participants perceived the regeneration status was highly improved while (47%) felt that it was moderately improved. The remaining (7%) Annex 6
Justification of Change	The participants concluded that trend of forest tree regeneration was increased in many places because people became aware of the forest benefits and allow growth of regeneration and also reduced the effect of domestic animals because the animals would damage tree regeneration as results of grazing, browsing and trampling Annex 6

Change in Biodiversity	Reduced illegal forest tree feeling
Monitored Change	67% mentioned that illegal tree feeling was highly reduced while about 22% of the participants mentioned that it was reduced moderately. The remaining 11% of perceived the trend of illegal tree felling was reduced at slow rate
Justification of Change	Illegal tree felling activity was largely controlled in many places inline to enhanced capacity of REDD+ CBOs. Annex 6

Change in Biodiversity	Incidence of forest Fire
Monitored Change	Almost all the PRA participants (79%) witnessed that incidence of forest fire was highly reduced while (15%) mentioned that forest fire incidence was reduced moderately.

Justification of Change	The incidence of the forest fire avoided in relation to enhanced people's awareness Annex 6
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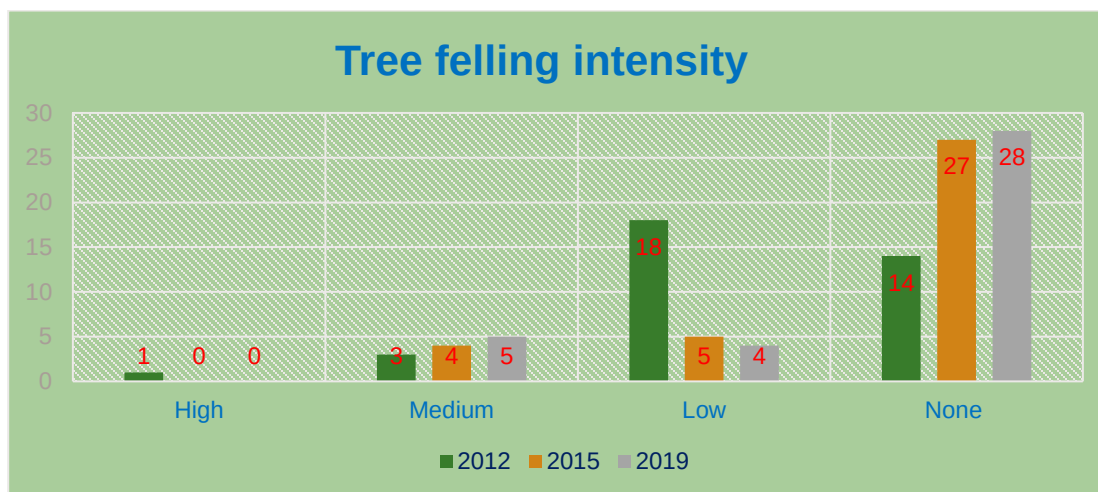
Change in Biodiversity	Reduced trend of slashing of forest regeneration
Monitored Change	54% of the participants ranked that the trend of slashing was highly decreased while 33% mentioned the trend was happened moderately. About 13% of the participants perceived that trend of reducing slashing was happen at slow rate
Justification of Change	This harmful practice was decreasing by continuous awareness creation provided to community. Annex 6

Change in Biodiversity	Reduced Incidence of killing wild animals
Monitored Change	about (50%) of participants responded that incidence of killing wild animals was highly decreased while (31%) responded that the reduction was moderate. The remaining (19%) participants perceived low. Annex 6
Justification of Change	The change happened due to the capacity building support and awareness created.

Change in Biodiversity	Frequency of wild animals Appearance
Monitored Change	About (79%) of participants indicated that wild animals' frequency to appear around forest was very high while (17%) responded it was moderate and the remaining (4%) responded that it was rare. Annex 6
Justification of Change	The change happened due to the capacity building support and awareness created.

Furthermore, the project conducted participatory forest resource assessment (PFRA) as per the management agreement between OFWE and forest CBOs. PFRA is the forest assessment system that used ecological indicators understandable to community like, Basal area, tree felling intensity, soil exposure, grazing intensity, incidence of fire, crown cover and regeneration. In this reporting period, PFRA conducted on the same sample plot where baseline and first verification has done. As indicated in the figure 12 below the number of sample plots where no new tree felling observed increased from 14 in 2012 to 27 in 2015 and then to 28 in 2019 for more detail, See annex 7.

Figure 13 tree felling in the years 2012,2015 and 2019



5.1.2 Mitigation Actions (B2.3)

Basically REDD+ projects are complementing with bio diversity conservation. The project implemented participatory with high engagement of community and government to resolve the identified forest problems and to maintain HCVs activities like identifying forest areas for different uses and priorities for conservation, implementing standardized management plan through the community plus the planned project activities that intend to reduce drivers of deforestation and forest degradation. Planned project activities comprise interventions like establishing woodlots for construction and fuelwood supply, promoting agro-forestry outside of the forest areas to produce non-timber forest products and implementing sustainable NTFPs (coffee, honey, medicinal plants, bamboo, etc) production practices. The project activity has given special attention to address drivers that can severely affect biodiversity of the forest such as forest fire control through training and material supports to local communities (Firefighting devices have been distributed to communities involved in the project implementation).

5.1.3 Net Positive Biodiversity Impacts (B2.2, GL1.4)

The Bale Mountains is the most important component of the Ethiopian Highlands Conservation International (CI) Hotspot, within the Eastern Afromontane Hotspot (PASP, 2005). The Bale Mountains have one of the highest incidences of animal endemism of any terrestrial habitat in the world, with 160 endemic species of flowering plants and is the most important area of high conservation values in the Ethiopian highland. It constitutes part of Conservation International's Eastern Afromontane Biodiversity Hotspot Area, and is one of the 69 Important Bird Areas (IBAs) designated in the country, harboring about 280 bird species, of which six are endemic, seven are globally threatened and 42 out of 48 Afro-tropical highland biome bird species (88% of the total in the country). Compilations of previous studies show at least 78 mammal species, belonging to nine orders and 23 families of mammalian groups, are known to occur in the Bale Mountains Eco-region. Twenty (26%) of the total species are reported to be endemic to Ethiopia representing 40% and 67% of the total mammal species and endemics, respectively, occurring in the Ethiopian highlands. Furthermore, at least five species are presumed to be confined to the Bale Mountains area while another five species are locally endemic.

Under the "without project" scenario, 32.2 % of the Bale mountains forest estimated to lose by 2031. The loss of forest cover implies a loss of biodiversity and habitat for local flora and fauna, as well as the environmental services that the forest provides. This loss of forest also directly affects the conservation of

the soils and disturbs the ecological processes on a larger scale. However, the REDD+ project scenario assumes that the resources required to guarantee forest conservation and sustainable development are available from emissions reductions payments. Under this scenario, it is assumed that the forests in the project area can be conserved and promote great benefits in terms of biodiversity conservation when compared to the “baseline” scenario. This has been achieved through the establishment of a robust system for biodiversity conservation and monitoring in the Bale Mountains Eco-region in which community actively engaged. The importance of involving local communities and their role in maintaining the integrity of the ecosystem is highly encouraged through Participatory Forest Management (PFM).

The Bale mountains REDD+ project II contributed to decrease rate of deforestation by 56% which implies for high conservation of biodiversity. The project is set in Afromontane humid and dry forest ecosystems housing diverse wild Arabica coffee, and other endemic flora and fauna populations. No invasive species have not been introduced in the natural forest area. The project encourages sustainable production and harvesting of Non-Timber Products (NTFPs) to compliment the livelihood of the local community. In the Bale Mountains Eco-region, the communities grow exotic species at the vicinity of their villages/farms as boundary plantings or woodlots while the Oromia Forest and Wildlife Enterprise grows industrial exotic plantations of Cupressus lusitanica and Eucalyptus species in the concession area outside of the forest areas. The plantations are meant to meet the ever-increasing demand of the local community for wood and thereby reduce pressure on the natural forest. The genetically modified organisms has never been introduced and will not be used in anyway in the project area. Moreover, people's perception about the biodiversity impact were monitored by using Participatory Rural appraisal (PRA) and Participatory forest assessment and the results are described as below:

Following the awareness creation on climate change and REDD+ project in the first phase of the project (Piloting Bale REDD+ project) the forest management activity which result in biodiversity conservation had been continued in this phase too. As a result, deforestation reduced in the project and leakage belt area, regeneration improved, tree felling decreased and also fire incidence highly reduced and the result perceived by community. For instance, 54% of the community perceived as deforestation highly reduced in the project area whereas 40% perceived as deforestation was moderately reduced and the rest 6% ranked low. Also 67% of the sample community realized that tree illegal felling was highly reduced and 22% perceived as moderate and the remaining 11 percent perceived low.

Expansion of coffee plantation in the forest is one of the identified main traits of biodiversity in Bale forest. To tackle forest degradation caused as a result of coffee plantation and improve the biodiversity of the forest, the project introduces practice of coffee planting on cropland as agroforestry system, so far 19.9 ha of crop land converted to coffee agroforestry system and farmers are encouraged to allocate more crop land for agroforestry practice. These agroforestry plots would have multiple function in maintaining micro climate of the area, enhance the income of community through diversifying income generated from coffee and fruit trees planted. Also, the plots serve source of fuelwood for the house holds which entirely depend on the forest for fuel wood. Moreover, the contribution of agroforestry plots in conservation of the biodiversity of the area is indispensable.

To reduce forest degradation due to fuel wood, the Bale REDD+ project distributed 2681 fuel efficient stoves to project beneficiaries in 2017 and 2019 (Annex 5). Referring to this distribution, about (46%) of the PFR participants indicated that the distribution was done highly while the majority of participants (56%) perceived the distribution was moderate and the other (7%) mentioned. (Table 17). The fuel-efficient stoves were basically distributed to beneficiaries of the project to address the two important purposes. Primarily, it aimed at reducing high consumption of fuel woods which has implication to the forest resource and carbon emission. Secondly, it supposed that the stoves would improve health condition of women by avoiding excess heating and smokes that affect the health conditions of the women particularly their eyes.

Besides to this, MSc study entitled fuelwoods consumption and environment implications was sponsored by the Bale REDD+ project and this study revealed that fuel efficient stove used to decrease fuelwoods consumption by 28.6% as compared to tradition stove which implies for saving 0.875 ton of fuel wood/stove/year/. This value was used to calculate a total amount of fuel woods saved. Accordingly, the

total 2681 stoves that were distributed has a contribution to avoid the destruction of forest biomass equivalent to 2345.88 ton/year in this project period which is enable to reduce high number of tree felling for fuelwood.

Concerning the overall benefits of the biodiversity, the deforestation analysis made using Landsat image indicated that deforestation in the eco-region 8566.85 ha of forest was saved from deforestation which was 56% achievement of reducing deforestation against what was estimated under scenario of business as usual in the absence of REDD+ project. This indicates biodiversity in the project areas is well conserved in a better condition at larger landscape level which implies that many plants biodiversity and wild animals protected from destruction.

To supplement biodiversity benefits assessed through PRA technique, a case study was carried out in the selected (HVC) area using Participatory Forest Resources Assessment tool adopted and used to assess forest resources in the Bale eco-region. Therefore, the case study conducted in the same area called Chiri forest compartments indicated that the average forest basal area in 2015 was 30.05m² /ha and it was increased to 30.525m² in 2019. This implies the average basal area was increased by 0.475 m²/ha over the indicated three years (Table 16). The largest increment of the basal area 0.7 m²/ha was recorded in Hiliye compartment while low increment recorded 0.3m²/ha in Melka fugnani. Despite these, the overall result indicates the total basal area increment implies for sustainable forest management.

Table 14: Basal area statistics

No	Compartment name	Basal area in 2012	Basal area in 2015	Basal area in 2019	Increment over 2016 to 2019
1	Hiliye	30.4	29	29.7	0.7
2	Melka fugnani	28	30	30.3	0.3
3	Dikicho	31.71	33.2	33.7	0.5
4	Bahicho	27.1	28	28.4	0.4
	Total	117.21	120.2	122.1	1.9
	Average /ha	29.3	30.05	30.525	0.475

In 2015 forest regeneration was recorded as plenty in 8 plots whereas the record increased by one in 2019 and also regeneration in medium category was increased from 22 to 24 plots. The plots that record scare regeneration in 2015 was 6 but now only two plots show scare regeneration record this is a result of improved forest protection from livestock. (Annex 7).

Regrading, wild animals the PRA participants indicated that before intervention of the Bale REDD+ project in some places wild animals were killed illegally by individuals for various reasons. In this project intervention period the incidence decreased and the trend of decreased was perceived as high by (81%) of the PRA participants while (10%) perceived trend of incidence was moderate and the rest (9%) decreased slowly. Having discussion with participants, it was clearly explained that an incidence of killing wild animals was decreased by far in relation to provided awareness creation activities and capacity building supports provided to REDD+ CBOs. Following decrease of this illegal activities and better conservation of forest resources, it assumed that the visibility or presence of wild animals in the area expected to increase. With

this assumption, PRA participants were requested and about (79%) of participants indicated that the wild animals' frequency to appear around forest was increased highly while (17%) perceived it was moderate and the remaining (4%) perceived as it was low or rare (Table 12).

Table 15: People's perception about biodiversity benefits

Sn.	Parameters	Total	High		Medium		Low	
			No.	%	No.	%	No.	%
1	Reduced deforestation trend in the project area	100	54	54%	40	40%	6	6%
2	Reduced rate of deforestation surrounding to the project boundary (leakage belt)	100	70	70%	17	17%	13	13%
3	Forest regeneration improvement	100	46	46%	47	56%	7	7%
4	Reduced illegal tree feeling	100	67	67%	22	22%	11	11%
5	Decreased incidence of forest fire	100	79	79%	15	15%	6	6%
6	Decreased trend of slashing of undergrowth in the forest coffee area	100	54	54%	33	33%	13	13%
7	Reduced incidence of Killing of wild animals	100	81	81%	31	10%	9	9%
8	Frequency of appearing of wild animals in and around the forest	100	79	79%	17	18%	4	4%
9	Overall perception	800	530	66%	222	28%	69	9%

5.1.4 High Conservation Values Protected (B2.4)

Special attention were given to HCV areas specific to mee community needs, including areas with Coffee (coffee Arabica) which is naturally growing in the Bale Mountains Natural forest and contributes a lot to the household economy in the area. The project supports the local community owning the wild coffee in the BMERP area to sustainably use the coffee for their livelihood improvement. There are also numerous natural mineral water springs, locally called horas, which provide an essential source of minerals for livestock. The mineral springs within the BMERP area are valued for their high mineral content (sodium, magnesium, zinc and calcium), and local pastoralists believe that in order to maintain good health and milk production their livestock must be given hora water.

The implementation of REDD+ project by nature is in favor of biodiversity conservation. The project implementation focused on community participation in the conservation and monitoring of the forest through participatory forest management approach. Implementation of sustainable forest management contributes to maintain all the HCV of the eco-region. Measures that were taken to maintain the HCVs include identifying forest areas for different uses and priorities for conservation, implementing standardized management plan through the community. Implemented project activities comprise interventions like establishing woodlots for construction and fuelwood supply, promoting agro-forestry outside of the forest areas to produce non-timber forest products, implementing sustainable NTFPs practices, distribution of fuel-efficient stoves to reduce volume of wood demand and the like (see section 2.1). For instance, a standardized management practices for forest coffee production in Bale and major coffee forests of Ethiopia

have already been developed. The project activity had given special attention to address drivers that could severely affect biodiversity of the forest such as forest fire control through training and material supports to local communities and occurrences of fire regularly monitored and effectively addressed. Community perception toward project implementation result showed that 79% of the respondent perceived as fire incidence highly decreased/reduced see annex 6 and section 5.1.1. Hence, the no HCVs related to biodiversity have been negatively affected by project implementation in this reporting period.

Culturally, the forest is highly valued among the Oromo community. In oral Oromo history, part of the Bale Eco-region (Mada Walabu) is considered as the place of origin for all Oromo people, the biggest ethnic group in East Africa, perhaps the second largest in the whole of Africa. In Oromo tradition, trees and forests have high value, as economic as well as cultural and ritual sites. For instance, large trees like Ficus are used as assembly places as well as ritual sites. Forests are the main sources of coffee, honey, traditional veterinary and human medicine, and seasonal grazing lands for lowland pastoralists.

Forests also provide watershed protection services highly valued and defended by pastoralists and agro-pastoralists from the lowlands. The local communities have strong traditional practices of managing forests and other communal resources. The project integrated these social, economic and cultural values and institutional arrangements such as PFM in its sustainable forest management endeavors. These activities helped to ensure that local biodiversity was protected.

5.1.5 Invasive Species (B2.5)

No invasive species recorded in the project area.

5.1.6 Impacts of Non-native Species (B2.6)

There is no record over adverse effect on use of non-native species over native species.

Species	<i>no.</i>
Justification of Use	
Adverse Effect	

5.1.7 GMO Exclusion (B2.7)

Not applied for this project.

5.1.8 Inputs Justification (B2.8)

The project did not used any form of fertilizers, chemical pesticides and biological control agents.

Name	<i>No input used</i>
Justification of Use	
Adverse Effect	

5.2 Offsite Biodiversity Impacts

5.2.1 Negative Offsite Biodiversity Impacts (B3.1) and Mitigation Actions (B3.2)

There were no negative environmental or biodiversity impacts from project implementation happened. The Bale Mountains Eco-region REDD+ Project was designed in a way not to bring any negative offsite biodiversity impact. It was actually expected to result in increased conservation value to an area that is globally significant. The project secured the protection of the natural forests by involving community and hence the natural resources within the Bale Mountains conserved.

The overall project area includes the entire Bale massif except the National Park. Hence none of the areas that are significant in biodiversity conservation were left out in this process. In addition, the project implementation supported the effort of the National Park by introducing sustainable natural resources management system around the park and hence enabled to reduced threats that were faced by the area before the project.

The project promoted economic development based on sustainable use of natural resources which increased the value of the resources in the area and ensured their conservation as well. Furthermore, there was monitoring system to ensure that the REDD+ project generate positive biodiversity impacts as well as a system to manage any potential negative impacts to offsite biodiversity. Therefore, the project does not bring any negative offsite biodiversity impacts.

Negative Offsite Impact	Mitigation Measure(s)
No negative offsite impact identified	

5.2.2 Net Offsite Biodiversity Benefits (B3.3)

The Bale Mountains is the most important component of the Ethiopian Highlands Conservation International (CI) Hotspot, within the Eastern Afromontane Hotspot (PASP, 2005). The Bale Mountains have one of the highest incidences of animal endemism of any terrestrial habitat in the world, with 160 endemic species of flowering plants and is the most important area of high conservation values in the Ethiopian highland. It constitutes part of Conservation International's Eastern Afromontane Biodiversity Hotspot Area, and is one of the 69 Important Bird Areas (IBAs) designated in the country, harbouring about 280 bird species, of which six are endemic, seven are globally threatened and 42 out of 48 Afro-tropical highland biome bird species (88% of the total in the country).

Compilations of previous studies show at least 78 mammal species, belonging to nine orders and 23 families of mammalian groups, are known to occur in the Bale Mountains Eco-region. Twenty (26%) of the total species are reported to be endemic to Ethiopia representing 40% and 67% of the total mammal species and endemics, respectively, occurring in the Ethiopian highlands. Furthermore, at least five species are presumed to be confined to the Bale Mountains area while another five species are locally endemic.

Under the "without project" scenario, 32.2 % of the Bale mountains forest will be lost by 2031. The loss of forest cover implies a loss of biodiversity and habitat for local flora and fauna, as well as the environmental services that the forest provides. This loss of forest also directly affects the conservation of the soils and disturbs the ecological processes on a larger scale.

The "with project" scenario assumes that the resources required to guarantee forest conservation and sustainable development are available from emissions reductions payments. Under this scenario, it is assumed that the forests in the project area will be conserved and thus will promote great benefits in terms of biodiversity conservation when compared to the "baseline" scenario.

To monitor biodiversity the project adopted Community Based Monitoring (CBM) system to actively engage community in the monitoring of bio diversity see annex 23. So that, the main positive net impacts that community-based monitoring (CBM) of the biodiversity brought to the project area was shown in the table 16 below. As shown, without community-based biodiversity monitoring, it was impossible to gather information that allows better management and conservation of the biodiversity.

Table 16: Net Positive impacts on the biodiversity

Area	Situation Without the project	Program/Activity	Net Benefits	Indicators	Institution
Biodiversity monitoring	No monitoring of biodiversity	PFM involving communities in monitoring biodiversity	Help with the prevention and identification of negative impacts on biodiversity and on the livelihood of the communities	Data collected regularly and documented	Forest managing community and OFWE

The Bale mountains REDD+ project halted the process which was placing rare, threatened or endangered species under extreme threat. The project was situated in Afromontane humid and dry forest ecosystems housing diverse wild Arabica coffee, and other endemic flora and fauna populations. No invasive species introduced in the natural forest area. The project enhanced wild coffee production from the existing natural forest while promoting marketing of coffee beans at premium price. The project also encouraged sustainable production and harvesting of Non-Timber Products (NTPs) to compliment the livelihood of the local community.

The project supported communities to plant exotic species at the vicinity of their villages/farms as boundary plantings or woodlots while the Oromia Forest and Wildlife Enterprise grows industrial exotic plantations of Cupressus lusitanica and Eucalyptus species. The plantations were meant to meet the ever-increasing demand of the local community for wood and thereby reduce pressure on the natural forest. These tree species are very popular and found distributed all over the country and had demonstrated no adverse effect on native species.

Moreover, around 12 million population both in the eco-region and beyond within Ethiopia, Somalia and Kenya are estimated to directly and indirectly depend on several ecosystem services generated from the eco-region. Hence, the conservation and management of this ecosystem positively affect the livelihood and living condition of this community.

5.3 Biodiversity Impact Monitoring

5.3.1 Biodiversity Monitoring Plan (B4.1, B4.2, GL1.4, GL3.4)

The biodiversity goal of the project focuses around maintaining and improving forest cover and conditions throughout the project areas by implementing project's activities to maintain biodiversity and ecosystem conservation. For this reason, this biodiversity monitoring plan is devised to monitor the progresses of the project in maintaining and improving the conservation value of the project areas.

The selection of indicators for monitoring the outputs-outcomes and impacts of the project followed the theory of change approach that uses to explain a causal model to predict changes attributable to the project by measuring the most relevant indicators of the progress. This implies that the theory of change approach allows identification of causal chains from project activities to short-term outputs, from outputs to outcomes and from outcomes to impacts through anticipating the cause-and-effect sequences.

The biodiversity impacts were measured at landscape level using Landsat images and transect walks to monitor the deforestation and threats to biodiversity as a result of project activities implementation throughout the project areas. The analysis done in January 2020 see annex 1 and. Land-use land-cover change both in the Bale REDD+ Project area and Leakage Belt monitored using freely available Landsat images. The analysis generated classes of non-forest and forested areas. The deforestation analysis compared to the baseline data that obtained from historical deforestation analysis which indicated in the PDD. This deforestation, analysis carried out every three years in both project and leakage belt areas using the methodological procedure of Methodology VM0015 v 1.1. OFWE was responsible to the collection of monitoring data and information management with close support of Farm Africa and SOS Sahel Ethiopia. The data sources like image processing, image classification, produced maps and GPS coordinates documented in electronic archive see annex 1.

A total of 176 training points for forest land and non-forest land were digitized from Landsat image of Jan 2020 on the computer screen using ENVI 5.0 version and used to run the image classification (Annex 1). However, to make sure the classification was in the limit of acceptable range ground controlling data collection checking the accuracy of the classified is very crucial. Accordingly, prior to collecting GPS coordinate data from field, a field data record sheet was designed. Subsequently, using Garmin72 GPS 152 testing points were collected from the ground for both forest and non-forest land areas and used to check the accuracy of the classification (Annex1). The overall accuracy of image classification was calculated as 90.05% which indicates the high level of precision in the range of acceptable limit (Annex 1).

As per this analysis, in this reporting period the project managed to reduce deforestation by 56% and able to save 10,399 ha of forest (see section 3.2.2 and annex 1). Which implies the biodiversity (macro and micro including human being) which exist in and depend on this forest for different purpose were saved.

As per the monitoring plan the deforestation analysis was supposed to be conducted every five years, however, the project did the analysis at the 4th years of the first verification because the Bale mountains REDD+ project integrated in the larger OFLP REDD+ project. see section 2.2.7.

The ecosystem and species monitoring were conducted using the PFRA methodology that was adopted for participatory forest management. Sample PFRA conducted in October 2019 see annex 7 and annex 27 and section 5.1.3. In such assessment the project monitored changes in the forest conditions indicators like basal area, regeneration and other ecological indicators. See Annex 7.

The sample PFRA conducted on the sample plot (36 sample plots) reported on first verification indicated that the average basal area in 2019 was 30.525m²/ha. This revealed that the average basal area was increased with average increment of 0.475 m²/ha over the indicated three years. The largest increment of basal area of 0.7 m²/ha was recorded in Hiliye compartment while smallest basal area increments record of 0.3 m²/ha identified in Melkafungani compartment. However, the result indicted the total basal area was increased which implies the forest is under sustainable forest management. The number of sample plots where no tree felling observed were increased from 14 to 27 and then to 28 in 2012,2015 and 20119 respectively. (see Table1 of annex 7)

The effect of forest management could be detected in terms of change in the overall structure of the forest, such as change on the number of trees, saplings and seedlings per hectare. To monitor the forest structural change a woody tree species assessment was conducted, in 2017

on 51 sample plots, to serve as a baseline. The baseline result show that 44069 woody tree species /ha with proportion of (284 trees, 5740 saplings and 38,045 seedlings). The second assessment of 2019 showed the total number of woody species was 46434/ ha. This implies an increase of 5%. Of the total number of woody species in 2019 the proportion of trees was 381 individuals/ ha while samplings and seedlings accounted for 5620 and 40433 individuals / ha, respectively). The analysis revealed that the number of trees and seedlings were considerably increased. However, the number of saplings showed a slightly decrease by 120. This could be a case for two reasons. Firstly, some saplings grow to trees while other might die off due to high competition among individuals see annex 27. The assessment was supposed to be done every four years, however, it is conducted after three years because the baseline study was delayed by one year.

Before intervention of the Bale REDD+ project, it was a case that wild animals were not frequently appear around forest areas because they were derived away by the people due to various illegal hunting and other reasons. However, after the intervention of the Bale REDD+ project, people got awareness about the benefits of wild animals and started to care of wild animals and conservation of their habitats. In light of this, frequency of wild animals' appearing in and around the forest areas was increased. This was revealed by a study conducted in five sample woredas in 19 kebeles using PRA tool every four years. According to this study, about (79%) of participants indicated that wild animals' frequency to appear around forest was very high while (17%) responded it was moderate and the remaining (4%) responded that it was rare.

Incidence of killing wild animals was also one of the variables monitored, before the intervention of the Bale REDD+ project in some places wild animals were killed illegally by individuals for various reasons. To reduce the challenge in this regard the project has provided awareness creation massively. Accordingly, after the intervention of Bale REDD+ project, about (50%) of participants responded that incidence of killing wild animals was highly decreased while (31%) responded that the reduction was moderate. The remaining (19%) participants perceived low. During discussion with participants, it was clearly explained that the incidence of killing wild animals was stopped due to provided awareness creation activities and capacity building supports provided to REDD+ CBOs. The overall biodiversity impacts as a result of implementing the Bale REDD+ project was perceived as high by about 66% of the PRA participants and 42% perceived the impact was medium while 12% mentioned the impact was low (Annex 6, Table3).

5.3.2 Biodiversity Monitoring Plan Dissemination (B4.3)

The monitoring plan and the result of the monitoring disseminated to stakeholders and community through meetings and workshops, for community since February 14/2020, for zonal stakeholders since August 29-31/2020 and for National REDD+ network on December 12/2020.

5.4 Optional Criterion: Exceptional Biodiversity Benefits

Ethiopia has a large number of species listed as critically endangered and vulnerable to global extinction. The threatened species in Ethiopia can be broken down into three categories (based on IUCN ratings): Critically Endangered, Endangered and Vulnerable (Massicot, Paul 2005). In the table below (Table 18) Mountain Nyala, Ethiopian Wolf, African Wild dog, Harena shrew and others which are found in the project area falls in one of these three categories. This implies implementing the project and improving the management of the eco-region helps to save and sustain the lives of these endangered species and their ecosystem functions.

Table 17: List of fauna species in Bale eco-region at various level of threat

<http://www.animalinfo.org/country/ethiopia.htm>

Critically endangered mammals	Endangered mammals	Vulnerable mammals		
Bilen gerbil	Grevy's zebra	African elephant	Large-eared free-tailed bat	Red-fronted gazelle
Black rhinoceros	Mountain nyala	Ammodile	Lesser horseshoe bat	Rupp's mouse
Ethiopian wolf	Nubian ibex	Bailey's shrew	Lion	Scott's mouse-eared bat
Guramba shrew	African wild dog	Bale shrew	Moorland shrew	Soemmerring's gazelle
Haremma shrew		Beira antelope	Morris's bat	Speke's gazelle
MacMillan's shrew		Cheetah	Mouse-tailed bat species	Spotted-necked otter
Walia ibex		Dibatag	Natal free-tailed bat	Stripe-backed mouse
		Dorcas gazelle	Nikolaus's mouse	
		Glass's shrew	Patrizi's trident leaf-nosed bat http://en.wikipedia.org/wiki/Patrizi%27s_trident_leaf-nosed_bat	

The Bale Mountains are unique in Africa and encompass Africa's largest alpine plateau which contains the largest populations of two of Africa's least known and yet most charismatic species – the Ethiopian wolf and the Mountain Nyala (Figure 23). Bale Mountains also harbor an exceptionally high number of other species endemic to Ethiopia and, in some cases, endemic to the Bale Mountains themselves. They are included in Conservation International's Eastern Afrotropical Biodiversity Hotspot (one of 34 such critical eco-regions for biodiversity conservation in the world) and are designated as one of Bird Life International's Important Bird Areas.



Figure 14 Endemic Mountain Nyala

Among the larger mammal species of the area, five deserve special conservation attention since they are not only endemic and/or globally threatened, but are also important flagship species for the Ethiopian highlands. These include the endangered endemic Bale monkey (*Chlorocebus djamdjamensis*), Ethiopian wolf (*Canis simensis*) and Mountain nyala (*Tragelaphus buxtoni*), as well as the endangered Wild dog (*Lycaon pictus*) and the Ethiopian lion (*Panthera leo*) (Figure 24) which has recently been recognized as genetically different from other lion in East Africa.



Figure 15 Ethiopian lion with unique black mane – Harenna forest area

Around 78 species of mammals are recorded in Bale, which represent 40% of mammals known from the whole Ethiopia. Out of these, 20 species are Ethiopian endemics, representing 26% of the total species reported in the area. This is by far the highest proportion of endemics. On average, about 10% of the flora and fauna of Ethiopia are endemic. The endemic mammals of the Bale Mountains also 67% of the total endemic mammals recorded in the Ethiopian highlands. Isolation and rarity put these endemic species at high risk of extinction and, thus, in need of effective conservation strategies that are supported nationally and internationally. Not only does this area protect a significant portion of Ethiopia's and the world's biodiversity, it is also an area with immense benefits for species evolutionary processes.

However, the current trend of ecological degradation in the area poses a severe threat to the survival of most of these rare species. It has even been said that "if conservation efforts are not successful and people continue to exploit the resources in an unsustainable way, more species of mammals would go extinct than any area of equivalent size on the globe."

Hence the work that is envisaged to be carried out by the REDD+ project II over the whole Bale Mountains area will no doubt have an exceptional biodiversity benefits while placing a sustainable natural resources management system in an area with such global significance.

There are seven globally threatened species of birds recorded in the Bale Mountains. These include four vulnerable species (Greater Spotted Eagle, Imperial Eagle, Lesser Kestrel and Wattled Crane), and three near-threatened species (Pallid Harrier, Rouget's Rail, and Abyssinian Longclaw). The 6 endemics out of the total 16 Ethiopian endemics are: Spot-breasted Plover, Yellow-fronted Parrot, Abyssinian Longclaw, Abyssinian Catbird and Black-headed Siskin. The Spot-breasted Plover population is the largest and most

significant for the species, and hence deserves conservation on its own. All these endowment make the Bale mountains eco-region to be unique and providing exceptional biodiversity benefits.

5.4.1 Trigger Species Population Trends (GL3.3)

Bale Mountains Eco-Region is known by its endemic species where majority found in the national park outside REDD+ project area. So that the management/ conservation of the project area has positive impact on the conservation of all species in the park. Biodiversity conservation and protection is one of the major forest protection activity planned under sustainable forest management plan of JFM CBOs.

According to IUCN 2019 report only 'Five species locally restricted to the Bale area triggered the status as a site recognized by the Alliance for Zero Extinction (*Crocidura harenni*, *Tachyoryctes macrocephalus*, *Altiphrynos malcolmi*, *Balebreviceps hillmani* and *Ericabatrachus baleensis*) because every single one of them is known to occur in BMNP only. Along with high endemism, BMNP encompasses a diversity of habitats, including grassland, woodland, afro-alpine meadows, moorland, and highly threatened afro-montane forest. While not exclusively restricted to the park, BMNP also hosts the largest population of the endemic and endangered mountain nyala (*Tragelaphus buxtoni*), an estimated two-thirds of the global population of the species; the most important population of the endemic and endangered Ethiopian wolf (*Canis simensis*) and the endemic subspecies Menilik bushbuck (*Tragelaphus scriptus meneliki*). Data for birds is similarly impressive with a large number of endemic birds either found only in the Bale Mountains and the Harenni Forest or these areas playing a key role for such species. Noteworthy avian species include the endemic Abyssinian catbird (*Sylvia galinieri*), yellow-fronted parrot (*Poicephalus flavifrons*), Abyssinian long-claw (*Macronyx flavicollis*) and Spot-breasted lapwing (*Vanellus melanocapillus*) black-headed siskin (*Serinus nigriceps*), blue-winged goose (*Cyanochen cyanoptera*) and spot-breasted plover (*Vanellus melanocapillus*). There are eight endemic rodent species together with prominent taxa the endangered and Bale endemic.'

The trigger species listed above are not found in the REDD+ project area. However, the rest listed endemic animals found in the project area, so that, conservation of the forest in the project area highly contribute for their existence. From IUCN red listed/ endangered fauna and flora of Ethiopia 105 (45 fauna and 65 flora) found in Bale Ecoregion within and out of the project area (see annex 30).

These diversities are result of the geographical coverage and high ecological variation that the project area covers. Three different Key Biodiversity Areas (KBAs) are part of the Project Area (Harenni-Kokosa, Bale Mountains National Park, Mena-Angetu Forest) <http://www.keybiodiversityareas.org/kba-data> and as described in the PDD, the major target of the Project Activity is to protect existing forests and therefore also the flora and fauna of the KBAs. The participatory forest management deployed to conserve both plant and animal biodiversity found in these KBA, no special attention given for specific groups/ species. So that, the project does not explicitly monitor Trigger Species. Also, it is very difficult to quantify biodiversity as this was not measured as part of project monitoring. However, as a result of forest protection and conservation in the project area and has seen an increase of overall biodiversity such as the Nyala, Ethiopian Wolf that are endemic animals in Bale.

6 ADDITIONAL PROJECT IMPLEMENTATION INFORMATION

The Bale REDD+ project together with conservation international have piloted Community Based Monitoring(CBM) system developed by other FA project (Annex 23), construct 14 coffee ware houses, developed coffee value chain and establish model agroforestry plots which enable the farmers to learn that coffee can grow outside the forest area.

7 ADDITIONAL PROJECT IMPACT INFORMATION

Not applicable

8. APPENDICIES

Table 18: Project Risks Table

Identify Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed to mitigate the risk
Fire	Damage the biodiversity	• Firefighting equipment /tools made available for each JFM CBOs; • Capacity building of forest CBOs' to better manage the risks of forest fire ;
Weak law enforcement	Deforestation, deforestation and disturbance of biodiversity	Oromia regional government has given attention to forest protection law enforcement, to stop illegal activities inside the forest; The Climate Resilient Green Strategy (CRGE) and the Growth & Transformation plan of Ethiopia has given due attention to forestry sector (REDD+ is one of the four fast track implementation activities of the Ethiopian CRGE Strategy); JFM CBOs (local community organization) are given mandate to locally enforce their internal bylaw to protect forest; The project established close working relationships with judiciary to enforce law.
Weak institutional capacity to implement REDD+ project	Accelerate deforestation and degradation that result in biodiversity damage, ecosystem change and GHG emission	Frequent training in areas of REDD+ project implementation provided to OFWE, OEFCCA staffs and the local communities; REDD+ unit established in OFWE HQ and in the Bale and Arsi branches; Oromia Environment Forest Climate Change Authority established at regional level under the Federal Climate Change Commission Federal level REDD+ secretariat established to provide support to regions for the implementation of REDD+ pilot projects Farm Africa and SOS sahel Ethiopia with comprehensive experience in the forest carbon backstopped implementation of the project.

Annex

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1. Deforestation Analysis Report_2019_ | 
2 Project period GHG emission calculation 2 sheet revised 3rd ver: | 
3 Carbon calculation sheet | 
4. OCAT FOR BALE REDD+_2020.pdf | 
5. fuel efficient stove distribution.xlsx | |
| 
6 People's perception assessmer | 
7 Forest Assessment report of Chiri.pdf | 
8. Fuel efficient MSC study.pdf | 
9 Bale REDD+ Modelling Report.pdf | 
10. Bale REDD+ Forest Carbon Stock /permanace Risk-Repo | 
11. VCS-Non |
| 
12. Bale REDD+ VCS-Non-Permanence | 
13 . Wood density data for species in Eth | 
14. GREIVANCE HANDLING MECHANISM | 
15. Constitution of the FCL | 
16. Federal rural Administration pr | 
17. OFWE labour law English.pdf |
| 
18. Forest Development Conserv | 
19. Oromia Forest proclamation.pdf | 
20. Cooperatives commision establishmr | 
21. EthLabourPro377.pdf | 
22. OCAT guideline.docx.pdf | 
23. CBM Piloting guidelines.pdf |
| 
24. Forest Proclamation 2018.pdf | | | | | |
| 
25a. Audit Report REDD+ 2019.pdf | 
25b. REDPLUS PHASE II AUDIT.pdf | 
26. Finance Policies and Procedures - updat | 
27. woody species assessment report.p | 
29. Ethiopia CRGE.pdf | 
28. House hold income survey In Hare |
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30.IUCN Red listed- endangered fauna an | 
31. Final OFLP PIM April 25 2017 Versior | 
32. Updated upto MLP 2019.XLSX | 
33. OFWE regulation.pdf | 
34. Ethiopia REDD+ registry fields_with_de | 
35. Nesting REDD+ in OFLP_Final.pdf |
| 
36. sample Quarter report.PDF | 
37. community feedback report 241 | 
38. Minute of Bi annual staff meeting | 
39. Minutes of aL.N.December 2020.p | 
40. Annual report submitted to zonal st | 
41. 2019 Bale REDD+ activity performance r |
| 
42 a. Bale zone Forest carbon benefi | 
42 b. Westarsi zone Forest carbon benefit | 
42 c. MINUTE Bale REDD+ between RED | 
43. Final with in community benefit sh | 
44. Donor agreement.pdf | |

