Federal Democratic Republic of Ethiopia
Oromia Environment Forest and Climate Change Authority (OEFCCA)
Oromia Forest and Wildlife Enterprise (OFWE)

Federal Democratic Republic of Ethiopia

Project for Supporting Sustainable Forest Management through REDD+ and Certified Forest Coffee Production and Promotion

Project Completion Report

November 2020

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Federal Democratic Republic of Ethiopia

Project for Supporting Sustainable Forest Management through REDD+ and Certified Forest Coffee Production and Promotion

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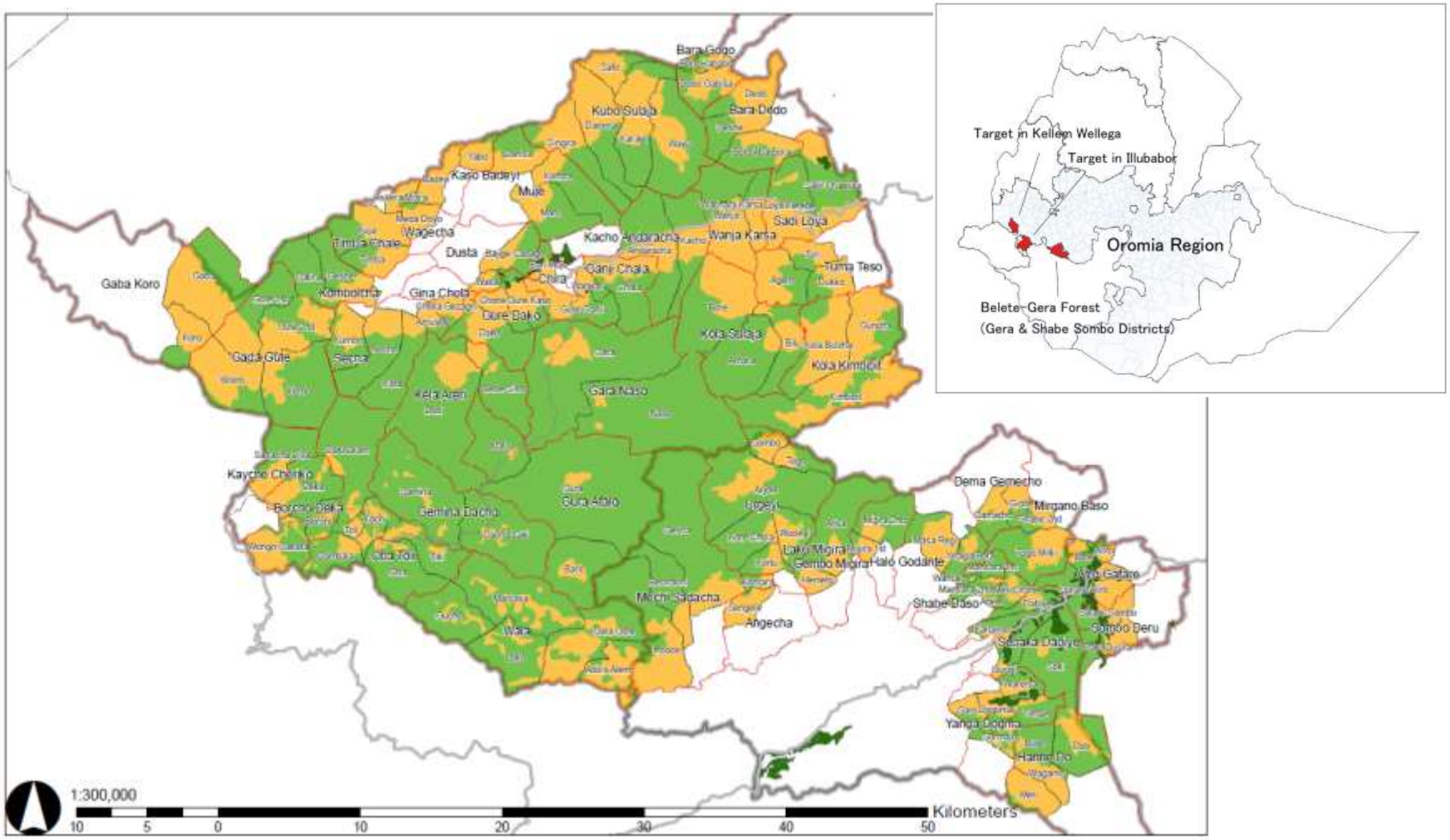
Belete-Gera Forest Area, Gera & Shabe Sombo Districts, Jimma Zone, Oromia Region



List of Abbreviation

BR	Biosphere Reserve
CRGE	Climate Resilient Green Economy
DA	Development Agent
EC	Executive Committee
ECTA	Ethiopia Coffee and Tea Authority
ETB	Ethiopia Birr
FAO	Food and Agricultura Organization of the United Nations
FCCP	Forest Coffee Certification Program
FMA	Forest Management Agreement
FRC	Forest Research Center
GIAHS	Globally Important Agriculture Heritage System
HO	Head Office
ICS	Internal Control System
JBO	Jimma Branch Office
JFM	Joint Forest Monitoring
JICA	Japan International Cooperation Agency
NTFP	Non Timber Forest Product
OCSSC	Oromia Credit and Saving Share Company
OEFCCA	Oromia Environment, Forest and Climate Change Authority
OFLP	Oromia Forested Landscape Program
OFWE	Oromia Forest and Wildlife Enterprise
OP	Output
PDM	Project Design Matrix
PFM	Participatory Forest Management
QC	Quality Control
RA	Rainforest Alliance
RECOFTC	The Center for People and Forests
REDD+	Reducing emissions from deforestation and forest degradation
RIP	REDD+ Investment Program
SC	Steering Committee
SCAJ	World Specialty Coffee Conference and Exhibition
SDGs	Sustainable Development Goals
SFM	Sustainable Forest Management
SOP	Standard of Operation

TC	Technical Committee
TOT	Training of Trainers
WaBuB	“Waldaa Bulchiinsa Bosona” (Forest Management Association).

Summary

1. Background

Ethiopia has 11.5 million ha of forests and is famous as the origin of Arabica coffee. Meanwhile, forest coverage in Ethiopia has been seriously decreasing with 1.25 % of annual deforestation rate since 2010 according to the forest resource assessment 2015 by FAO. It has been continuing mainly due to farmland expansion combined with logging caused by population growth across the country. Ethiopian Government recognizes deforestation as one of the priority issues to address, and is taking various policy measures represented by its core national strategy of the Climate Resilient Green Economy (CRGE) which promotes afforestation and forest conservation as main actions for achieving green economy and strengthening climate resilience.

Oromia region has the highest forest coverage among nine regions in Ethiopia, which constitutes 70 % of all forest areas in Ethiopia. By targeting the Belete-Gera Forest, which is in the south-western part of Oromia, the Participatory Forest Management (PFM) project in the Belete-Gera Forest was implemented from 2003 to 2012 by Oromia Government with support from JICA. In the Belete-Gera PFM project, the PFM groups, WaBuBs in the local Oromia language, were established in all 124 sub-villages through livelihood support interventions such as Forest Coffee Certification Program (FCCP). The FCCP focus on the uniqueness of wild coffee in Oromia and aims to add more value to the coffee through environment-friendly production and its contribution to forest conservation and livelihood improvement.

The other development partners, the World Bank and the Norwegian government, also have supported the country to conserve those precious natural forests in the Oromia Region through REDD+ interventions, namely, Oromia Forested Landscape Program (OFLP) and REDD+ Investment Program (RIP).

Based on the experiences and assets up to 2012, the current project; The Project for Supporting Sustainable Forest Management through REDD+ and Certified Forest Coffee Production and Promotion in Ethiopia, started in 2014 by working together with OFLP and RIP at both policy and field level as these interventions have the common goals of forest conservation, supporting community's livelihoods and climate change mitigation and adaptation under the CRGE.

Forest Coffee in Gera

Collaboration for avocado nursery

2. Project Descriptions

1) Overall Goal:

Sustainable rural development harmonized with forest management, contributing to CRGE and SDGs, is

promoted beyond the target areas.

2) Target Areas:
Belete-Gera Forest in Jimma Zone (Gera and Shabe Sombo Districts)
Selected sub-villages in Illubabor and Kellem Wellega Zones

3) Target Groups:
Officials and Staff of OEFCCA, OFWE and its Jimma, Illubabor and Wellega branch offices, and staff of the relevant WaBuBs/Cooperatives (direct beneficiary), farmers in the target areas (indirect beneficiary)

4) Period of Project:
July 2014 – November 2020 (6 years and 5 months)
*Project duration was originally from July 2004 to January 2020 (5 years and 5 months)

5) Amount of input by the Japanese side:
549.0 million JPY (181.8 million ETB, 1 JPY= 0.33 ETB)
*Original plan was 480.0 million JPY

6) Implementing Agency:
Oromia Environment, Forest and Climate Change Authority (OEFCCA)
Oromia Forest and Wildlife Enterprise (OFWE)

3. Main Achievement

Project Purpose:

The project purpose was achieved as Appropriate Sustainable Forest Management (SFM) mechanism was developed, which is balancing forest management and livelihood in both Forest Coffee and Highland areas with different natural conditions and agricultural activities. It is expected that this SFM mechanism will be applied to other forest and highland areas in Oromia and the country as this mechanism is applicable to areas with various deforestation drivers and agents over forest area in Ethiopia.

Output 1: Institutional capacity and cooperative mechanism

Cooperative mechanism for sustainable forest management is developed through various trainings for government officials and field staff.

- 38 experts in Zonal and Regional level were trained in the field of PFM, REDD+, etc.
- A total of 124 Development Agents (DAs, extension worker) and 73 experts at District level were trained in livelihood support, land use, extension, etc.

Output 2: PFM implementation mechanism (targeting all 124 WaBuBs)

The function of WaBuB, as a cooperative, in promoting PFM was strengthened by making its agreement legalized through authorizations by the Regional Justice Office. The effectiveness of PFM with WaBuB can be seen in changes of deforestation rate through satellite image analysis. The deforestation rate was decreased from 1.16% of annual average from 1995 to 2000 to 0.6% in 2009, which suggests that deforestation

has been mitigated in Belete-Gera forest area. The forest monitoring method utilizing a tablet was also introduced in PFM especially for the forest coffee areas. This tablet helps monitoring activities to provide more accurate and consistent data combined with photo and location information.

- WaBuB PFM groups were revitalized through newly registering 12,339 members in 93 sub-villages out of 124 sub-villages.
- 2 WaBuB PFM Cooperatives consisted of a total of 124 sub-villages in 2 Districts have been established as legally effective organizations.
- Budget for Jointly Forest Monitoring (JFM) in Zonal level was allocated by OFWE Jimma Branch as ordinary budget while annual forest monitoring by WaBuBs was specified as a regular activity of PFM Cooperatives.
- As a measure against degradation of forest resource and genetic diversity of Arabica-coffee, Forest Coffee Management Guideline was prepared.

Pilot JFM in Shabe

Training for monitoring with tablet

Output 3: Sustainable FCCP establishment (targeting 67 WaBuBs in coffee area)

The FCCP has been continued and strengthened as an approach for promoting forest coffee production and selling through business with overseas coffee companies (so far those in Japan) while conserving forests. Through the process, the Coffee Cooperatives were strengthened and further market channel for arabica-origin forest coffee was explored. Besides that, the Project introduced a micro-credit mechanism to support local communities, particularly youth without job.

- A total of 12,160 (2014-2020, average 2,100/year) coffee producers were benefitted by the FCCP (e.g. technical supports from the Project and premium payment from buyers).
- WaBuB Forest Coffee Cooperatives were strengthened through i) developed tablet ICS system, ii) 185 community inspectors trained for the tablet ICS, and iii) having multiple sales channels.
- The cupping evaluations conducted with UCC Ueshima Coffee Company in Japan (UCC) were carried out every year during the project period. In the latest evaluation, more than half of the participating WaBuBs' forest coffees were rated as specialty coffees.
- A total of 250 coffee producers received solar light systems as a mean of micro credit. It aimed to benefit especially to school children and youth without job for motivating them working outside forest by accessing education and more information and opportunities.
- For examining and exploring effective marketing channels for Arabica-origin forest coffee, the achievement of Belete-Gera FCCP was shared in i) "Symposium on Ethiopia Wild Coffee as a Gift to the World"

organized by the project in Addis Ababa in 2019, ii) Specialty Coffee Exhibition Japan 2019 (SCAJ 2019) in Tokyo, and iii) International Coffee Events 2019 and 2020 in Addis Ababa.

Symposium in Addis Ababa

SCAJ2019 in Tokyo

Output 4: Livelihood improvement for forest conservation in highland areas (targeting 57 WaBuBs in non-coffee area)

For forest users living by agriculture in the Highland area, various livelihood supports, both agricultural and NTFP-based activities, were introduced and promoted for aiming to decrease the pressure to the forests. By conducting the livelihood activities which can contribute to land use management and increase agricultural productivity, the forest users could increase cash income. Totally 2,549 community members were benefitted by the livelihood supports.

- The five livelihood activities were introduced: i) improved beekeeping, ii) improved crops combining with green manure, iii) community nursery of avocado/apple, iv) vegetable in home garden, and v) rehabilitation of highland bamboo.
- Totally 472 community members were trained for livelihood activities, community nursery, etc.
- Income of households were increased more than three times (by sampling survey), 37,927 ETB in 2020, compared with that in 2017 (12,000 ETB).

Training for improved beekeeping

Set up community nursery

4. Key aspects in the project process

The following key aspects can be highlighted in the project implementation, which aimed to develop appropriate Sustainable Forest Management mechanism.

<u>i) Implementation system at each level</u>

- Set up Zonal Steering Committee which is matched with a planned structure in OFLP and RIP

- Position WaBuB groups as existing administrative organizations
- Strengthened WaBuB's status and its capacity by revising the Forest Management Agreement (FMA) with legal basis, as the lack of legal enforcement was identified as challenges for WaBuBs.
- Developed business-oriented structures such as ICS for securing Rainforest Alliance (RA) standard and traceability in marketing.

ii) Sustainable mechanism through harmony between forest and livelihoods

- Highlighted the uniqueness and value-addition of forest coffee in international market as unique asset of Ethiopia.
- Improved the accuracy and transparency of forest monitoring and coffee traceability by introducing a tablet system into the ICS conducted by the forest coffee cooperatives.
- Enhanced forest coffee cooperatives' capacity and participation by setting up multiple sales channels.
- Promoted various livelihood activities as measures for deforestation drivers in the Highland area by synergizing with forest management.
- As an in-direct measure for potential deforestation agents and drivers in the future, solar light systems were provided for coffee producers who have young children without jobs or school children to motivate their children working outside forest by accessing education and more information and opportunities.
- Explored opportunities to add more value to the forest coffee by examining feasibility for registering in UNESCO Biosphere Reserve (BR) and FAO's Globally Important Agricultural Heritage System (GIAHS).

5. Key Factors influenced in Implementation and Outcomes

The project implementation was backed up by close relationship between the Oromia Regional Government and JICA over 20 years. Prompt actions and leadership by Project Directors of OEFCCA and OFWE contributed to effective project implementation. The Project faces challenges during its implementation and some of those were raised at the project review on June 2019 jointly conducted by the OEFCCA-OFWE and JICA. The Project Directors established the WaBuB PFM Steering Committee and allocated budget for the JFM to address those challenges immediately after the review. Even though the Project also faced other difficulties with external factors such as unstable security situation and delay of the OFLP, mutual collaboration based on the long-term cooperation of both countries contributed to overcome those difficulties and finally achieved the project purpose.

Collaboration by the UCC Ueshima Coffee Company in Japan was also beneficial as they supported the Project for quality improvement and strengthening of competitiveness of the forest coffee in the international market.

Project terminal review

Agree on Steering Committee

6. Recommendations

By the project implementation in Belete-Gera Forest, the forest management mechanism was established. In order to make it sustainable and disseminate to other areas for achieving policy goals such as CRGE, the following further efforts and actions by the Ethiopian side will be required.

- Continuous support for the WaBuB Forest Coffee Cooperatives for collaborating more with the private sector such as the Coffee Unions.
- Strengthening the FCCP to maintain clear synergies with forest conservation through promoting the drafted Forest Coffee Management Guideline.
- Continuous allocation of staff and budget for conducting the JFM and supporting the WaBuB PFM Cooperatives to sign on the revised FMA with all WaBuBs and supervise PFM activities in the field.
- Coordination with the Ministry of Agriculture for setting up a secretary office and register for Globally Important Agriculture Heritage System (GIAHS) to promote sustainable forest coffee management and invite international interests in original Ethiopian coffee practices.

Chapter 1 Outline of the Project

1-1 Background of the Project

Ethiopia has 11.5 million ha of forests and is famous as the origin of Arabica coffee. Meanwhile, forest cover in Ethiopia has been seriously decreasing with 1.25 % of annual deforestation rate since 2010 according to the forest resource assessment 2015 by FAO. It has been continuing mainly due to farmland expansion combined with logging caused by population growth over the country. Ethiopian Government recognizes deforestation as one of the priority issues to address, and is taking various policy measures represented by its core national strategy of the Climate Resilient Green Economy (CRGE) which promotes afforestation and forest conservation as main actions for achieving green economy and strengthening climate resilience.

Oromia region has the highest forest cover among nine regions in Ethiopia, of which forest is equal to 70% of all forest areas in Ethiopia. Since 2003, following a development study in forestry sector conducted from 1996 to 1998, the Government of Ethiopia in cooperation with JICA has been promoting a Participatory Forest Management (PFM) approach. This has been with the aim of promoting forest conservation and improving the livelihoods of local communities of 20,000 households in the Belete-Gera Forest area in Oromia, southwestern Ethiopia, where 174,000 ha valuable forests still remain.

The last two phases; Participatory Forest Management Project in Belete-Gera Regional Forest Priority Area (2003-2006) and its Phase 2 (2006-2012) of this project have achieved the launch of a Forest Coffee Certification Program (FCCP) as a measure to improve livelihood, and the introduction of a Farmer Field School (FFS) to strengthen PFM capabilities. The projects established 124 local forest management groups (hereinafter referred to as "WaBuB"). Of particular note, certified coffee of the Belete-Gera Forest has been exported to Japan and sold by a Japanese coffee companies. Belete-Gera forest coffee is the origin of Arabica coffee and therefore is also significant from the perspective of genetic resource preservation.

Based on the experiences and assets in the Phase 2, the current phase project has started in 2014, and aimed to establish an "FCCP-linked PFM model" in Belete-Gera by collaborating with the Oromia Forest and Wildlife Enterprise (OFWE) as a counterpart government agency. The initial emphasis of the project has been placed on the FCCP mainly due to its strong regional affinity and high potential for profit. Expected outcomes were set for the project: (1) improve FCCP (contribute to forest conservation and enhance sustainability); (2) expand the improved FCCP as pilot programs in Illubabor and Kellem Wellega, and (3) strengthen the capacity of OFWE in terms of PFM and FCCP.

After about a year and a half, the progression of deforestation was confirmed in highland areas, which are non-forest coffee areas. Besides that, the other development partners, the World Bank and the Norwegian government, also have supported the country to conserve those precious natural forests in the Oromia Region through REDD+ interventions, namely, Oromia Forested Landscape Program (OFLP) in cooperation with the Bio-carbon REDD+ program and REDD+ Investment Program (RIP). In order to respond to situational changes and align with those REDD+ programs as all interventions have the common goals of forest conservation, supporting community's livelihoods and climate change mitigation and adaptation under the CRGE, the scope of the project (PDM, Annex 1) was then modified to establish a sustainable forest management model for the Belete-Gera forest area . Livelihood improvement was added for the highland area. Also, support for Illubabor and Kellem Wellega has turned to be implemented remotely due to the security reason.

In December 2016, the Oromia Environment, Forest and Climate Change Authority (OEFCCA) was established and it became the implementation agency of the Project in addition to OFWE since then. Meanwhile,

due to a significant delay of the OFLP program, the project's purpose was revised to "establishing an appropriate sustainable forest management model in the Belete-Gera forest area" and REDD+ related activities were removed except for livelihood diversification for highland area communities. Other changes were also made that included the revision and signing of a Forest Management Agreement (FMA) as legally enforceable organization for strengthening PFM.

This Project Completion Report is prepared as a part of the output by the Japanese Consultants, those who supported the activities in Ethiopia from January 2017 to September 2020, by collaborating with a Japanese expert. Thus, the content in the report is mentioned based on the activities after dispatchment of the Japanese consultants while some information such as Input and Plan of Operation cover results during the whole project period.

1-2 Objectives of the Project

【Overall Goal】

Sustainable rural development harmonized with forest management, contributing to CRGE and SDGs, is promoted beyond the target areas.

【Project Purpose】

Appropriate Sustainable Forest Management (SFM) mechanism is developed in Belete-Gera Forest area.

【Output】

(1) Institutional capacity of OEFCCA, OFWE, and other relevant government agencies is strengthened to provide appropriate service regarding Sustainable Forest Management mechanism.

(2) WaBuB PFM is strengthened through revision of legally effected Forest Management Agreements (FMA) in Belete-Gera Forest area.

(3) FCCP is improved with sustainable way in forest coffee area of Belete-Gera Forest and promoted target areas in Illubabor and Kellem Wellega.

(4) Highland WaBuB diversify livelihood options that contributes reduction of deforestation pressure.

1-3 Target of the Project

【Target Areas】

- Belete-Gera Forest area in Jimma Zone (Gera and Shabe Sombo Districts)
- Selected sub-villages in Illubabor and Kellem Wellega Zones

【Target Groups】

- Officials and Staff of OEFCCA, OFWE and its branch offices in Jimma, Illubabor and Wellega Zones
- Representatives of the WaBuBs groups and cooperatives (direct beneficiary), and farmers in the target areas (indirect beneficiary)

1-4 Implementing Agency

- Oromia Environment, Forest and Climate Change Authority (OEFCCA)
- Oromia Forest and Wildlife Enterprise (OFWE)

1-5 Input for the Project

(1) Input by the Japanese side

The financial and human resource input are as bellows. The detail of those input is summarized and listed in

Annex 2 and Annex 3.

【Expert dispatch】

- Three long-term experts: 1. Chief advisor / Forest management, 2. Project coordinator / participatory rural development, and 3. Sustainable Forest Management / Project coordinator,
- Total 13 Short-term Experts (Forest coffee certification system, international marketing, production and quality improvement, cupping evaluation),
- Survey team for REDD+ Program Collaboration Survey, and
- Consultant team (5 persons) mainly for activities in Output 2 and 4.

【Receipt of training participants】

Totally 38 staff of OFWE and OEFCCA for the trainings in Japan and Thailand.

【Equipment Provision】

Vehicles and other equipment for the project implementation, equivalent to 26.05 million JPY (4.62 million ETB)

【Overseas activities cost】

89.40 million JPY (20.34 million ETB) was disbursed for field activities.

(2) Input by the Ethiopian side

【Counterpart assignment】

- OEFCCA (4)
  Project director: Director General / Project manager: Deputy Director General
  Focal person / Zonal Coordinator: Jimma office manager and technical staff
- OFWE (10)
  Project director: Director General / 2 Project managers: Technical Division Deputy Director General, Director of Planning and Marketing Directorate /
  3 Branch Coordinators: Branch Manager of JBO, IBO, WBO / Focal person /
  Technical Staff: Forest Coffee Export in OFWE HO, ICS and RA Expert, and Quality control Expert in JBO

【Provision of offices and other items】

- Office or desk space in head offices in OFWE and OEFCCA
- Annual application fee for RA Certification (Approximately 600,000 USD) by OFWE
- Budget for Joint Forest Management (JFM) in Belete-Gera from 2019 (514,000 ETB) by OFWE

Chapter 2 Project Activities

2-1 Framework of the Project

The project, targeting on development of appropriate SFM system (Project Purpose), was consisted of four main components or Outputs (OP). Based on enhanced capacity of government entities (OP1), sustainable PFM model (OP 2) with legally effective Forest Management Agreement (FMA) and periodical monitoring was attempted by re-vitalizing 124 WaBuBs, which have been established in the Phase 2 project up to 2012. As means of capacity building for the PFM implementation, community-level activities were conducted by utilizing natural resources and agricultural potentials in both forest coffee and highland areas. In the forest coffee areas, the Forest Coffee Certification Program (FCCP), adding value to forest coffee through Rainforest Alliance (RA) certification and its uniqueness as origin of Arabica coffee, was promoted by targeting 67 WaBuBs (OP 3), while agricultural livelihood supports were introduced and demonstrated in the highland area for the other 57 WaBuBs, located in higher altitude where is no naturally-growing forest coffee (OP 4).

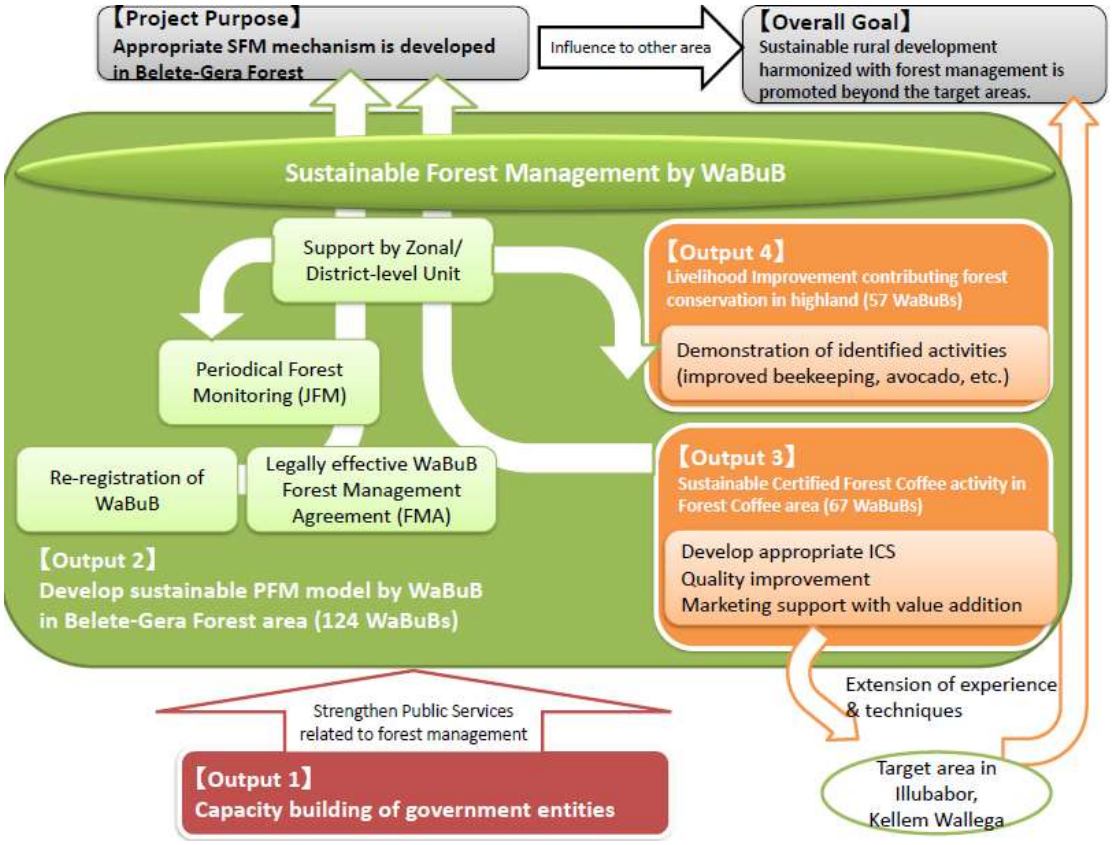


Figure 2-1: Framework of the project

As mentioned in the Background, the Project target and scope have changed from the initial plan. The target areas of the Project were the forest coffee areas in Belete-Gera, Illubabor and Kellem Wellega. However, the highland area in Belete-Gera was added as a part of the target areas.

2-2 Activities for Output 1

Output 1: Institutional capacity is strengthened to provide appropriate service regarding Sustainable Forest Management mechanism.

Activity 1.1 Develop capacity for FCCP and forest management through training, study visit, and on the job training.

For developing capacity of government staff for supporting FCCP and forest management activities, 38 government officers from the counterpart organizations took various trainings in Japan, Thailand, and Kenya in the field of Climate Change, REDD+ implementation, Sustainable Forest and Natural Resource management, Community-based Forest and Natural Resource management, Coffee Marketing and Export, Remote Sensing, and Forest Landscape Conflicts. Besides that, a total of 124 Development Agents (DAs, extension workers) and 73 experts in District level were trained in livelihood support, land use, extension, etc.

Monthly meetings were organized from July 2018 with participation of key stakeholders, mainly of agriculture and forest sectors at Zonal and District offices, to share progress and plans. The main purpose of these meetings were to clarify roles and responsibilities of each office on the project activities, and monitor the progress through sharing monitoring results.

In response to the recommendations from the Project Terminal Review carried out by joint review team in June 2019, Ethiopian side led by OEFCCA and OFWE prepared the Action Plan and shared with JICA in August 2019 for committing to take measures for securing sustainability of the achievement of the Project.

According to the Action Plan, the PFM Steering Committee (SC) and Technical Committee (TC) were established at the Zonal level. The structure is presented in the Figure 2-2. OEFCCA and OFWE delegated its supervision and management functions of the Belete-Gera forest to the SC including implementation of zonal monthly meeting. The TC was assigned under the SC to set up legally effective forest management organization as a part of revision of the Forest Management Agreement (FMA)

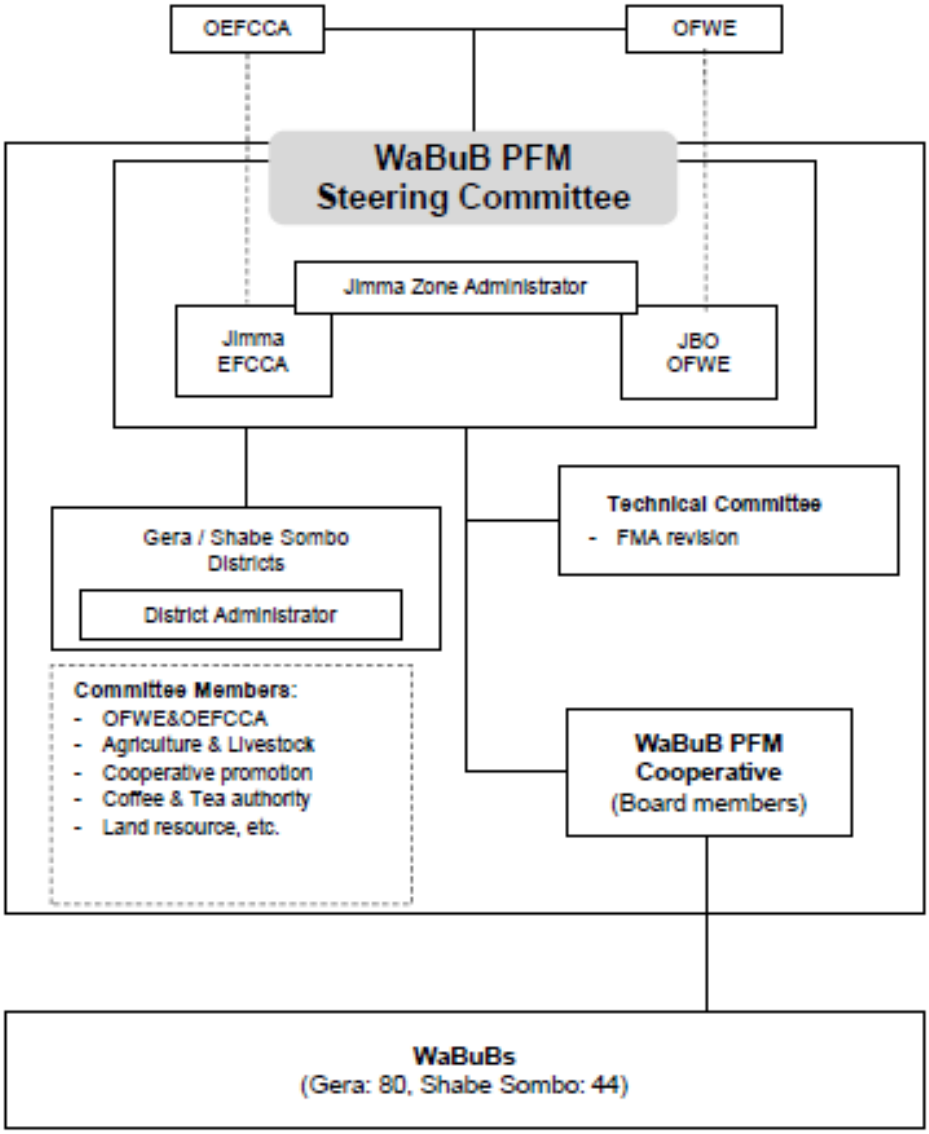


Figure 2-2: Structure of the WaBuB PFM Steering Committee

Activity 1.2 Conduct baseline survey and studies on forest management-related topics (ex. village socio-economic survey, forest cover, NTFPs).

For identifying appropriate livelihood activities in the highland area, a socio-economic baseline survey, targeting 300 households, was conducted from October to December 2017. The result including potential livelihood activities were shared in the 6th JCC meeting held in July 2018. In order to assess the effectiveness of those livelihood activities, the Impact Survey was conducted in June 2020 by targeting 225 households in the highland area.

The other related survey and studies are listed in the Annex 4. As a way of exploring potential measures against degradation of forest coffee, a simple Feasibility Study for Biosphere Reserve (BR) as well as biodiversity survey were conducted by contracting with staff in Jimma University. A Forest Coffee Inventory Survey was also conducted by setting up 70 plots in forest coffee areas. By utilizing the data, a draft of Forest Coffee Management Guideline (Annex 10) was prepared in June 2020.

2-3 Activities for Output 2

Output 2: WaBuB PFM is strengthened through revision of legally effected Forest Management Agreement (FMA) in Belete-Gera Forest area by targeting all 124 WaBuBs.

Activity 2.1 Establish and facilitate a consultative committee for supporting forest management and livelihood activities at the zonal/district level.

The 1st consultative committee meeting was held in October 2017 by collaborating with an OFLP coordinator in Addis Ababa and inviting stakeholders in Zonal and District level. It aimed to have common understand among stakeholders about a concept of REDD+ mechanism as a way of forest conservation and share ideas for integrating the WaBuB PFM with the OFLP. Due to delay of the OFLP implementation and budget disbursement, the committee meeting was substituted with the project monthly meetings from July 2018, chaired by Jimma branch offices of OEFCCA and OFWE, for sharing the progress and plan of forest management and livelihood activities.

As response to the recommendations in the Project Terminal Review conducted in June 2019, the Project Directors, Director Generals of OEFCCA and OFWE, organized a meeting in Jimma for signing on Memorandum of Understanding on establishment of WaBuB PFM Steering Committee as a part of the Action Plan for securing sustainability of the Project achievement.

1st SC meeting at Jimma

2nd SC meeting at Jimma

The Zonal Steering Committee (SC) was established and aimed to delegate responsibility of management of the Belete-Gera Forest to Zonal and District offices. During the project period, three-times of the SC meeting were conducted in Jimma with the following agenda (Table 2-1).

Table 2-1: Agenda of the WaBuB PFM Steering Committee meetings

No.	Date	Key Agenda
1st	21 August 2019	Role and responsibility of the Steering Committee Plan of up-coming PFM and livelihood activities
2nd	22 October 2019	Establishment of WaBuB PFM Technical Committee Collaboration with REDD+ Investment Program (RIP)

3rd	18 December 2019	Progress of establishing legally effective WaBuB organization Activity Plan during the project extension period

Activity 2.2 Update member list of WaBuBs with re-established WaBuB Executive Committee.

There were no follow-ups for updating and monitoring of 124 WaBuBs after signing the Forest Management Agreement (FMA) with OFWE in 2012. The 1st WaBuB meeting was organized in January 2018 by inviting all sub-village leaders, as WaBuB representatives, in both Gera and Shabe Sombo Districts. In the meeting, the following challenges that WaBuBs face were raised and discussed.

- Since WaBuB is a voluntary group without legal basis, representatives could not take strict measures against illegal activities by local communities such as farm expansion and logging.
- In some villages, official stamp of WaBuB is owned by non-WaBuB members and used for other purposes than PFM.
- It would be difficult to call members out for re-staring WaBuB after 6 years without any follow-ups and supports by public intuitions such as OFWE.

By sharing the challenges and collaborating with staff of Jimma branch offices of OEFCCA and OFWE, the measures of re-vitalization and improvement of WaBuB were considered and shared with the representatives in villages and sub-villages from Belete-Gera Forest through the four-times of WaBuB meetings (Table 2-2). The following points were agreed to reflect in the re-established WaBuB structure (Figure 2-3) and revision of Forest Management Agreement (FMA).

- to position WaBuB EC under structure of village authority
- to involve Abba Gada (a kind of cultural authority) in WaBuB structure
- to update WaBuB member list based on the current residential status, not by the list signed in 2012
- to revise the FMA as legally effective document not voluntary-basis
- to establish a PFM Cooperative as an upper organization to supervise all WaBuBs and closely communicate with the government.

WaBuB Meeting at Gera

WaBuB Meeting at Shabe

By the end of the project period, 51 (64 %) out of 80 WaBuB in Gera District re-established Executive Committee and updated member list while 42 (95.5 %) out of 44 were done in Shabe Sombo District. The progress of WaBuB re-establishment is summarized in Annex 5.

Table 2-2: Agenda of the 1st-4th WaBuB meetings

No.	Month	Key Agenda
1st	January 2018	Review of WaBuB PFM activities Plan for revitalizing WaBuB in each sub-village
2nd	August 2018	Promotion of FCCP and livelihood support activities Plan of Forest Monitoring activities
3rd	January 2019	Progress of EC establishment and member list Discussion about structure, role and rights of WaBuB
4th	May 2019	Progress of WaBuB member registration Sharing findings of pilot monitoring in coffee forests

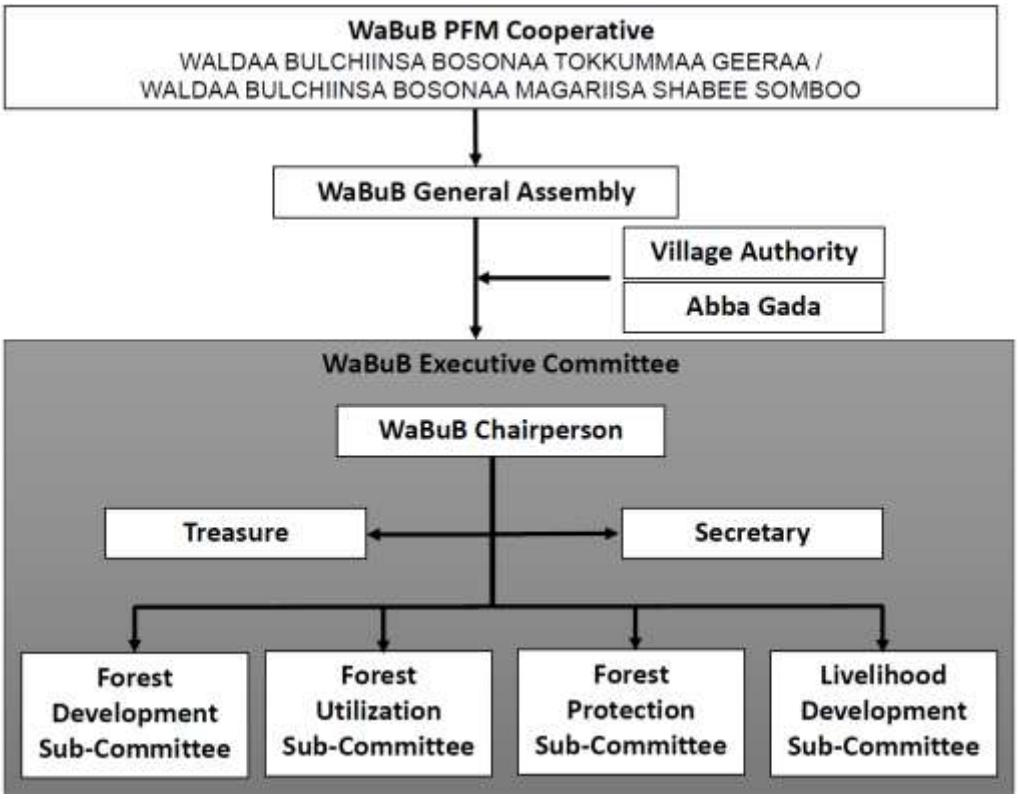


Figure 2-3: Structure of the WaBuB in each sub-village

Activity 2.3 Create a feasible way to conduct Joint Forest Monitoring.

Annual Joint Forest Monitoring (JFM) in 10-15 pilot WaBuBs were planned in the Forest Management Agreement as an obligation of OFWE-JBO. In the original concept of FCCP in the current project since 2014, budget for conducting the JFM was expected to be allocated from a profit of forest coffee selling, of which OFWE obtain 30 % of the gross profit while that of 70 % is paid to WaBuB Coffee Cooperatives. However, that concept was not sufficiently discussed and clarified by the time of WaBuB re-vitalization activity

in 2018. In the 6th JCC meeting in July 2018, necessity of allocating budget for JFM budget was raised as a part of essential measures for securing sustainability of the WaBuB PFM activities. As a Minutes of the JCC meeting, budget allocation by OFWE was agreed as a commitment. As official budget in Ethiopian fiscal year 2019, OFWE-JBO has secured 514,000 ETB for conducting JFM in 17 WaBuBs.

Illegal settlers found in pilot JFM

Illegal practices found in pilot JFM

A pilot JFM was conducted by 10 WaBuBs from November-December 2018 by a JFM team from the related Zonal and District offices, including a justice office, a police, and a courts, with financial support from the project based on the official request from OEFCCA and OFWE. For sharing the results and taking necessary measures, the JFM Review meeting was organized at Jimma in December 2018 by inviting Zonal and District stakeholders as well as village authorities in the both Districts. In the meeting, the Action Plans for law enforcement and periodical monitoring were discussed and prepared. The result was also shared in the 7th JCC meeting in December 2018 and 3rd WaBuB meeting in January 2019. In the meeting, it was found out that the purpose of budget allocation for JFM by OFWE is mainly to collect evidence of illegal activity by local communities to punish them, which is different from the concept of participatory approach of designed PFM. So, the PFM approach should be reviewed again by OFWE and local stakeholders for maintaining the original purpose of PFM that is to conserve forests jointly with local communities as their own rights and responsibilities. Otherwise, each WaBuB may conduct annual forest monitoring with their own resources under official mandate of Village Authorities. Those process and findings were internalized in a plan and an activity of WaBuB PFM Cooperatives and the revised WaBuB PFM Agreement.

JFM Review Meeting at Jimma

JFM Review Meeting at Jimma

Activity 2.4 Support WaBuBs for signing revised Forest Management Agreement (FMA).

Through discussions in the WaBuB meetings and the JFM review meeting, some key points for reflecting in the revised FMA were discussed to improve the previous PFM signed in 2012. One of the important points was to make WaBuBs have legally effective functions in forest management. For that purpose, it was agreed to involve law enforcement authorities in the process of FMA revision.

Under the Zonal WaBuB PFM Steering Committee (SC) mentioned above, Activity 2.1, a Technical Committee (TC) for the FMA revision was also established in October 2019. The committee team consisted of a total of 5 Zonal officials from OEFCCA, OFWE, Justice office, Police office, and Court in Jimma. The TC was officially assigned by the Zonal Administrator, a chairperson of the SC, to collaborate as a team and periodically report the progress.

Through a series of consultations with the Regional Justice office in Addis Ababa, the TC team prepared necessary document and discussed with the WaBuB representatives about the way of appropriate legalization status of WaBuB. In the 5th WaBuB meetings, the representatives agreed to establish WaBuB PFM Cooperatives respectively in Gera and Shabe Sombo Districts. Then, seven board members those who lead the PFM Cooperative were elected from the WaBuB representatives. In the following 6th meeting in December 2019, all WaBuB representatives signed in a legal document to be a member of the WaBuB PFM Cooperatives.

Elected board members at Gera

Voting for board members at Shabe

Table 2-3: Agenda of the 5th-6th WaBuB meetings

No.	Month	Key Agenda
5th	November 2019	Role and rights of WaBuB PFM Cooperative Selection of board members
6th	December 2019	Agreement on document for WaBuB PFM Cooperative WaBuB representatives signed on Legal Document

Finally, the legal document was approved by the Oromia Regional Justice Office in December 2019. The TC team reported those progress and achievement of WaBuB PFM establishment at the 9th JCC meeting in December 2019. Each WaBuB Cooperative; *Tokuma Forest Management Cooperative* in Gera and *Magarisa Forest Management Cooperative* in Shabe Sombo, is expected to conduct their annual Action Plan for forest management by getting support from OFWE and OEFCCA.

The remaining process is that each WaBuB explains to the members about content and role of the

PFM Cooperatives. At the same time, details of forest management rules and obligations need to be confirmed by signing in the revised FMA, which was prepared through the WaBuB meetings, between each WaBuB and OFWE-JBO or PFM Steering Committee. The revised WaBuB FMA is attached as Annex 9.

Activity 2.5 Monitor the progress of PFM activities.

The WaBuB SC is responsible for monitoring forest condition and WaBuB PFM activities. For that purpose, the OFWE-JBO allocated budget for the JFM in 2019 and is expected to be continued. The OEFCCA Jimma office also conducted monitoring of forest coffee in Walla village, Gera District by allocating budget in 2020. District offices in Gera and Shabe Sombo also support WaBuB activities through assignment of Development Agents in village level.

Annual forest monitoring was conducted in forest coffee area as Internal Control System (ICS) audit by trained farmer inspectors in the WaBuB Coffee Cooperatives. The way of forest coffee monitoring has been improved by introducing a tablet with camera that records location information. This tablet helps monitoring activities to provide more accurate and consistent data.

Based on the satellite image analysis with ground-truth survey in Belete-Gera Forest, annual rate of forest cover reduction in 2018 and 2019 was calculated as 0.53 % and 0.60 % respectively. The deforestation rate was decreased from 1.16% of annual average from 1995 to 2000 to 0.6% in 2019, which suggests that deforestation has been mitigated in Belete-Gera forest area. The base maps with summary calculation result are presented in the Annex 6.

2-4 Activities for Output 3

Output 3: FCCP is improved with sustainable way in forest coffee area, 67 WaBuBs, of Belete-Gera Forest and promoted in Illubabor and Kellem Wellega.

Activity 3.1 Carry out FCCP process.

FCCP activities such as ICS and forest coffee export were carried out every year during the project period. The participation rate to ICS of WaBuB was 60-88%, and a total of 12,160 coffee producers were benefitted by the FCCP with technical support and premium payment in 2014 to 2020.The details of the ICS members are summarized in Annex 7.

The trainings for ICS and Quality Control (QC) were conducted by collaboration with the Kata Muduga Coffee Union, based in Agaro, during the 2019/20 crop season in order to establish a new export channel option.

After the completion of the Project, OFWE will carry out ICS training while the Coffee Union will carry out QC training to the WaBuB Coffee Cooperatives. The cooperatives will manage field-level activities.

The cupping evaluations were carried out with UCC every year during the project period. These annual events were aimed to improve quality of forest coffee and enhance competitiveness in the international market. In the latest evaluation, more than half of the participating WaBuBs' forest coffees were rated as specialty coffees.

	
Cooperative level ICS training	ICS by tablet system
	
Quality control training	Quality control training

Activity 3.2 Examine options for effective marketing (e.g., preparing SOP on coffee business, alternative sales channel).

The Standard of Operation (SOP) was prepared and revised by the short-term experts on overseas marketing in 2014 and 2015.

In the 2019/20 crop season, the Project facilitated the Forest Coffee Cooperatives to have two options for coffee export channel; OFWE or Kata Muduga Coffee Union. It aimed to address marketing issues related with OFWE's channel such as delays of export schedules and premium payments, limited export volumes compared to production volume, and sustainability of the activities after the Project termination.

For examining and exploring effective marketing channels for Arabica-origin forest coffee, the achievement of Belete-Gera FCCP was shared in i) "Symposium on Ethiopia Wild Coffee as a Gift to the World" organized by the project in Addis Ababa in 2019, ii) Specialty Coffee Exhibition Japan 2019 (SCAJ 2019) in Tokyo, and iii) International Coffee Events 2019 and 2020 in Addis Ababa.

	
Symposium on Ethiopian Wild Coffee as a Gift to the World	Event of Specialty Coffee Association Japan (SCAJ)

Activity 3.3 Review and revise the ICS manual and system for WaBuB FCCP to comply with revised RA criteria and to strengthen the linkage with forest conservation.

As the RA criteria changed frequently, the ICS questionnaire and manual were updated several times. To improve the efficiency and accuracy of forest coffee monitoring, a tablet system in the ICS was introduced in all 67 WaBuBs in forest coffee area from 2019/20 crop season. The contents of questionnaire using the tablet ICS system was reviewed and consulted with a RA audit organization in July 2020, in order to comply with the revised RA standard and accommodate it with forest coffee conditions in Belete-Gera Forest.

From result of the pilot JFM as mentioned in the Activity 2.3, it was observed that increase of youths without jobs and expansion of farmlands were growing drivers of forest degradation by entering to forest area and planting coffee seedlings. In order to tackle with those challenges, the project provided solar light system as micro credit for 250 coffee farmers in total. It will be benefitted especially for school children and youth without job by motivating them working outside forest through accessing education, information and opportunity.

Activity 3.4 Examine and select target areas in Illubabor and Kellem Wellega, where PFM is already introduced and with high potential in forest coffee production.

Due to the state of emergency of the country in 2016 to 2017, site selection process for target areas in Illubabor and Kellem Wellega was delayed more than a year. The target areas were approved in the 5th JCC meeting in July 2017.

Activity 3.5 Introduce FCCP process in Illubabor and Kellem Wellega.

The project supported three coffee cooperatives in Illubabor and Kellem Wellega since 2017, and supported remotely due to security instability. Main supports were a construction of cooperatives' storehouse, several quality improvement trainings, an ICS training, and a cupping evaluation. Although the Project could not support as much as the original plan due to the security condition, forest coffee from the target areas in Illubabor and Kellem Wellaga (KW) were evaluated high in the cupping evaluation in January 2019 with score of

81.80-84.22, which can be categorized as Specialty Coffee.

Quality control training at KW

Cupping evaluation at Illubabor

2-5 Activities for Output 4

Output 4: Highland WaBuB, 57 WaBuBs, diversify livelihood options that contributes reduction of deforestation pressure.

Activity 4.1 Identify appropriate improved livelihood activities in highland area.

Through a series of field observations, interviews, and consultations in the highland area, the Project identified typical land use issues (Figure 2-4) and proposed five options for livelihood improvement which could be effective for land use management and forest conservation. Each WaBuB selected several activities from the options based on their interests and consensus in each sub-village. The identified options were proposed in the 1st WaBuB meeting conducted in January 2018, and the WaBuBs submitted their proposals mentioning selective activities and group members for conducting field demonstration and periodical group learning in the field.

(1) Improved beekeeping
(2) Improved crops with green manure
(3) Community nursery of avocado/apple
(4) Vegetable in home garden
(5) Rehabilitation of highland bamboo

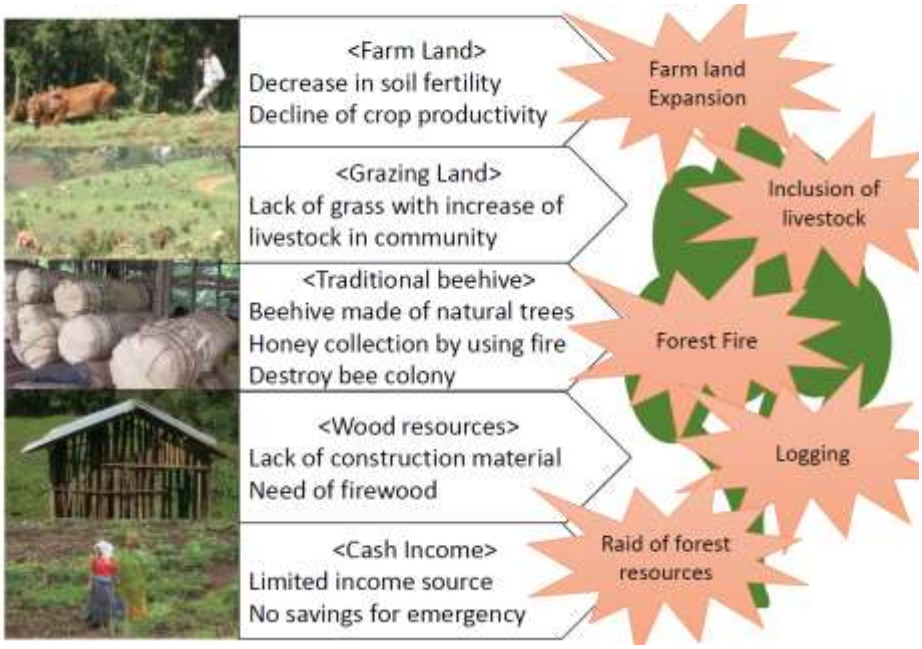


Figure 2-4: Identified typical land issues in Highland area

	
Interview survey in highland area	1st WaBuB meeting at Gera

Activity 4.2 Support introduction of the improved livelihood activities as technical training and demonstration in the field level.

For WaBuBs submitted the proposal of livelihood activities, the Project provided technical trainings and necessary materials for conducting demonstration in a farm of groups representative in each WaBuB. During the project period, the following supports were provided by collaborating with Zonal and District experts as trainers and follow up in the field. The number of training participants and group members are summarized in Annex 8.

(1) Improved beekeeping:

Main purpose:

- To increase honey production by introducing transitional and modern beehives which can reduce risk of accident and forest fire compared with traditional ones.

- To utilize local resources and acquire practical skills by demonstrating transitional beehives which can be gradual steps for applying modern beehive in the future.

Project support:

- Provide beekeeping materials such as protection wears, smokers, water sprays, a set of modern beehive, etc.
- Technical training: May 2018
- Follow-up trainings: December 2018, August 2019

Local Resource:

- Livestock and Fishery Development Office, Jimma Zone

Beneficiaries:

39 groups (573 members)

	
Technical training at Shabe	Inspect provided materials at Gera

(2) Improved crops with green manure:

Main purpose:

- To promote group learning about chemical fertilizer and improved variety of wheat and barley.
- To increase productivity in farm area by applying appropriate variety of crop seed and fertilizer.
- To cultivating green manure (fodder) as contour ridge which can protect soil and provide nutritious forage with high protein.

Project support:

- Provide Improved seed (wheat/barley), fertilizers and pesticide
- Technical training: July 2018 for 1st round, July 2019 for 2nd round
- Follow up training for Field Day preparation: March 2019
- Field Day for Promotion: March-April 2019

Local Resource:

- Agriculture Office, Jimma Zone

Beneficiaries:

1st round: 43 groups (430 members)

2nd round: 58 groups (580 members)

	
Technical training at Gera	Provision of fodder seed at Shabe

(3) Community nursery of avocado/apple

Main purpose:

- To conserve forest through diversification of livelihoods in highland area. Most of the area is suitable for avocado or apple farming.
- To prepare avocado's mother trees in District nurseries for making the activity sustainable by producing scions.
- To promote cash saving practice with regular follow up to start micro-business by utilizing the capital and selling fruits.

Project support:

- TOT for District Experts by visiting avocado group in Kersa area
- Establishment of the avocado mother tree's nursery in both Districts
- Avocado/Apple seeds and seedlings (Hass & Ettinger variety)
- Apple seedlings (3 variety: Anna, Prinsisa, Dorset Golden)
- Avocado's technical and follow-up trainings with provision of scion for grafting: August 2019 and January 2020
- Apple's technical training: August 2018

Local Resource:

- Agriculture Office, Jimma Zone
- Holetta Agriculture Research Center
- Oromia Credit and Saving Share Company (OCSSC),

Beneficiaries:

Avocado: 33 groups (330 members)

Apple: 17 groups (170 members)

	
TOT for Avocado at Kersa	Distribution of Avocado seedings

	
Mother trees in District nursery	Community avocado nursery

(4) Vegetable in home garden:

Main Purpose:

- To provide cash income opportunity for females by utilizing home garden in which females can control and use product for cashing.
- To increase opportunity for intake vegetable as an essential nutrition especially for pregnant women and children.
- To promote use of compost which improve soil condition such as aeration, soil water holding capacity, micro-organisms, etc.

Project support:

- Vegetable seeds: 5 types for each group
- Verme worm for compost making
- Technical training for farming and compost making: December 2018

Local Resource:

- Agriculture Office, Jimma Zone

Beneficiaries:

39 groups (312 female members)

	
Technical training for vegetable farming	Demonstration for compost making

(5) Rehabilitation of highland bamboo

Main Purpose:

- To rehabilitate highland bamboo forest damaged after flowering and dying in 2017 to 2018.
- To acquire proper knowledge that the highland bamboo can be recovered with proper management after flowering.

Project support:

- Technical training & Action Plan making: April 2019

Local Resource:

Forest Research Center (FRC) in Jimma

Beneficiaries:

14 groups (154 members)

	
Deteriorated area after bamboo flowering	Training by FRC staff

Activity 4.3 Support expansion of the improved livelihood activities.

Most of the livelihood support activities such as beekeeping and avocado/apple nursery took time to get harvest and production when compared with the improved crops activities. Based on discussion through the monthly meetings with Zonal and District experts, it was agreed that the support for expansion of livelihood activities should focus more on the improved crops since it is critical for the highland farmers to aware

productivity of crops as their main livelihoods by getting appropriate knowledge on farming skills including improved variety and fertilizer application.

Action plans for crops extension were prepared by each group after harvest and analysis of findings through their demonstration and group learning in the field. Based on the submitted plans, the 2nd round of the crops activities were implemented by utilizing improved seed produced and shared by the 1st group. The technical training for the 2nd round was conducted in July 2019 with minimum support from the project. The 580 members in 58 groups conducted the improved crops activities as a part of activity over the target villages in the highland area.

	
Field Day for sharing experience	Demonstration of improved beekeeping

Through discussions in the 3rd SC meeting and 9th JCC meeting after the terminal review, it was agreed that the livelihood activities for the highland area would be conducted by utilizing existing resources of Ethiopian side. The expansion and follow up activities were continued as a part of regular activities of the agriculture offices in Zone and Districts during the project follow-up period, after January 2020.

Activity 4-4. Monitor and evaluate progress of support for the improved livelihood activities.

Monitoring of the livelihood activities was conducted by the assigned focal persons in each related-offices in the Districts. The focal persons reported the progress and issues of the activities during the monthly meetings or the Steering Committee (SC) meetings.

	
Reporting in monthly meeting	Field monitoring by District Expert

In the Action Plan submitted from the Ethiopian side in August 2019 as a response to the recommendation of Project Terminal Review, monitoring and assessment of those activities were confirmed as a part of responsibility of the SC members through regular tasks by the Agriculture office in the Districts.

Even though under the emergency declaration of COVID-19 pandemic, the District experts conducted monitoring and reporting especially for the improved beekeeping and crops activities. The result of monitoring was summarized in the Annex 8 as follow-up.

Chapter 3 Achievements of the Project

3-1 Outputs and Indicators

Output 1. Institutional capacity of OEFCCA, OFWE, and other relevant government agencies is strengthened to provide appropriate service regarding Sustainable Forest Management mechanism.

	Indicator	Achievement
1-1	At least three Forest Coffee experts of OFWE/JBO are assigned to conduct FCCP and PFM experts or related experts, including district level staff of OFWE/OEFCCA are assigned to follow up forest management in the target area.	Achievement is High as 100% has been achieved. - Three experts were appointed; one person in charge of coffee export at OFWE headquarters in Addis Ababa, one person in charge of ICS and RA in JBO. In addition, the focal persons were appointed from OFWE and OEFCCA in Addis Ababa. - Sustainable forest management in Belete-Gera forest was implemented mainly by the legally effective WaBuB PFM Cooperatives with support from the Zonal Steering Committee (SC). OEFCCA and OFWE will monitor the SC activities as supervising bodies.
1-2	Obtained baseline data and other related survey results are shared among OEFCCA/OFWE/JICA as a basis of further policy making.	Achievement is High as 100% has been achieved. - The baseline survey and other related studies were conducted as listed in the Annex 4. As a way of exploring potential measures against degradation of forest coffee, a simple Feasibility Study for biosphere Reserve (BR) as well as Biodiversity survey were conducted by contracting with staff of Jimma University. A Forest Coffee Inventory Survey was also conducted by setting up 70 plots in forest coffee areas.

Output 2. WaBuB PFM is strengthened through revision of legally effected Forest Management Agreements (FMA) in Belete-Gera Forest area.

	Indicator	Achievement
2-1	Budget for Joint Forest Monitoring is secured by OEFCCA and OFWE. (e.g. allowances, transportation costs for the technical staff of their organization)	Achievement is Medium as 75 % has been achieved. - Based on discussion in the 6th JCC meeting in July 2018, OFWE and OEFCCA committed to allocate budget for conducting the annual JFM. OFWE-JBO secured 514,000 ETB for the JFM as ordinary budget in 2019/20. OEFCCA Jimma Office also conducted forest coffee monitoring in Walla village, Gera District, by using own budget. - However, the purpose of that JFM by OFWE was to collect detailed information needed to punish farmers those who were involved in illegal activities, which was different from the concept of PFMs. Each WaBuB was also obliged to conduct periodical forest monitoring to secure their forest use rights under the newly established WaBuB PFM Cooperatives and the revised FMA, which is ready to be signed.
2-2	At least 15 WaBuB conduct Joint Forest Monitoring annually.	Achievement is Medium as 75 % has been achieved. - The JFM was implemented by 10 out of 124 pilot

		WaBuBs from November-December 2018 by allocating the project budget. - The OFWE-JBO secured budget for conducting the JFM for 17 WaBuBs in 2019/20. The budget for conducting the monitoring in forest coffee area was also allocated by OEFCCA. - It was not confirmed that the budget for the JFM in 2020/21 would be allocated or not either from OFWE or OEFCCA.
2-3	At least 30% of WaBuBs have signed revised FMA during the project period.	Achievement is Medium as 75% has been achieved. - In order to legalize the FMA signed in 2012, the two WaBuB PFM Cooperatives, as of supervising all 124 WaBuBs in Gera and Shabe Sombo Districts respectively, were established in December 2019 as legally approved organization by the Oromia Regional Justice Office. All 124 WaBuB representatives signed on the legal document for the PFM Cooperatives. - Due to expansion of COVID-19 pandemic, it was difficult to conduct activities on the site, therefore a format of the revised FMA document was prepared by reflecting discussions and confirmation through the WaBuB meetings. After situation stabilized, the PFM SC and OFWE-JBO will lead activities for signing the revised FMA with WaBuB representatives.

Output 3. FCCP is improved with sustainable way in forest coffee area of Belete-Gera Forest and promoted target areas in Illubabor and Kellem Wellega.

	Indicator	Achievement
3-1	The FCCP annual plan in Belete-Gera Forest area is prepared by OFWE and shared among stakeholders (e.g. consultative committee member organizations) and the annual plan is put into practice.	Achievement is Medium as 70% has been achieved. - FCCP annual plan in Belete-Gera Forest was prepared in 2016 and has been modified several times. The plan has been shared among stakeholders at SCs and JCCs. - The all 7 WaBuB Coffee Cooperatives operated coffee purchase and transactions based on the annual plan by getting support from OFWE Jimma branch and the project. However, the processing and export procedures by OFWE were frequently delayed and it affected business of the Japanese buyer. The coffee cooperative members also filed a complaint to OFWE about the delay of premium payment from the buyers. - Since 2019/20, the project suggested an alternative option, Kata Muduga Coffee Union, as coffee trading channel in addition to through OFWE. The 5 WaBuB Coffee Cooperatives started to export forest coffee through Kata Muduga Union with relatively smooth transaction. The other 2 cooperatives chose to continue dealing with OFWE, and there was challenges in transaction same as the previous year. - After the project is completed, each cooperative will

		operate own coffee business based on the plan in cooperation with export organizations such as OFWE and Coffee Union.
3-2	Revised ICS (Internal Control System) in Belete-Gera Forest area is developed to reflect RA criteria revisions and examined its effectiveness (i.e. costs, workloads and schedule) in the process of FCCP.	Achievement is High as 100% has been achieved. - As the RA criteria was changed frequently by a RA audit organization, the ICS questionnaire and manual were updated several times. The items of questionnaire using a tablet ICS system were reviewed and consulted with a RA audit organization in July 2020, in order to comply it with the revised RA standard and accommodate it with forest coffee conditions in Belete-Gera Forest. - To improve efficiency and accuracy of forest coffee area monitoring, the tablet system for the ICS was introduced in all 67 WaBuBs in forest coffee area from 2019/20 crop season.
3-3	RA certificate is obtained by more than 50% of WaBuBs that produce forest coffee, based on the improved FCCP in Belete-Gera Forest area.	Achievement is High as 100% has been achieved. - The participation rate in ICS of WaBuB is 60-88%, and the all participants were qualified as achieving the RA standard though the annual audit.
3-4	Quality coffee for specialty market is produced by each target cooperatives in Illubabor and Kellem Wellaga.	Achievement is High as 80 % has been achieved. - The project supported the target cooperatives in Illubabor and Kellem Wellaga from 2017 to 2019 to improve coffee quality such as by storehouse construction and quality improvement training. Due to the state of emergency and unstable security conditions at the target sites, the support was forced to be minimized in training implementation by remote operation. - The sample of forest coffees from the target cooperatives were evaluated high as specialty coffee with scores of 73.70-82.15 in 2018 and 81.40-84.22 in 2019 at the cupping evaluation events conducted in Illubabor.

Output 4. Highland WaBuB diversify livelihood options that contributes reduction of deforestation pressure.

	Indicator	Achievement
4-1	80% of WaBuBs in highland area (55 WaBuBs) participate in the demonstration of improved livelihood activities.	Achievement is High as 100 % has been achieved. - Based on the submitted proposal from each WaBuB, the Project provided technical trainings and materials for conducting demonstration of improved livelihood activities. By the end of December 2019, the following livelihood activities were conducted. Percentages show ratio of the number of WaBuB which carried out their demonstration activities out of the total WaBuBs in the highland area (1) Improved beekeeping: 39 WaBuBs (71 %) (2) Improved crops with green manure: 47 WaBuBs (85 %) (3) Community nursery of avocado/apple: 50 WaBuBs (91%) (4) Vegetable in home garden: 39 WaBuBs (71%)

		(5) Rehabilitation of highland bamboo: 14 WaBuBs (all bamboo area)
4-2	60% of WaBuBs in highland area (55 WaBuBs) prepare action plan for expansion of improved livelihood activities.	Achievement is High as 100% has been achieved. - The action plans for extending livelihood activities were prepared by 58 wheat groups in 47 WaBuBs (85 %) after harvest and analysis of findings through the demonstration in the field. - Through discussions in the 3rd SC meeting and 9th JCC meeting after the terminal review, it was agreed that the livelihood activities for the highland area would be conducted by utilizing existing resources of Ethiopian side. The expansion and follow up activities were continued as a part of regular activities of the agriculture offices in Zone and Districts during the project initial extension period from January to September 2020.

3-2 Project Purpose and Indicators

Project Purpose: Appropriate Sustainable Forest Management mechanism is developed in Belete-Gera Forest area.

	Indicator	Achievement
1	Implementation of WaBuB FMA is embedded as one of regular work of OEFCCA/OFWE.	Achievement is High as 80% has been achieved. - The WaBuB PFM Steering Committee, led by Jimma offices of OEFCCA and OFWE, was established based on the Action Plan prepared by Ethiopian side after the Terminal Review. The SC is responsible for promoting the sustainable forest management in Belete-Gera Forest. Besides that, the legally approved WaBuB PFM Cooperatives lead and supervise WaBuBs' forest management activities by collaborating and getting support from OEFCCA and OFWE.
2	Marketing FCCP coffee with payment of premium to farmers are executed by OFWE or/and Coffee Union in a timely manner according to the FCCP annual plan.	Achievement is Medium as 70 % has been achieved. - The delay of paying premium payment to the coffee farmers was one of the challenges while continuing transaction through OFWE up to 2018/2019. It was often that the payments to the coffee farmers were often delayed and sometimes farmers received it one year later. - Since 2019/20, the 5 out of 7 WaBuB Coffee Cooperatives started to export forest coffee through Kata Muduga Union with relatively smooth transaction, and is expected to be paid on the annual plan.
3	Average of income in highland area is increased compared to those in 2017 (12,000 ETB for sample households).	Achievement is High as 100% has been achieved. - The impact survey livelihood activities in Highland areas was conducted in June 2019 by targeting 225 households. The average of income in latest cropping season was 37,927 ETB. 72 % of the sample households responded that their agricultural production increased compared to 2017.

3-3 History of PDM modification

There were four times of PDM modifications and those were confirmed by Minutes of Meetings to revise the Record of Discussion during the project period.

- The first modification was made in June 2016 to add the activities in the highland area in collaboration with the OFLP.
- The second modification was made in January 2018 and OEFCCA became the implementation agency in addition to OFWE after its establishment in 2017. The project purpose was also changed to focused on WaBuB PFM in Belete-Gera Forest and REDD+ related activities were modified to PFM due to delay of the OFLP implementation. In addition, the activities in Illubabor and Kellem Wellaga were minimized because of unstable security situations over the area.
- The third modification was made in January 2019. The project period was extended for 9 months based on the submitted action plan by the Ethiopian side to prepare for taking over the project achievement.
- The fourth modification was made in October 2020. The project period was extended again for 2 months to complete ICS training and Quality Control training that have been delayed due to COVID-19 pandemic.

Chapter 4. Result of Joint Review

4-1 Results of Review based on DAC Evaluation Criteria

The Terminal Review was conducted in June 2019 by a joint team from JICA and Ethiopian sides, OEFCCA and OFWE. In the Review, results of the Project activities were assessed from the aspect of DAC Evaluation Criteria. As 11 months extension of the project was made after the terminal review, the project reexamined the project achievements at the end of the project and concluded the final review as follows.

(1) Relevance: High

The Project is highly relevant to development policies and needs of the Ethiopian Government and development cooperation policies of the Japanese Government. The approaches taken by the Project are strongly aligned to those policies.

(Ethiopian Side)

- Ethiopia's Climate-Resilient Green Economy (CRGE)
- Nationally Determined Contributions (NDC) of Ethiopia
- National REDD+ Strategy of Ethiopia
- National Forest Sector Development Program, Ethiopia

(Japanese Side)

- Ministry of Foreign Affairs of Japan: Country Assistance Policy for Ethiopia issued in July 2017 includes as priority field; Agriculture and Rural Development, and the Natural Resource Management Program with the aim to support establishing methods of community based natural resource management and the strengthening of an extension system for both agricultural productivity and forest resource conservation.

(2) Effectiveness: Medium

- Outcomes and the Project purpose were almost achieved but some indicators are partially unachieved.
- Some activities such as signing of the revised WaBuB FMA and ICS in the 2020/21 crop season were not fully implemented and completed during the project period mainly due to limitation of conducting the field activities under the stage of Emergency Declaration of the country due to COVID-19 pandemic.

(3) Efficiency: Medium to High

- The total inputs by JICA was about 549 million JPY while original plan was 480 million JPY. One of the main reasons of this gap is some project activities were added including REDD+ related activities and then modified again responding to REDD+ progress in Ethiopia aiming that the project aligns more with Ethiopia’s CRGE strategy. Also 11 months project extension mainly due to the state emergencies of the country by instability situations and COVID-19 pandemic caused the increase of project implementation costs. Therefore, the increase of costs is associated with expansion of project scopes and unavoidable factors.
- Most of inputs for the Project activities by JICA have been provided as planned in terms of volume and timing. However, it was unfortunate that dispatch of JICA Expert and Consultants was disabled after March 2020 due to expansion of COVID-19 pandemic.

(4) Impact: Medium to High

- The positive impact of the project can be seen in decrease in annual reduction rate of forest coverage in Belete-Gera forest area, increased income with forest coffee and livelihood activities, and continued forest coffee business in international market.
- The impact survey in Highland areas, conducted in 2020, indicated that the average of cash income was increased by almost three times in the sample households when compared with that in 2017.
- The Project provided the necessary capacity building opportunities and developed guidelines for achieving the overall goal. It is expected that the outcomes especially relating to PFM and FCCP will be continuously used by the Oromia Regional Government and other partners for expanding sustainable forest management in forest coffee areas in Oromia region.

(5) Sustainability: Medium

- Most of the forest management activities such as meetings and trainings were conducted by the budget from JICA. But efforts by Ethiopian side toward sustainability were also shown in the Action Plan submitted by the Ethiopian Side in August 2019, and necessary budget such as JFM implementation was secured by OFWE in 2019. OEFCCA in Jimma Zone also conducted forest coffee monitoring in Walla Village in Gera District by allocating own budget. By utilizing funding through other external finance such as REDD+ programs, the forest management activities can be further continued even after the project.
- Forest Coffee produced by WaBuB Coffee Cooperatives maintains its quality and fulfils the RA criteria, which attract Japanese buyers. However, those process have been fully supported by the project, so it is not very sure whether forest coffee producers and delivery service providers can meet requirement from the buyers after the project. In order to ensure quality, on-time delivery, and stable amount of production, the Project has facilitated an optional export route such as Kata Muduga Coffee Union from 2019/20 season based on the exit strategy through discussions in the JCC meetings, which is expected to strengthen the sustainability of coffee production of the area to meet requirements by the international market.
- From a longer-term perspective, the Project prepared a draft forest coffee management guideline and revised ICS system to ensure sustainability of FCCP which achieves forest conservation and forest coffee production in a harmonized manner.

4-2 Key Factors influenced in Implementation and Outcomes

(1) Long-term cooperation of both countries

- The project implementation was backed up through close relationship between the Oromia Regional Government and JICA over 20 years. Prompt actions and leadership by Project Directors of OEFCCA and OFWE contributed to effective project implementation. Even though the Project faces some challenges during its implementation, the Project Directors established the WaBuB PFM Steering Committee and allocated budget for the JFM to address those challenges immediately after the terminal review.
- Collaboration with the UCC Ueshima Coffee Company in Japan was also beneficial as they supported the Project not only as their coffee business but as a part of their CSR activities for quality improvement and strengthening of competitiveness of the forest coffee in the international market.
- Mutual collaboration based on the long-term cooperation of both countries contributed to overcome the other difficulties, such as unstable security situation and delay of the OFLP, and finally achieved the project purpose.

(2) Delay of the REDD+ Program in Oromia

- Due to delay of the agreement regarding Oromia Forested Landscape Program (OFLP) between Ethiopia and the World Bank, the overall OFLP implementation delayed and its activity plan was not clear enough to harmonize both projects. Though the project had planned to utilize channel and resource of the OFLP for implementation of field-level activities especially in the highland area, the project's plan had to be re-considered.
- The budget of OFLP was executed from July 2017, but only districts designated as "hot spot" were prioritized for OFLP intervention (and Belete-Gera was not included in "hot spot") and it was not clear if budget would be allocated for the other districts including Belete-Gera Forest. Structural arrangement at Zonal level, such as establishment of a consultation committee, as well as WaBuB revitalization activities by integrating with OFLP delayed. Due to these delays in OFLP implementation, the Project was needed to revise the project plan without waiting for the OFLP's progress.

(3) Insufficient collaboration with national coffee sectors

- Export of forest coffee to Japan is delayed every year, mainly due to insufficient OFWE's supervision for FCCP activities. It was also a challenge that there were no middle and long-term vision and consensus on forest coffee business by OFWE. It hampered the increase in the purchase channel and export amount of forest coffee since beginning of the Project.
- Since the Ethiopia Coffee and Tea Authority (ECTA) was established in 2017, production of coffee has been prioritized in policy and recommended to increase coffee productivity by introducing improved coffee varieties and inputs. Even in the Belete-Gera Forest, that policy has been applied and seemed to accelerate degradation in forest coffee areas.
- Along deregulation on coffee business was applied by ECTA in 2017, the number of coffee wash mill facility has been immediately increased, around 30 facilities in Belete-Gera Forest. It caused soaring of coffee cherry purchase and reduction in amount of dry coffee selling under the FCCP.

(4) Instability in the country and influence by COVID-19

- Due to instability of the region, visiting to Illubabor and K/Wellaga have been under restriction since summer of 2016. This has negatively affected the project activities. Despite this challenge, the Project started activities in these areas since for 2017 to 2018 crops such as quality control and ICS training.
- Due to expansion of the COVID-19 pandemic over the world as well as Ethiopia, the Prime Minister announced Emergency Declaration and closed country boarder for foreigner's since April 2020. In addition, travel of JICA experts have been suspended since March 2020, and the project activities have been limited.

(5) Implementation structure of the Project

- For conducting the WaBuB revitalization activities and livelihood support in the highland area from 2017, cooperation with the District administration and Development Agents (DAs) under the agriculture office has been essential for operation at the field level. Up to the Phase 2 project, those offices were included as the Counterpart Agencies or partners. Since the implementing agencies of the current project did not include agricultural agencies and DAs, it affected project implementation particularly for approaching to farmers.

4-3 Evaluation on the results of the Project Risk Management

(1) Appropriate revision of project strategy

- Necessity of revising the project strategy, caused by delay in the OFLP implementation, was discussed and agreed in the JCC meeting in July 2018. Based on that, revised PDM, the 3rd version, was approved by the Minutes of Meeting signed on August 18, 2018. In the revised PDM, REDD+-related activity (ex-Output 2) was separated to PFM-related activity (Output 2) and livelihood support in highland area (Output 4). These revisions were made appropriately and on-time.

(2) Facilitating options for forest coffee transaction channel

- Challenges in the coffee transactions, such as delay in coffee export and premium payment, were discussed in the JCC meetings. As a part of Exit Strategies, it was agreed to consider exploring the other options for the coffee transaction channel not only through OFWE. From the crop season in 2019/2020, the project facilitated the options and own selection by each cooperative for their forest coffee transaction channel through either OFWE or the Kata Muduga Coffee Union.

(3) Collaboration with local stakeholders by remote assistance

- Since Japanese experts and project local staff were prohibited to travel to the Western part of Oromia region include Illubabor and Kellem Wellega Zone due to security reasons, the Project explored activities that can be performed remotely by consulting with the branch manager.
- Under the challenges with the COVID-19 pandemic, necessary field-level activities, forest coffee transaction and distribution of avocado scion, were conducted by collaboration among local stakeholders and project local staff. Close relationships developed through cooperation over the 15 years has enabled implementation even under unexpected difficulties.

4-4 Lessons Learnt

- In order to motivate counterpart agencies in the field level, establishment of Steering Committee (SC) under official agreement by the central government was effective to delegate some responsibility and promote collaboration among local governments and forest users. It led to allocation of the budget for Joint Forest Monitoring (JFM) by OFWE-JBO.
- Collaboration with private-based organizations in coffee business can enhance sustainability of forest coffee marketing. Since the single channel in coffee trading only through public institution has risk in sustainability by unstable budget allocation and possible change in government policy. Enhancing options such as the channel with coffee cooperatives can mitigate risks and provide more diversified options for coffee farmers.
- Over years, motivation for participating in the FCCP by forest coffee farmers has weakened due to increase in marketing options for forest coffee. Compared with the situation in 2014 when the current project started, farmers now can sell forest coffee with relatively better price even without through the FCCP and RA certification, as coffee market in the country is activated. For adding more value to forest coffee, further measures can be taken besides obtaining the international certification such as RA. This includes to promote uniqueness of forest coffee in Ethiopia such as the story as origin of Arabica coffee and its contribution to forest conservation and people's welfare in markets for domestic and international buyers and consumers.

Chapter 5. For the Achievement of Overall Goals after the Project Completion

5-1 Prospects to achieve Overall Goal

(1) FCCP is expanded to more than one area in Illubabor and Kellem Wellega.

As the project activities, a series of trainings and cupping events in the pilot areas of Illubabor and Kellem Wellega were conducted in 2018 and 2019 even though it was difficult to continue after 2019 due to the security situation. By utilizing capacity developed and necessary resources to implement the FCCP, FCCP activities are expected to be expanded in other areas of Illubabor and Kellem Wellega than the pilot areas.

(2) Sustainable forest management is promoted using the mechanism developed in Belete-Gera Forest area in more than two forest areas except Belete Gera in Oromia and other Regions.

With practices and experiences in Belete-Gera Forest, the following materials were developed and shared with the Oromia Regional Government and related development partners or programs such as RIP and GIZ.

a) Document of WaBuB PFM Cooperatives

b) FCCP-ICS Manual

c) Draft Forest Coffee Management Guideline

Experiences of the WaBuB PFM re-vitalization and legalizing process are summarized in the a) document of WaBuB PFM Cooperatives and the revised FMA. It can be utilized in the other forest areas such as forest concessions where OFWE-JBO and OEFCCA promote PFM activities as a part of OFLP and RIP. Over the forest coffee areas in the Oromia Region and the Southern Nations, Nationalities, and People's Region (SNNPR), the materials b) and c) can be utilized for promoting coffee certification and appropriate forest coffee management through FCCP.

5-2 Recommendations for the Ethiopian side to achieve Overall Goal

By the project implementation in Belete-Gera Forest, the forest management mechanism was established. In order to make it sustainable and disseminate to other areas for achieving policy goals such as CRGE, the following further efforts and actions by the Ethiopian side will be required.

- Continuous support for the WaBuB Forest Coffee Cooperatives for collaborating more with the private sector such as the Coffee Unions.
- Strengthening the FCCP to maintain clear synergies with forest conservation through promoting the developed Forest Coffee Management Guideline.
- Continuous allocation of staff and budget for conducting the JFM and supporting the WaBuB PFM Cooperatives to sign on the revised FMA with all WaBuBs and supervise PFM activities in the field.
- Coordination with the Ministry of Agriculture for setting up a secretary office and register for Globally Important Agriculture Heritage System (GIAHS) to promote sustainable forest coffee management and invite international interests in original Ethiopian coffee practices.

5-3 Monitoring Plan from the end of the Project to Ex-post Evaluation

- Monitor the situation of the WaBuB PFM Cooperatives how they renew annual plan and conduct PFM activities

- Monitor OFWE-JBO and OEFCCA to support WaBuB PFM Cooperatives and allocate necessary budget
- Monitor WaBuB Coffee Cooperatives to conduct ICS and continue marketing of forest coffee with appropriate quality.
- Conduct consultations with related governmental organizations and development partners such as OFWE-JBO, OEFCCA, ECTA, and GIZ how they utilize experiences or materials from the Belete-Gera Forest.

ANNEX

ANNEX 1: PDM (Version 1-3)
ANNEX 2: Plan of Operation
ANNEX 3: Results of the Project
ANNEX 4: List of Products
ANNEX 5: Summary of WaBuB PFM Progress
ANNEX 6: Forest Cover Map in 2018 & 2019
ANNEX 7: Summary of FCCP ICS in Forest Coffee area
ANNEX 8: Summary of Livelihood Activities in Highland area
ANNEX 9: Revised WaBuB Forest Management Agreement
ANNEX 10: Draft of Forest Coffee Management Guideline

ANNEX 1: PDM

Project Design Matrix

Project Title: Certified Forest Coffee Production and Promotion Project **Version 0**

Implementing Agency: Oromia Forest and Wildlife Enterprise **01 September 2014**

Target Group: Staff of OFWE, its Jimma, Ilubabor and Wellega branch offices, and staff of the relevant WaBuBs/cooperatives (direct beneficiary), farmers in the target areas (indirect beneficiary)

Period of Project: June 2014 - November 2019 (5.5 years)

Project Site: RFPAs where FCCP is/will be introduced in Jimma, Ilubabor and Kellem Wellega in Oromia Region

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal Sustainable rural development balancing increase of farmers' income and forest conservation is promoted through expansion of FCCP.	1) FCCP is expanded to more than one area in Ilubabor and Kellem Wellega. 2) The coverage rate of forest in the target areas is sustained after the Project completion.	Record of OFWE OFWE's Statistics	
Project Purpose Farmers' income is increased through FCCP linked with proper participatory forest management in the target areas.	1) Price of coffee sales through FCCP is higher than the local price of the same period of time. 2) Marketing FCCP coffee and returning the premium to farmers are executed in a timely manner in accordance with SOP. 3) More than 50% of WaBuB that produce forest coffee maintain their forest boundaries.	Record of OFWE and interview with farmers. Joint forest monitoring report by WaBuB and JBO	1. There is no change of government policy on PFM, RFPA and rural development. 2. International coffee price does not turn substantially negative to expansion of FCCP
Outputs 1. FCCP is improved for forest management and enhanced in sustainability in the target areas of Belete-Gera. 2. Improved FCCP is extended to the target areas in Ilubabor and Kellem Wellega. 3. Capacity of OFWE HQ and its relevant branch offices for implementing FCCP and PFM is strengthened.	1-1) RA certificate is obtained by more than 50% of WaBuBs that produce forest coffee, based on the improved FCCP. 1-2) Joint forest monitoring is conducted with JBO and more than 50% of WaBuB that produce forest coffee with their own budgets. 2-1) RA certificate is obtained by the cooperatives in the target areas of Ilubabor and Kellem Wellega. 3-1) Marketing promotion activities are increased. 3-2) SOP on marketing FCCP coffee and returning the premium to farmers is developed in OFWE. 3-3) Options of possible financial sources for PFM or farmers income generation are listed.	RA certificate Joint forest monitoring report Project progress report RA certificate Project progress report OFWE's report OFWE's coffee business F/S and record	1. Illegal timber logging, settlement, agricultural investment, or road construction which cause deforestation do not take place at the level of affecting project implementation. 2. International coffee price does not turn substantially negative to project implementation.

Activities	Inputs		Pre-Conditions
	The Japanese Side	The Ethiopian Side	1. The Project can start at the planned timing to concurrent with ICS cycle of 2014. 2. Promotion of coffee business is intended in OFWE's Recalibration Plan that is under preparation at present. 3. Coffee Sector Development Strategy (including the planned Coffee Authority) currently under development does not substantially affect the Project framework. 4. OFWE allocates a necessary budget for 2014 to conduct FCCP and PFM, based on the proposal submitted by JBO by no
0. Review and improve the ICS manual for WaBuB FCCP to strengthen the linkage with forest conservation. 1-1. Carry out FCCP process (e.g., ICS manual revision, training on coffee quality control and traceability, ICS procedure strengthening). 1-2. Create a financial mechanism to cover PFM activity costs. 1-3. Monitor WaBuBs' PFM activities (e.g., general assembly, joint forest monitoring, forest management action plan). 2-1. Examine and select target areas in Ilubabor and Kelem Wallega, where PFM is already introduced and with a high potential in forest coffee production. 2-2. Carry out FCCP process. 2-3. Monitor PFM activities in the target areas. 3-1. Prepare and conduct marketing training of OFWE's staff. 3-2. Examine and carry out options for effective marketing (e.g., preparing SOP on coffee business, alternative sales channel through cooperative union). 3-3. Conduct a study on possible financial sources for PFM such as REDD+ and PES. 3-4. Conduct a study on enhancing current marketing of NTFP to bring additional income to farmers.	1. Dispatch of Experts 1) Long-term Experts (Chief advisor and in the areas of forest management, project coordination, participatory rural development) 2) Short-term Experts (Coffee marketing and production, certification system, REDD+, etc. to be determined during the course of the Project implementation) 3) Local expert(s) maybe recruited additionally if it would be efficient and effective 2. Training Training in Japan and/or other countries 3. Machinery and equipment 1) Vehicles 2) Equipment necessary for enhancing marketing activity 3) Office equipment such as PC, printer, etc.	1. Assignment of counterpart ・Project Director (Director General) ・Project Managers (Technical Division Deputy DG, Director of Planning and Marketing Directorate) ・Branch Coordinators (Branch Manager of JBO, IBO, WBO) ・Technical staff (Coffee quality control officer, FCCP coordinator, and PFM expert at zonal level, and forest experts at district level, in JBO, IBO, and WBO) 2. Provision of facility Provision of office space for the Project 3. Running expenses necessary for the	<Issues and countermesures>

Project Design Matrix

Project Title: Project for Supporting Sustainable Forest Management through REDD+ and Certified Forest Coffee Production and Promotion

Version 1
August 2016

Target Area : RFPAs where FCCP is/will be introduced in Jimma, Ilubabor and Kellem Wellega in Oromia Region

Implementing Agency: Oromia Forest and Wildlife Enterprise

Target Group: Staff of OEFCCA, OFWE and its Jimma, Ilubabor and Wellega branch offices, and staff of the relevant WaBuBs/cooperatives (direct beneficiary), farmers in the target areas (indirect beneficiary)

Period of Project: July 2014 - January 2020 (5.5 years)

Project Site: RFPAs where FCCP is/will be introduced in Jimma, Ilubabor and Kellem Wellega in Oromia Region

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal Sustainable rural development balancing increase of farmers' income and forest conservation is promoted through REDD+ and Certified Forest Coffee Production & Promotion, contributing to CRGE.	1) FCCP is expanded to more than one area in Ilubabor and Kellem Wellega. 2) The coverage rate of forest in the target areas is sustained after the Project completion resulting from the introduction of the sustainable REDD+ financial mechanism.	Record of OFWE OFWE's Statistics	
Project Purpose Appropriate Sustainable Forest Management model through REDD+ and Certified Forest Coffee Production & Promotion is established in Belete-Gera Forest districts.	1) Price of coffee sales through FCCP is higher than the local price of the same period of time. 2) Marketing FCCP coffee and returning the premium to farmers are executed in a timely manner in accordance with SOP. 3) More than 50% of WaBuB that produce forest coffee maintain their forest boundaries. 4) A REDD+ financial mechanism is in place at the district level as a result of allocating the result-based payment by OFLP.	Record of OFWE and interview with farmers. Joint forest monitoring report by WaBuB and JBO	1. There is no change of government policy on PFM, RFPA and rural development. 2. International coffee price does not turn substantially negative to expansion of FCCP.
Outputs 1. Capacity of OFWE HQ and its relevant branch offices and CBOs for implementing REDD+ and production and promotion of forest coffee and other non-timber forest products is strengthened.	1-1) Marketing promotion activities are increased. 1-2) SOP on marketing FCCP coffee and returning the premium to farmers is developed in OFWE. 1-3) Capacity building activities (including training, seminars, consultative meetings, etc.) on REDD+ is carried out targeting for a different level of stakeholders.	RA certificate Joint forest monitoring report Project progress report	1. Illegal timber logging, settlement, agricultural investment, or road construction which cause deforestation do not take place at the level of affecting project implementation.

2. A mechanism for realizing REDD+ Action Plan at district level is established in Belete-Gera Forest districts within the framework of national/regional REDD+ mechanism.	2-1) A multi-sectoral structure is established and functional at the district level as a forum to discuss district's emission reduction strategies. 2-2) A REDD+ action plan for Belete-Gera Forest districts is developed. 2-3) REDD+ pilot activities, especially targeted for the highland area, are implemented, and results are reviewed according to the PDCA cycle.	RA certificate Project progress report	2. International coffee price does not turn substantially negative to project implementation.
3. FCCP is improved for forest management and enhanced in sustainability in the target areas of Belete-Gera.	3-1) RA certificate is obtained by more than 50% of WaBuBs that produce forest coffee, based on the improved FCCP. 3-2) Joint forest monitoring is conducted with JBO and more than 50% of WaBuB that produce forest coffee with their own budgets.	OFWE's report OFWE's coffee business F/S and record	
4. Improved Forest Coffee Production and Promotion is extended to the target areas in Ilubabor and Kellem Wellega.	4-1) RA certificate is obtained by the cooperatives in the target areas of Ilubabor and Kellem Wellega. 4-2) Capacity of cooperatives in the target areas of Ilubabor and Kellem Wellega on improved coffee production and promotion is strengthened. ・The target cooperatives produce quality coffee for the export of specialty markets. ・An experience sharing visit to WaBuB cooperatives in Belete-Gera Forest is carried out.		

Activities	Inputs		Pre-Conditions
	The Japanese Side	The Ethiopian Side	1. The Project can start at the planned timing to concurrent with ICS cycle of 2014.
1-1. Form a multi-sectoral platform including relevant government's departments/offices in the target area which will be linked to OFLP's institutional set-up. 1-2. Support capacity building in terms of technology transfer (including training and logistics) for implementing REDD+ in the target areas. 1-3. Prepare and conduct marketing training of OFWE's staff. 1-4. Examine options for effective marketing (e.g., preparing SOP on coffee business, alternative sales channel through cooperative union). 1-5. Conduct a study on enhancing current marketing of NTFP to bring additional income to farmers.	1. Dispatch of Experts 1) Long-term Experts (Chief advisor and in the areas of forest management, project coordination, participatory rural development) 2) Short-term Experts (Coffee marketing and production, certification system, REDD+, etc. to be determined during the course of the Project implementation) 3) Local expert(s) maybe recruited additionally if it would be efficient and effective 2. Training Training in Japan and/or other countries	1. Assignment of counterpart ・Project Director (Director General) ・Project Managers (Technical Division Deputy DG, Director of Planning and Marketing Directorate) ・Branch Coordinators (Branch Manager of JBO, IBO, WBO) ・Technical staff (Coffee quality control officer, FCCP	2. Promotion of coffee business is intended in OFWE's Recalibration Plan that is under preparation at present. 3. Coffee Sector Development Strategy (including the planned

2-1. Establish and facilitate a multi-sectoral governance structure (a multi-sectoral forum) for discussing sustainable emission reduction strategies at the district level. 2-2. Formulate a district's REDD+ action plan that includes; 1) forest management (forest development, conservation, utilization and protection activities), 2) livelihoods support activities with strong linkage with forest management and protection, especially targeting for communities in the highland area in Belete-Gera Forest, 3) district's MRV system for the activities, 4) financial plan of result-based payment for carbon benefits and other resources in comply with national / regional principles and methodology, guideline, etc. 2-3. Implement REDD+ activities in the target districts. 2-4. Establish a PDCA cycle for carrying out the REDD+ action plan. 3-1. Carry out FCCP process. 3-2. Create a financial mechanism to cover PFM activity costs. 3-3. Monitor WaBuB's PFM activities (e.g. general assembly, forest management action plan). 3-4. Review and improve the ICS manual for WaBuB FCCP to strengthen the linkage with forest conservation. 4-1. Examine and select target areas in Ilubabor and Kellem Wellega, where PFM is already introduced and with high potential in forest coffee production. 4-2. Carry out FCCP process (e.g., ICS manual revision, training on coffee quality control and traceability, ICS procedure strengthening). 4-3. Monitor PFM activities in the target areas. 4-4. Strengthening PFM activities such as general assembly and sharing experiences in Belete-Gera etc.	3. Machinery and equipment 1) Vehicles 2) Equipment necessary for enhancing marketing activity 3) Office equipment such as PC, printer, etc.	coordinator, and PFM expert at zonal level, and forest experts at district level, in JBO, IBO, and WBO) 2. Provision of facility Provision of office space for the Project 3. Running expenses necessary for the implementation of the Project	Coffee Authority) currently under development does not substantially affect the Project framework. 4. OFWE allocates a necessary budget for 2014 to conduct FCCP and PFM, based on the proposal submitted by JBO by no later than June 2014.

Abbreviation: RFPA (Regional Forest Priority Area), OFWE (Oromia Forest and Wildlife Enterprise), JBO (Jimma Branch Office), IBO (Ilubabor Branch Office), WBO (Wellega Branch Office), PFM (Participatory Forest Management), WaBuB (Waldaa Bulchinsaa Bosonaa, Forest Management Association established in Berete-Gera in Jimma), FCCP (Forest Coffee Certificate Program), ICS (Internal Control System), RA (Rainforest Alliance), SOP (Standard Operational Procedure) REDD+ (Reducing Emissions from Deforestation and Forest Degradation Plus), PES (Payment for Ecosystem Services), NTFP (Non-timber forest products), F/S (Financial Statement), CRGE (Climate-Resilient Green Economy), CBOs

Project Design Matrix

Project Title: Project for Supporting Sustainable Forest Management through REDD+ and Certified Forest Coffee Production and Promotion

Version 2
September 2019

Target Areas: Belete-Gera Forest area, Selected areas in Illubabor and Kellem Wellega

Implementing Agencies: OEFCCA, OFWE

Target Group: Staff of OEFCCA, OFWE and its Jimma, Illubabor and Wellega branch offices, and staff of the relevant WaBuBs/cooperatives (direct beneficiary), farmers in the target areas (indirect beneficiary)

Period of Project: July 2014 – October 2020 (6 years and 3 months)

Project Site: Jimma, Illubabor and Kellem Wellega in Oromia Region

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal			
Sustainable rural development harmonized with forest management, contributing to CRGE and SDGs, is promoted beyond the target areas.	1) FCCP is expanded to more than one area in Illubabor and Kellem Wellega. 2) Sustainable forest management is promoted using the mechanism developed in Belete-Gera Forest area in more than two forest areas except Belete Gera in Oromia and other Regions	Record of OFWE Interview with OEFCCA /OFWE, and related state departments and development partners engaged forestry sector.	
Project Purpose			
Appropriate Sustainable Forest Management mechanism* is developed in Belete-Gera Forest area.	1) Implementation of WaBuB FMA is embedded as regular work of the target district governments and OEFCCA/OFWE. 2) Marketing FCCP coffee with payment of premium to farmers are executed by OFWE or/and Coffee Union in a timely manner according to the FCCP annual plan. 3) Average of income in highland area is increased compared to those in 2017 (12,000 ETB for sample households).	JFM report by WaBuB Regular Budget allocation to JFM by OEFCCA/OFWE OFWE's report Project report Project report	1. There is no critical change of government policy on PFM and rural development. 2. International coffee price does not turn substantially negative to expansion of FCCP.
Outputs			
1. Institutional capacity of OEFCCA, OFWE, and other relevant government agencies is strengthened to provide appropriate service regarding Sustainable Forest Management mechanism.	1-1) At least three Forest Coffee experts of OFWE/JBO are assigned to conduct FCCP and PFM experts or related experts, including district level staff of OFWE/OEFCCA are assigned to follow up forest management in the target area. 1-2) Obtained baseline data and other related survey results are shared among OEFCCA/OFWE/JICA as a basis of further policy making.	Project report Report on REDD+ integration Baseline Survey Report	1.Extream illegal timber logging, settlement, agricultural investment, or road construction which cause deforestation do not take place at the level of affecting project implementation.

2. WaBuB PFM is strengthened through revision of legally effected Forest Management Agreements (FMA) in Belete-Gera Forest area. => That "strengthened" means PFM activities, especially Joint Forest Monitoring (JFM), are legally secured and conducted under revised Forest Management Agreement (FMA)	2-1) Budget for Joint Forest Monitoring is secured by OEFCCA and OFWE. (e.g. allowances, transportation costs for the technical staff of their organization) 2-2) At least 15 WaBuB conduct Joint Forest Monitoring annually. 2-3) At least 30% of WaBuBs have signed revised FMA during the project period.	Project progress report Agreement (FMA) Joint forest monitoring (JFM) report Revised WaBuB Forest Management	2. International coffee price does not turn substantially negative to project implementation. 3. Security condition in the target area does not seriously affect in project activities.
3. FCCP is improved with sustainable way in forest coffee area of Belete-Gera Forest and promoted target areas in Illubabor and Kellem Wellega. => Sustainable way means: ICS with RA will be continued by OFWE by utilizing own human and financial resources (to be committed in September 2018)	3-1) The FCCP annual plan in Belete-Gera Forest area is prepared by OFWE and shared among stakeholders (e.g. consultative committee member organizations) and the annual plan is put into practice. 3-2) Revised ICS(Internal Control System) in Belete-Gera Forest area is developed to reflect RA criteria revisions and examined its effectiveness(i.e. costs, workloads and schedule) in the process of FCCP. 3-3) RA certificate is obtained by more than 50% of WaBuBs that produce forest coffee, based on the improved FCCP in Belete-Gera Forest area 3-4) Quality coffee for speciality market is produced by each target cooperatives in Illubabor and Kellem Wellaga.	OFWE's report OFWE's coffee business F/S and record RA Certification	
4. Highland WaBuB diversify livelihood options that contributes reduction of deforestation pressure.	4-1) 80% of WaBuBs in highland area (45 WaBuBs) participate in the demonstration of improved livelihood activities. 4-2) 60% of WaBuBs in highland area (35 WaBuBs) prepare action plan for expansion of improved livelihood activities.	Baseline survey result Post-project survey report	

Activities	Inputs		Pre-Conditions
	The Japanese Side	The Ethiopian Side	1. The Project can start at the planned timing to concurrent with ICS cycle of 2014.
1-1. Develop capacity for FCCP and forest management through training, study visit, and on the job training. 1-2. Conduct baseline survey and studies on forest management-related topics (ex. village socio-economic survey, forest cover, NTFPs)	1. Dispatch of Experts 1) Long-term Experts and Consultants (Chief advisor and in the areas of forest management, project coordination, participatory rural development) 2) Short-term Experts (Coffee marketing and production, certification system, REDD+, etc. to be determined during the course of the Project implementation) 3) Local expert(s) maybe recruited additionally if it would be efficient and effective	1. Assignment of counterpart ・ Project Director (OEFCCA) ・Co-project Director (OFWE) ・ Project Managers (OEFCCA, OFWE)	2. Promotion of coffee business is intended in OFWE's Recalibration Plan that is under preparation a present.

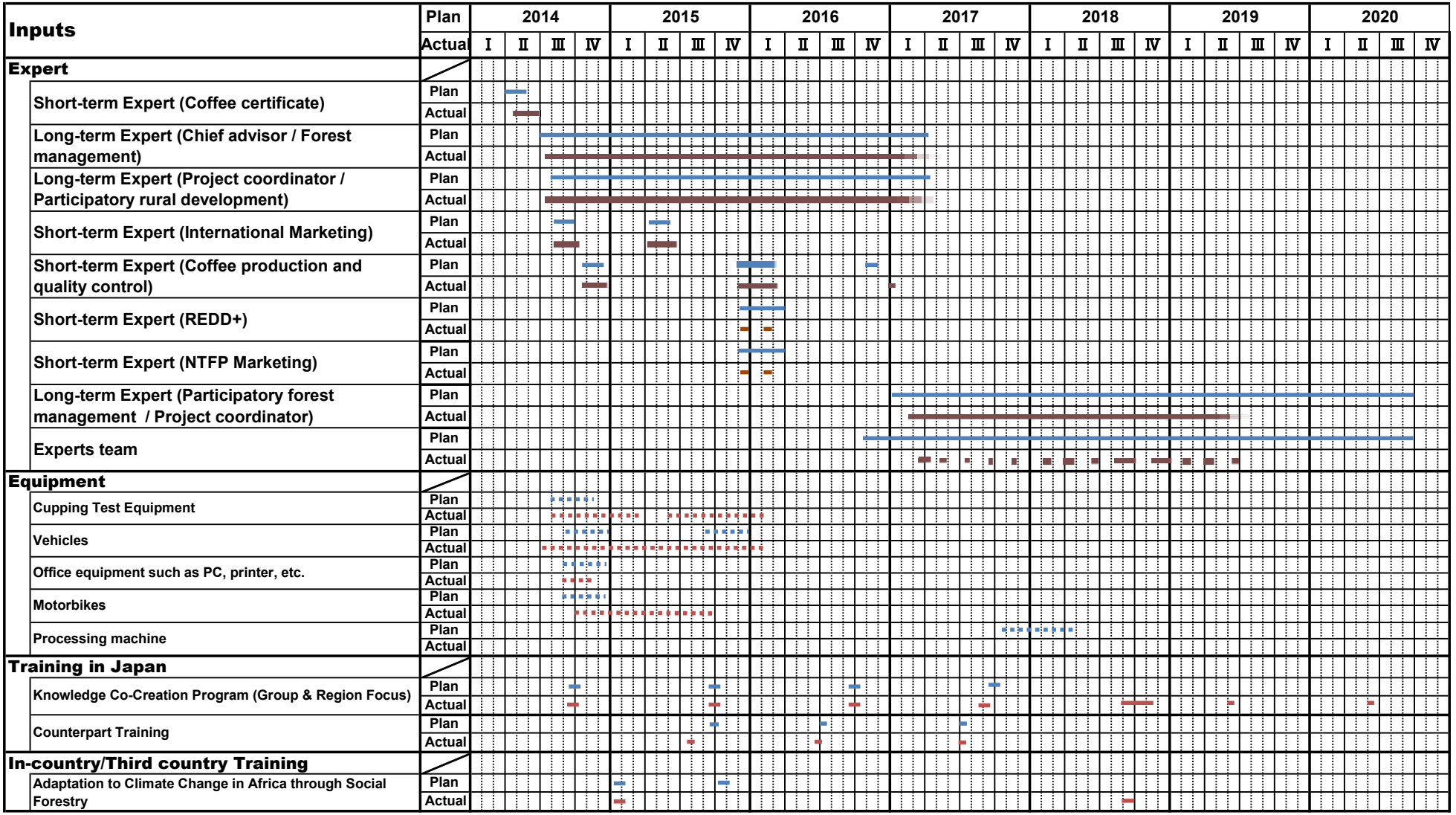
2-1. Establish and facilitate a consultative committee for supporting forest management and livelihood activities at the zonal/district level. 2-2. Update member list of WaBuBs with re-established WaBuB Executive Committee. 2-3. Create a feasible way to conduct Joint Forest Monitoring. 2-4. Support WaBuBs for signing revised Forest Management Agreement (FMA). 2-5. Monitor the progress of PFM activities. 3-1. Carry out FCCP process. 3-2. Examine options for effective marketing (e.g., preparing SOP on coffee business, alternative sales channel). 3-3. Review and revise the ICS manual and system for WaBuB FCCP to comply with revised RA criteria and to strengthen the linkage with forest conservation. 3-4. Examine and select target areas in Illubabor and Kellem Wellega, where PFM is already introduced and with high potential in forest coffee production. 3-5. Introduce FCCP process in Illubabor and Kellem Wellega. 4-1. Identify appropriate improved livelihood activities in highland area. 4-2. Support introduction of the improved livelihood activities as technical training and demonstration in the field level. 4-3. Support expansion of the improved livelihood activities. 4-4. Monitor and evaluate progress of support for the improved livelihood activities.	2. Training Training in Japan and/or other countries 3. Machinery and equipment 1) Vehicles 2) Equipment necessary for enhancing marketing activity 3) Office equipment such as PC, printer, etc.	2. Provision of facility Provision of office space in OEFCCA and OFWE for the Project 3. Running expenses necessary for the implementation of the Project	3. Coffee Sector Development Strategy (including the planned Coffee Authority) currently under development does not substantially affect the Project framework. 4. OFWE allocates a necessary budget for 2014 to conduct FCCP and PFM, based on the proposal submitted by JBO by no later than June 2014.

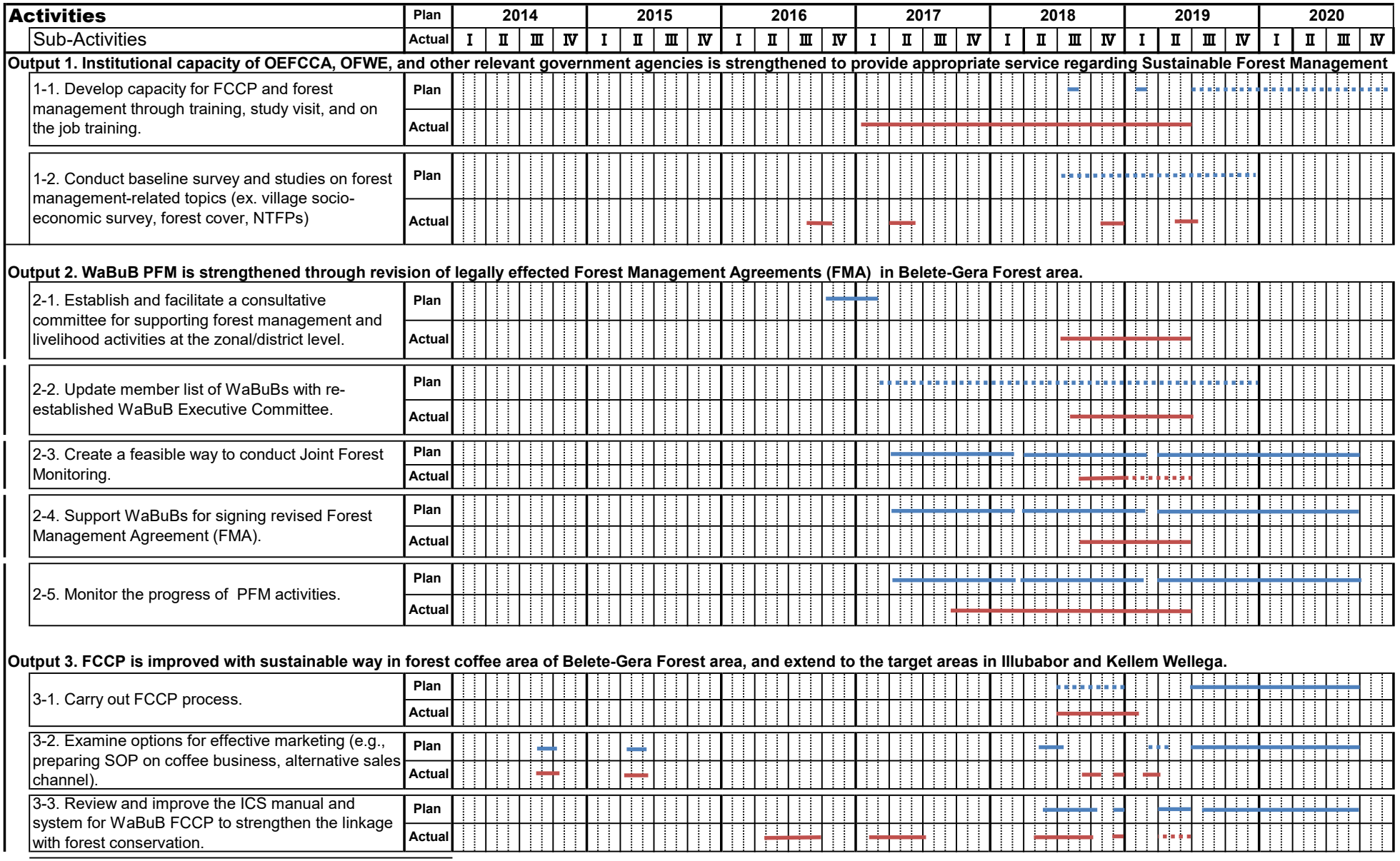
* Sustainable Forest Management mechanism in this PDM is defined as a series of community-based forest conservation oriented activities including forest boundary maintenance, periodical forest monitoring, FCCP and livelihood activities, implemented by Forest Management Association (WaBuB) which is legally recognized by Forest Management Agreement (FMA).

ANNEX 2: Plan of Operation

Plan of Operation (Final Version)

Project Title: Project for Supporting Sustainable Forest Management through REDD+ and Certified Forest Coffee Production and Promotion




Activities
Plan
Actual
2014
2015
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2017
2018
2019
2020
I II III IV
Output 1. Institutional capacity of OEFCCA, OFWE, and other relevant government agencies is strengthened to provide appropriate service regarding Sustainable Forest Management
1-1. Develop capacity for FCCP and forest management through training, study visit, and on the job training.
1-2. Conduct baseline survey and studies on forest management-related topics (ex. village socio-economic survey, forest cover, NTFPs)
Output 2. WaBuB PFM is strengthened through revision of legally effected Forest Management Agreements (FMA) in Belete-Gera Forest area.
2-1. Establish and facilitate a consultative committee for supporting forest management and livelihood activities at the zonal/district level.
2-2. Update member list of WaBuBs with re-established WaBuB Executive Committee.
2-3. Create a feasible way to conduct Joint Forest Monitoring.
2-4. Support WaBuBs for signing revised Forest Management Agreement (FMA).
2-5. Monitor the progress of PFM activities.
Output 3. FCCP is improved with sustainable way in forest coffee area of Belete-Gera Forest area, and extend to the target areas in Illubabor and Kellem Wellega.
3-1. Carry out FCCP process.
3-2. Examine options for effective marketing (e.g., preparing SOP on coffee business, alternative sales channel).
3-3. Review and improve the ICS manual and system for WaBuB FCCP to strengthen the linkage with forest conservation.

3-4. Examine and select target areas in Illubabor and Kellem Wellega, where PFM is already introduced and with high potential in forest coffee production.	Plan	
	Actual	
3-5. Introduce FCCP process in Illubabor and Kellem Wellega.	Plan	
	Actual	

Output 4. Highland WaBuB diversify livelihood options that contributes reduction of deforestation pressure.

4-1. Identify appropriate improved livelihood activities in highland area.	Plan	
	Actual	
4-2. Support introduction of the improved livelihood activities as technical training and demonstration in the field level.	Plan	
	Actual	
4-3. Support expansion of the improved livelihood activities.	Plan	
	Actual	
4-4. Monitor and evaluate progress of support for the improved livelihood activities.	Plan	
	Actual	

Monitoring Plan		2014				2015				2016				2017				2018				2019				2020			
		Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅰ	Ⅱ	Ⅲ	Ⅳ
Monitoring																													
Joint Coordination Committee	Plan																												
	Actual																												
Set-up the Detailed Plan of Operation	Plan																												
	Actual																												
Submission of Monitoring Sheet	Plan																												
	Actual																												
Monitoring Mission from Japan	Plan																												
	Actual																												
Joint Monitoring	Plan																												
	Actual																												
Reports/Documents																													
Project Completion Report	Plan																												
	Actual																												

ANNEX 3: Results of the Project

(1) Dispatch of Japanese Consultant

Project for Supporting Sustainable Forest Management through REDD+ and Certified Forest Coffee Production and Promotion

Name	Title		No of Trip	2016		2017												2018												2019												2020												Days	M/M
				11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12		
Masahiko Hori	Leader/Participatory Forest Management	Plan	7				(21)			(12)						(12)						(15)							(11)								(9)					(3)												83	2.77
		Actual	7				2/19 3/2 (10) (2)					7/9 7/23 (15)					12/23 1/4 (9) (4)							7/15 7/25 (11)					12/14 12/28 (15)						6/23 6/2 (6)						12/15 12/25 (11)												83	2.77
Toshihide Yoshikura	Sub Leader/Livelihood Support	Plan	15				(21)			(55)			(40)			(45)			(40)			(30)			(40)				(40)				(30)				(45)				(30)		(35)		(15)	(14)									480	16.00
		Actual	15				2/19 3/2 (10) (2)			5/2 5/21 (20)		7/9 8/9 (23) (9)		9/1 10/2 (12) (25)			12/6 (26)	1/4 2/21 3/9 (4) (8) (9)			4/19 5/13 (12) (12)		6/29 (2)	7/26 8/30 (31) (30)				11/1 (12)	1/11 (31)	1/11 (11)	2/14 4/11 (15) (31) (11)			6/13 7/12 (18) (12)		8/6 8/28 (23)		10/3 10/31 (29) (5)		11/26 12/26 (26)		2/1 3/6 (15) (6)										480	16.00
Yuhei Tanahashi	REDD+ mechanism	Plan	10				(21)			(39)			(30)			(30)						(15)			(30)				(15)				(15)				(27)					(14)												236	7.87
		Actual	10				2/19 3/2 (10) (2)	4/29 (2)		5/13 (13)		7/9 7/31 (23)		10/7 10/21 (15)			12/6 (26)	1/4 (4)			4/17 5/10 (14) (10)		6/21 7/26 (10) (25)	8/27 9/22 (5) (22)				12/7 (20)	12/26	2/25 (4)	3/31 (31)																							236	7.87
Masakazu Nakayama	Livelihood support (1)	Plan	5										(30)			(30)			(30)						(23)				(23)																											136	4.53
		Actual	5									7/17 8/ (15) (9)		9/19 10/7 (12) (7)							4/19 5/12 (12) (12)		7/17 8/24 (15) (24)					11/1 12/1 (12) (18)																											136	4.53
Yuya Ioki	Livelihood support (2)	Plan	1																										(25)																											25	0.83
		Actual	1																										12/5 12/29 (25)																											25	0.83
Ryo Takahashi	Remote sensing	Plan	3														(30)												(13)																											43	1.43
		Actual	3																2/23 2/25 (3)												3/1 3/20 (20)							8/12 9/1 (20)															43	1.43
																														Total																							Plan	1003	33.43
																																																				Actual	1003	33.43

Plan Actual

(2) Dispatch of Japanese Expert

Long-term experts

No.	Name	Term	
1	Tatsuji Nishikawa	6 July 2014 - 5 April 2017	Chief advisor / Forest management
2	Takashi Fujisaki	9 August 2014 - 6 April 2017	Project coordinator / participatory rural development
3	Taichi Morinaga	12 March 2017 - 5 October 2020	Sustainable Forest Management / Project coordinator

Short-term experts

No.	Name	Term	
1	Yasuo Takahashi	30 April 2014 - 11 June 2014	Forest coffee certification system
2	Junko Nakayama	10 August 2014 - 8 October 2014	Forest coffee international marketing 1
3	Shinsaku Kuramochi	20 November 2014 - 11 December 2014	Forest coffee production and quality improvement 1
4	Naomi Nakahira	5 January 2015 - 14 January 2015	Forest coffee cupping evaluation and quality improvement 1
5	Shigekazu Yamawaki	3 April 2015 - 7 July 2015	Forest coffee international marketing 2
6	Shinsaku Kuramochi	7 December 2015 - 3 March 2016	Forest coffee production and quality improvement 2
7	Naomi Nakahira	6 January 2016 - 19 January 2016	Forest coffee cupping evaluation and quality improvement 2
8	Shinsaku Kuramochi	4 January 2017 - 14 January 2017	Forest coffee production and quality improvement 3
9	Naomi Nakahira	4 January 2017 - 18 January 2017	Forest coffee cupping evaluation and quality improvement 3
10	Shinsaku Kuramochi	2 weeks in November 2017 and January 2018	Forest coffee production and quality improvement 4
11	Naomi Nakahira	5 January 2018 - 15 January 2018	Forest coffee cupping evaluation and quality improvement 4
12	Naomi Nakahira	16 January 2019 - 23 January 2019	Forest coffee cupping evaluation and quality improvement 5
13	Naomi Nakahira	17 February 2020 - 28 February 2020	Forest coffee cupping evaluation and quality improvement 6

Survey Team

No.	Name	Term	
REDD+ Program Collaboration Survey (December 2015 - March 2016)			
1	Tsutomu Nishimura	1st survey : 8 - 29 December 2015 2nd survey : 11 - 29 February 2016 3rd survey : 16 - 24 March 2016	Team leader
2	Yuhei Tanahashi		REDD+ financial mechanism
3	Ryo Takahashi		Remote sensing
4	Yasuko Matsumi		Livelihood improvement

(3) Receipt of training participants

No.	Name	Organization	Program	Period
1	Mr. Abayineh TeleleTefera	OFWE (HO)	Strengthening the Export Competitiveness of Small and Medium-sized Coffee Producers	14 September - 17 October 2014
2	Mr. Oli Berkessa Denta	OFWE (HO)	Strengthening the Export Competitiveness of Small and Medium-sized Coffee Producers	14 September - 17 October 2014
3	Mr. Diro Bulbula	OFWE (HO)	Training for Regional Development by Systematic and Comprehensive Utilization of Forest Resources through Forest Certification System and Product Branding	22 October - 21 November 2014
4	Mr. Temesgen Yedeta	OFWE (IBO)	Adaptation to Climate Change in Africa through Social Forestry	26 January - 27 February 2015
5	Mr. Didha Dirriba Ayaineh	OFWE (HO)	Training for Certified Forest Coffee Production and Promotion	26 July - 9 August 2015
6	Mr. Girma Delessa Dadi	OFWE (HO)	Training for Certified Forest Coffee Production and Promotion	26 July - 9 August 2015
7	Mr. Gutu Haro Mideksa	OFWE (JBO)	Training for Certified Forest Coffee Production and Promotion	26 July - 9 August 2015
8	Mr. Charnet Dugo Befekadu	OFWE (HO)	Strengthening the Export Competitiveness of Small and Medium-sized Coffee Producers	14 September - 17 October 2015
9	Mr. Gedefa Negera Daka	OFWE (HO)	Training for Regional Development by Systematic and Comprehensive Utilization of Forest Resources through Forest Certification System and Product Branding	12 September - 31 October 2015
10	Mr. Kituma Jaleta	OFWE (JBO)	Licensed Q Arabica Grader training (in Ethiopia)	1 April - 30 June 2016
11	Mr. Dereje Hailu Jimale	OFWE (HO)	Developed Market Oriented Export Promotion Strategy / Marketing Strategy	25 June - 30 July 2016
12	Mr. Ararsa Regassa Fayisa	OFWE (HO)	Training for Certified Forest Coffee Production and Promotion	28 June - 8 July 2016
13	Mr. Gurara Gebissa Demesa	OFWE (HO)	Training for Certified Forest Coffee Production and Promotion	28 June - 8 July 2016
14	Mr. Dereje Mekonnen Gessese	OFWE (HO)	Training for Certified Forest Coffee Production and Promotion	28 June - 8 July 2016
15	Mr. Mengistu Tadese Woldemariam	OFWE (HO)	Proceeding Ability of Policy Making for Sustainable Forest Management	21 August - 22 October 2016
16	Mr. Berehanu Jilcha Meta	OFWE (HO)	Proceeding Ability of Policy Making for Sustainable Forest Management	21 August - 22 October 2016
17	Mr. Tesfey Simessa Tuge	OFWE (JBO)	Sustainable Forestry Management with Community Participation	23 August - 19 October 2016
18	Ms. Amarech Gedle Endashaw	OFWE (IBO)	Strengthening the Export Competitiveness of Small and Medium-sized Coffee Producers	12 September - 15 October 2016
19	Mr. Makonen Aramayo Ayana	OFWE (HO)	Training for Regional Development by Systematic and Comprehensive Utilization of Forest Resources through Forest Certification System and Product Branding	18 September - 29 October 2016

20	Mr. Alemayehu Haileselassie Ameha	OFWE (JBO)	Training for Regional Development by Systematic and Comprehensive Utilization of Forest Resources through Forest Certification System and Product Branding	18 September - 29 October 2016
21	Mr. Ararsa Regassa Fayisa	OEFCCA(HO)	Remote Sensing of Forest Resources	7 May - 24 June 2017
22	Mr. Ahmed Heiru Sebrala	MOEFCC	Policy planning skills for implementation of REDD+ (for government executives)	28 May - 6 June 2017
23	Mr. Mohammed Hasen Yusuf	OEFCCA(HO)	Policy planning skills for implementation of REDD+ (for government executives)	28 May - 6 June 2017
24	Dr. Gemechu Wirtu	OFWE (HO)	Training for REDD+ & Certified Forest Coffee Production and Promotion	3 July - 15 July 2017
25	Dr. Bekele Tsegaye	OFWE (IBO)	Training for REDD+ & Certified Forest Coffee Production and Promotion	3 July - 15 July 2017
26	Mr. Daba Kanae	OFWE (WBO)	Training for REDD+ & Certified Forest Coffee Production and Promotion	3 July - 15 July 2017
27	Mr. Fekadu Teferra Meka	OFWE (HO)	Sustainable Forestry Management with Community Participation	22 August - 18 November 2017
28	Mr. Mitiku Mamo Gebisa	OFWE (WBO)	Strengthening the Export Competitiveness of Small and Medium-sized Coffee Producers	11 September - 13 October 2017
29	Mr. Aman Ulo	OFWE (HO)	Promotion of SATOYAMA Initiative: Biodiversity Conservation and Rural Development Through the Sustainable Management of Natural Resources	1 October 2017 - 3 November 2017
30	Mr. Tesfaye Tolcha	OFWE (JBO)	Sustainable Forest / Natural Resources Management Based on Market Mechanism	21 January - 3 March 2018
31	Mr. Getinet Derese	OFWE (HO)	Sustainable Forest / Natural Resources Management Based on Market Mechanism	21 January - 3 March 2018
32	Mr. Ararsa Regassa Fayisa	OEFCCA(HO)	Policy planning skills for implementation of REDD+ (for government executives)	29 May - 9 June 2018
33	Mr. Kituma Jaleta	OFWE (JBO)	Sustainable Forestry Management with Community Participation	11 September - 9 November 2018
34	Mr. Yiheyis Daniel Abebe	OFWE (HO)	GIAHS Training Programme 2018	10 November - 18 November 2018
35	Mr. Maruf A/Fita	JEFCCA	GIAHS Training Programme 2018	10 November - 18 November 2018
36	Dr. Negeri Lencho Bultim	OEFCCA(HO)	Policy planning skills for implementation of REDD+ (for government executives)	28 May - 8 June 2019
37	Mr. Gutu Mideksa	OFWE (JBO)	Transforming Forest Landscape Conflicts for Better Governance (RECOFTC, Thailand)	1 September - 10 September 2018
38	Mr. Mohammed Seid	OFWE (JBO)	Transforming Forest Landscape Conflicts for Better Governance (RECOFTC, Thailand)	1 September - 10 September 2018

(4) Equipment Provision

No.	Item	Purcase Date	Remarks		ETB	JPY
1	Project Vehicle 1	Jan 2015	Toyota Land Cruiser	16 035 AO	812,213.62	4,805,868
2	Project Vehicle 2	Feb 2015	Toyota Land Cruiser	16 049 AO	834,786.87	4,805,868
3	Project Vehicle 3	Jul 2015	Toyota Land Cruiser Prado	-	1,547,507.26	9,161,243
4	Cupping equipment	Sep 2015	Roaster, grinder, moisture meter, small dry mill			
5	Simple dry mill	Jan 2016				
6	Project Vehicle 4	Jul 2016	Toyota Land Cruiser Pickup	16 051 AO	838,168.17	3,897,482
7	Motorcycle (4)	May 2015	Gera, Shabe OFWE office		235,029.36	1,368,811
8	Photocopy Machine	Jan 2015	Canon iR2520		130,601.83	772,771
9	Furniture	Dec 2014	5 Desks, 1 table, 5 Chairs, 2 Steel Shelfs, 2 Steel Cabinets		37,267.00	218,500
10	Ultrasonic tree height measuring instrument	Mar 2016	Vertex IV 360		40,083.75	210,600
11	Laptop (2)	Oct 2014	Toshiba Satelite C-50, @ETB 15,565.21 x 2 sets		31,130.42	182,520
12	Desktop (2)	Oct 2014	Dell Opiplex GX 7010, @ETB 14,347.83 x 2 sets		28,695.66	168,246
13	moisture meter	May 2016	PM-450, @JPY 79,500 x 2 sets		32,179.72	159,000
14	Video Camera	Oct 2014	Sony HDR CX240E		14,995.00	87,917
15	Portable Generator	Oct 2014	KIPRO: IG 1000		13,800.00	80,911
16	LCD Projector	Jul 2014	Sony, DX-100		12,800.00	69,751
17	GPS (2)	Oct 2014	Garmin 72H, @ETB 4,800.00 x 2 sets		9,600.00	56,286
				Total (mill)	4.62	26.05

(5) Overseas activities cost

JFY	ETB (mill)		JPY (mill)
2014	0.40	5.532	2.19
2015	3.82	5.652	21.60
2016	2.85	4.925	14.04
2017	3.39	4.425	14.99
2018	4.59	3.955	18.15
2019	4.45	3.545	15.78
2020	0.84	3.160	2.66
Total	20.34		89.40

ANNEX 4: List of Products

No.		Product	Language*	Type / Format
1		**Agreement Document**		
	1	Record of Discussions (RD)	E	PDF document
	2	Request for Project Extension (Action Plan)	E	PDF document
2		**Meeting Minutes**		
	1	JCC (1st - 9th)	E	PDF document
	2	Stakeholder Meeting	E	PDF document
	3	PFM Steering Committee meeting (1st - 3rd)	E	PDF document
3		**Prepared Document**		
	1	Belete-Gera Forest Coverage Map (2018, 2019)	E	Word document, Map Data set
	2	Outline of WaBuB PFM Cooperation Document	O, E	Document set
	3	Draft of revised WaBuB FMA	E	Word document
	4	Forest Coffee Manaegment Guideline	E	PDF document
	5	Appliaction for RA inspection in 2020	E	Document set
	6	FCCP-PFM Outline	J	PPT slide
4		**Survey Report**		
	1	Baseline survey in Highland area	E	Document set
	2	Impact survey in Highland area	E	Document set
	3	Biosphere Reserve Feasibility Study	E	Report
	4	Overview of GIAHS	E	PPT slide
	5	Biodiversity Survey (Rapid Land Vertebrate Survey)	E	Report
	6	Forest Coffee Inventory Survey	E	Document set
5		**Event Materials**		
	1	Wild Coffe Symposium in Ethiopia	E	Set of PPT slide
	2	Seminar at SCAJ2019 in Japan	E	Set of PPT slide
	3	ICE2020 in Ethiopia	E	PPT slide
	4	Forest Coffee Seminar (森のコーヒー勉強会)	J	PDF document, PPT slide
6		**Training & Meeting Materials**		
	1	WaBuB Meetings for re-vitalization	E, O	Set of PPT slide
	2	Pilot JFM findings	O, E	Set of PPT slide
	3	Livelihood Support trainings	O	Set of PPT slide
7		**Public Relations Tool**		
	1	Project Borochure	E	TIF document
	2	Ethiopia's Wild Forest Coffee	E	PDF document
	3	Ethiopia Forest Coffee	J	PDF document
8		**Photo album**		Set of image data

* E: English, J: Japanese, O: Oromiffa

All the obove products is included in CD-R/digital data as a part of the Project Completion Report

ANNEX 5: Summary of WaBuB PFM Progress

Summary of WaBuB Establishment in Gera District

No	Zone	Village	Sub-Village (Name of WaBuB)	Area (Ha)			No. of WaBuB Members (Household)			2,018	
				Forest	Homestead Agriculture	Total	Resident	Seasonal Users	Total	No. of Households	Family No.
1	H	Bara Dedo	Botoo A/bora	688.9	354.2	1,043.1	168		168	161	789
	H		Geshee	286.7	211.4	498.1	124	8	132	78	296
	H		Deedoo	291.8	118.2	410.0	157		157	90	448
2	H	Bara Gogo	Dobo-Gabisa	2,225.3	1,240.7	3,466.0		169	169		
	H		Bore-Hababo	365.7	410.5	776.2	170		170	159	794
3	C	Kola Qinbibit	Qimbibiit	637.1	1,399.7	2,036.8	138		138		
	C		Q/Bulchaa			0.0	219		219		
	C		Guncaa	893.7	602.4	1,496.1	100		100		
4	C	Kola Sulaja	Billuu	438.8	177.4	616.2	108	2	110		
	C		Amara	216.9	125.5	342.4	91	9	100		
	C		Bore	1,065.1	1,170.5	2,235.6	170		170	138	798
5	H	Kubo Sulaja	Dammaa	867.8	490.4	1,358.2	195		195	141	
	H		Singira	419.9	347.4	767.3	210		210	129	
	H		Wayu			0.0	200		200	206	
	H		Safo			0.0			0	90	676
	H		Kereyu			0.0			0		
6	C	Sadi Loya	Loya Kerebe	1,266.5	600.0	1,866.5	101		101	88	483
	C		Sadi Chawura	1,070.0	777.1	1,847.1	514	15	529	447	1,940
7	C	Tuma Teso	Xurii	145.1	358.2	503.3	79		79	70	444
	C		Dukkoo	73.4	416.4	489.8	49		49	169	1,141
	C		Agelo			0.0	139	22	161		
8	C	Wanja Karsa	Waanjaa	498.4	112.6	611.0	91	94	185	112	573
	C		Wechera Qarsa	275.1	481.8	756.9	112	12	124	171	615
9	C	Chira	Barri- Muje	248.2	158.5	406.7	110		110		
10	H	Gaba Gute	Kemo			0.0	224		224	155	
	H		Gute 1st	168.7	978.4	1,147.1	96		96		
	H		Yetero	1,237.8	105.1	1,342.9	165		165	123	839
	H		Gute 2nd			0.0			0		
11	H	Gaba Koro	Gaba	2,143.4	438.3	2,581.7	328		328		
	H		Koro			0.0			0	76	541
12	C	Gera Naso	Nasoo	2,137.8	93.4	2,231.2	83		83	84	482
	C		Garaa	1,636.2	574.7	2,210.9	130		130	236	1,229
13	H	Gura Afalo	Bare	410.8	206.0	616.8	68		68	88	427
	C		Afalo	1,020.7	44.0	1,064.7	44	198	242	37	202
	C		Gura	7,159.4	148.9	7,308.3	132	141	273	130	683
14	C	Gure Dako	Chone	132.2	362.7	494.9	121		121	150	781
	C		Guree Kassoo	175.3	499.4	674.7	112		112		
	C		Dako			0.0	166		166	168	1,117
15	C	Kacho Andaracha	Andaracha	703.1	692.9	1,396.0	125	6	131	90	588
	C		Kacho	571.5	438.4	1,009.9	86		86	111	614
16	C	Kela Areri	Dobbii			0.0			0		
	C		Bede-Sisoo	1,089.0	58.1	1,147.1	71	12	83		
17	H	Muje	Kombaa	1,103.6	123.5	1,227.1	156		156	170	1,084
	H		Maruu	97.1	418.1	515.2	156	31	187	180	763
	H		Danisa			0.0			0	120	492
18	H	Secha	Qumboo	217.2	464.5	681.7	102		102		
	H		Noocee			0.0	205		205	210	1,104
	H		Kata	398.0	209.4	607.4	108		108		
	H		Amushe			0.0	144	3	147	142	818
19	H	Dusta	Bajige Cabago	453.8	289.3	743.1	200		200	150	926
	H		Wasa	70.0	237.6	307.6	353		353	128	600
20	C	Ganji Chala	Gure Ganjii	475.5	506.8	982.3	135		135		
	C		Warwaarii	241.5	125.7	367.2	33		33		
	C		Caallaa	742.0	473.8	1,215.8	98		98	97	571
21	H	Gina Chola	Cholla-Gezagni	72.5	381.7	454.2	254	26	280	210	10,068
22	H	Kaso Badeyi	Yabbo	295.1	66.4	361.5	166		166	180	817
	H		Bedeyi			0.0	200		200	150	1,296
23	H	Kombolcha	Gesha			0.0			0		
	H		Gatira			0.0			0	104	695
24	H	Timba Chale	Qujja	38.5	600.7	639.2	154		154	120	0
	H		Xinbaa	657.4	351.6	1,009.0	52		52	222	
	H		Askera Misra			0.0			0	226	
25	H	Wagecha	Meda-doyo	61.0	135.6	196.6	152		152	113	526
26	C	Borcho Deka	Wongoo-Gabata	196.6	326.2	522.8	317		317		
	C		Borcho	322.8	115.3	438.1	115		115		
	C		Deka			0.0	189		189		
27	C	Gemina Dacho	Dacho	1,359.9	72.7	1,432.6	66	111	177		
	C		Gamiinaa	2,185.2	126.9	2,312.1	137	106	243	171	799
28	C	Kayche Chariko	Sadacha & Dilla			0.0			0	90	484
29	C	Oba Toli	Obbaa	642.3	143.8	786.1	163	5	168	210	968
	C		Dambela	706.2	228.5	934.7	187		187	210	950
	C		Qochi	399.9	209.2	609.1	181		181	210	987
	C		Toli			0.0	143		143	141	598
	C		Tiki			0.0	143		143	90	441
	C		Daruselam			0.0			0	195	956
30	C	Wala	Lookoo	1,376.0	373.1	1,749.1	154		154		
	C		Addis Alem	340.0	1,129.9	1,469.9	180		180		
	C		Gara Gote			0.0	200	66	266		
	C		Gucho			0.0	106		106		
	C		Mardasa			0.0	173		173		
	80			43,012.4	21,303.5	64,315.9	10,318	1,036	11,354	7,536	42,443

Summary of WaBuB Establishment in Sabe Sombo District

No	Zone	Village	Sub-Village (Name of WaBuB)	Area (Ha)			No. of WaBuB Members (Household)			2018	
				Forest	Homestead Agriculture	Total	Resident	Seasonal Users	Total	No. of Households	Family No.
1	H	Atro Gafare	Atro Gefere	615.3	351.8	967.1	150		150	173	878
	H		Atro	127.3	123.0	250.3	67	25	92	91	433
	H		Bore			0.0			0	210	1320
2	H	Dema Gemecho	Gemecho	278.3	301.6	579.9	75	10	85	130	946
	H		Giche	254.2	201.4	455.6	35		35	33	0
3	H	Sombo Deru	Daru Dusira	284.1	444.8	728.9	125		125	152	647
	H		Gefere	297.4	342.3	639.7	149		149	149	856
4	H	Mirgano Baso	Shabee 2nd	198.0	98.2	296.2	32		32		
	H		Tugoo Milkii	436.3	585.9	1,022.2	45	13	58	96	692
5	H	Hanno Do	Deo	1,206.9	375.6	1,582.5	191		191	150	1168
	H		Waggmo	126.1	98.0	224.1	60		60	104	452
	H		Buyyoo	280.9	64.7	345.6	60		60	126	668
	H		Meti			0.0	55		55	77	430
6	C	Sebeka Dabaye	Dabiye	492.3	125.4	617.7	90	12	102	107	501
	C		Meti	382.4	181.2	563.6	143		143	77	430
	C		Soki	916.3	84.9	1,001.2	99		99	114	622
	C		Gurati	163.9	46.6	210.5	38		38	56	293
	C		Qartame	762.3	132.7	895.0	88	120	208	219	1015
7	C	Shaba Daso	Mandera 1ffaa	239.8	30.1	269.9	49	2	51	50	296
	C		Arere	131.3	27.0	158.3	101		101	121	698
	C		Wantelo	49.5	13.6	63.1	59		59	87	525
	C		Mandera 2ffaa/Fitte	68.7	146.1	214.8	154		154	78	437
8	C	Yahga Dogma	Warersa	92.7	151.8	244.5	100	9	109	98	551
	C		Yanga	428.8	284.5	713.3	158		158	162	765
	C		Garoo	105.6	198.3	303.9	123		123	104	595
	C		Dogma			0.0	134	24	158	151	0
	C		Surmajo			0.0			0	90	449
9	C	Halo Godante	Yetaga Bota	290.7	155.6	446.3	168		168	90	461
	C		Masareji	143.4	712.0	855.4	165	6	171	60	333
10	C	Angecha	Kontera			0.0	36	109	145	131	791
	C		Sengele			0.0	92	35	127	120	657
11	C	Gembo Migra	Migira 1ffa		20.5	20.5	82	20	102	119	702
	C		Migira 2ffa	1,073.9	191.9	1,265.8	76	7	83	76	462
12	C	Lekku Migira	Hemto	22.0	294.2	316.2	87	8	95	60	367
	C		Arisa	1,276.5	364.7	1,641.2	101		101	240	1439
13	H	Machii Sadacha	Gesha	4,301.2	378.4	4,679.6	116		116	105	659
	H		Indode	1,668.8	1,073.0	2,741.8	131	8	139	184	857
	H		Bodhaadhii	363.3	244.5	607.8	97		97		
14	H	Urgeyi	Kore Chola	226.4	133.9	360.3	66		66	80	495
	H		Wodeyi	466.3	362.8	829.1	22		22	149	838
	H		Kortu	95.5	90.7	186.2	108		108	119	577
	H		Arjole	2,949.3	632.4	3,581.7	167		167	120	781
	H		Sombo			0.0			0	89	626
	H		Togo			0.0	84	104	188	56	321
	44			20,815.7	9,064.1	29,879.8	3,978	512	4,490	4,803	26,033

ANNEX 6: Forest Cover Map

Forest Cover Maps in Belete-Gera Forest in 2018 & 2019

1. Preparation of the Maps
   - ○ Use of Landsat Satellite Image（path/row 170/55）
   - ○ Calculate NDVI（Normalized Difference Vegetation Index）from the satellite image
   - ○ Identify forest by a classification method based on the NDVI
   - ○ Estimate forest area in the Belete-Gera Forest from the forest cover map
   - ○ Calculate changes in forest area of by utilizing data of 4 time points produced during the previous phase of the project.

Table 1：Forest area and its rate of change in the Belete-Gera Forest

	1995	2000	2010	2015	2018	2019
Belete-Gera Forest						
Forest area（Ha）	115,537.50	108,823.77	101,860.56	99,508.77	97,922	97,332
Annual average rate of change (%)		−1.16	−0.64	−0.46	−0.53	−0.60
Forest Coffee Area						
Forest area（Ha）	69,593.22	64,688.94	63,245.25	62,041.23	61,297	61,029
Annual average rate of change (%)		−1.41	−0.22	−0.38	−0.40	−0.44
Highland Area						
Forest area（Ha）	45,944.28	44,134.83	38,615.31	37,467.54	36,625	36,303
Annual average rate of change (%)		−0.79	−1.25	−0.59	−0.76	−0.88

2. Change in Belete-Gera Forest

- ○ Preparation of forest cover change maps for the whole Belete-Gera Forest and two types of the part of that: Forest Coffee Area and Highland Area.
- ○ Changes in forest area from 1995 to 2019 (Figure 1)
- ○ Changes in forest area when the area in 1995 valued as 100 (Figure 2)
- ○

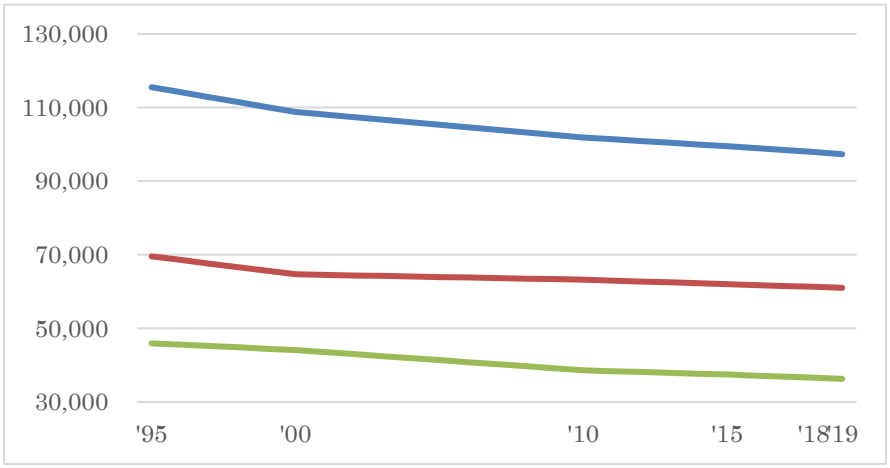


Figure 1. Forest Cover change in Belete-Gera Forest
(Blue: Whole, Red: Forest Coffee Area, Green: Highland)

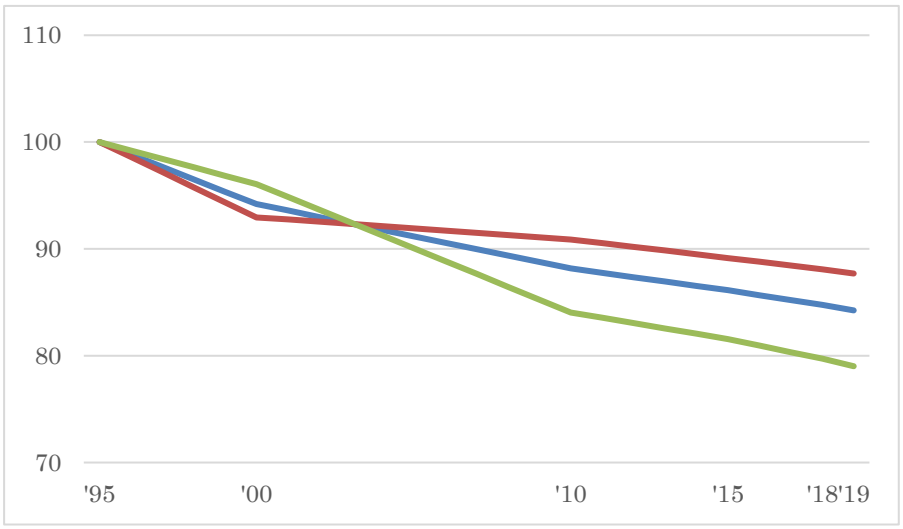
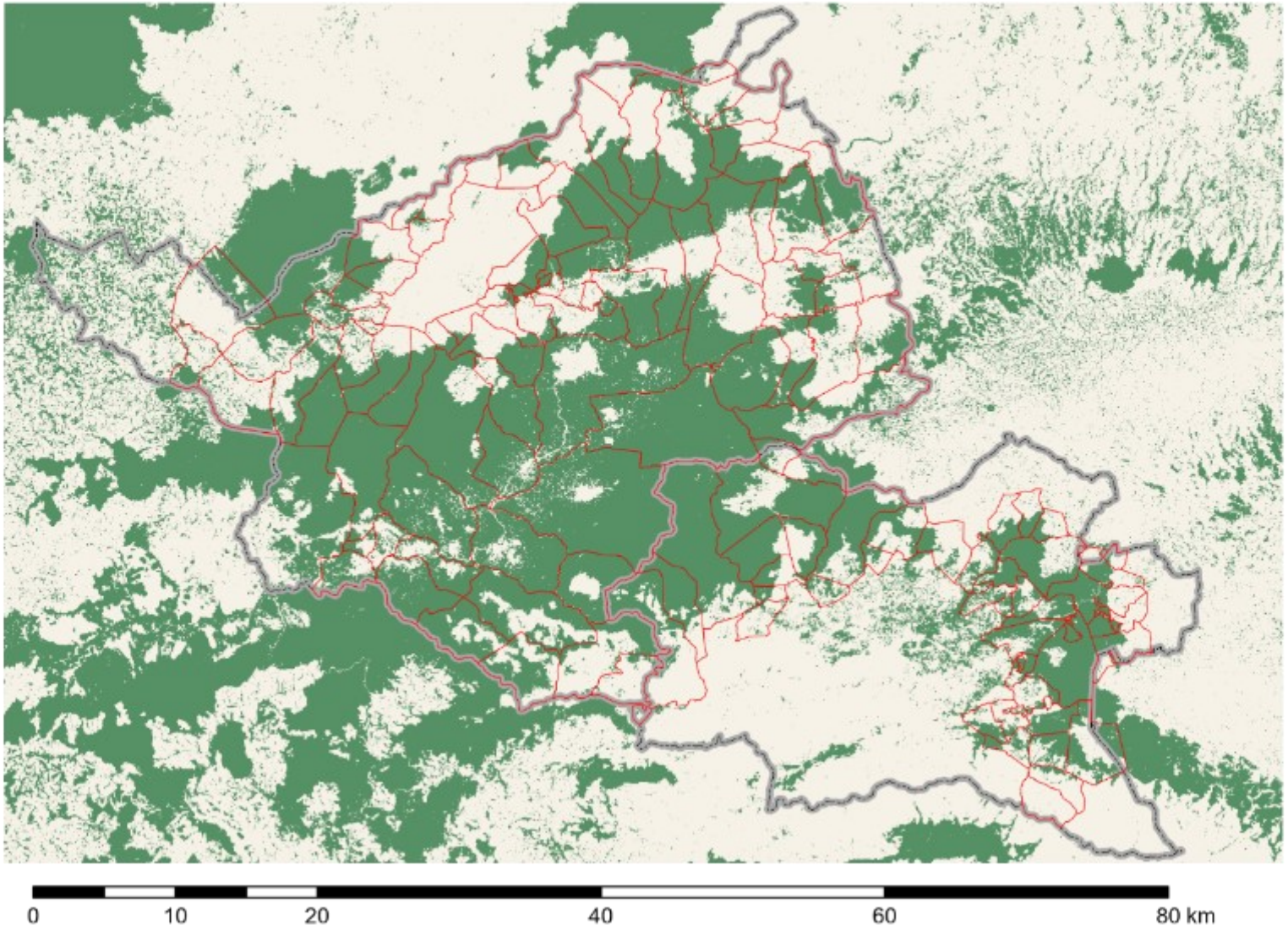
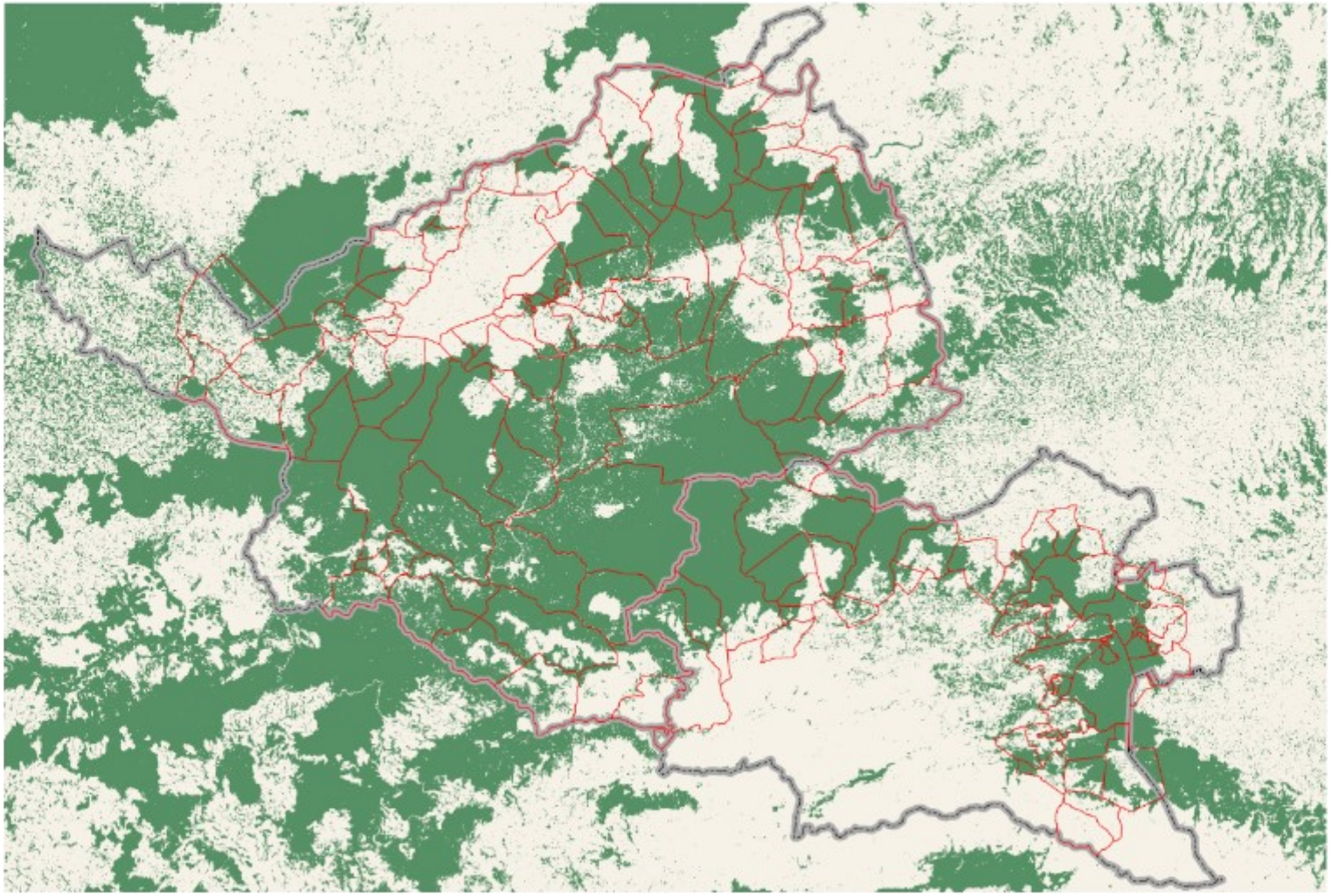


Figure 2. Forest Cover change when the area in 1995 valued as 100
(Blue: Whole, Red: Forest Coffee Area, Green: Highland)

Forest Map in 2018



Forest Map in 2019



ANNEX 7: Summary of FCCP ICS in Forest Coffee area

Summary of FCCP ICS in Forest Coffee area

No.	Cooperative		2013/14	2014/15		2015/16		2016/17		2017/18		2018/19		2019/20	
	Name	Total WaBuB	ICS Members	ICS WaBuB	ICS Members	ICS WaBuB	ICS Members	ICS WaBuB	ICS Members	ICS WaBuB	ICS Members	ICS WaBuB	ICS Members	ICS WaBuB	ICS Members
1	Sadi	13	0		487		584	10	342	12	461	11	439	10	443
2	Chira	13	0		501		627	9	390	3	145	3	169	6	217
3	Afalo	4	0		144		187	4	147	1	35	2	91	4	192
4	Oba	10	0		273		273	7	209	7	225	6	211	3	53
5	Walla	5	0		249		249	5	251	5	319	4	217	5	767
6	Sebeka	14	623		702		807	13	574	11	553	13	544	9	452
7	Migira	8	132		234		127	2	115	4	238	6	254	4	72
Total		67	755	59	2,590	56	2,854	50	2,028	43	1,976	45	1,925	41	2,196
				88.1 %		83.6 %		74.6 %		64.2 %		67.2 %		61.2 %	

ANNEX 8: Summary of Livelihood Activities in Highland area

Summary of Livelihood activity and Beneficieries (Gera District)

No.	Village	WaBuB	List of selected Enterprises																	
			Beekeeping					Wheat					Avocado		Apple		Vegetable		Bamboo	
			Training	Group members			Follow-up	1st r(2018)		2nd (2019)		Follow-up	TOT& Training	Group	Training	Group	Training	Group	Training	Group
				Male	Female	Total		Training	Group	Training	Group									
1	Bara Dedo	Bot/A/bora	2	9	6	15		2	10	2	10	10	2	10			2	8		
		Geshe	2	8	7	15	15	2	10	2	10	10	2	10						
		Deedo	2	7	8	15	15			2	10		2	10			2	8		
2	Bara Gogo	Dobo-Gabisa	2	13	2	15		2	10	2	10				2	10	2	8		
		Bore-Hababo	2	11	4	15		2	10	2	10		2	10			2	8		
3	Kubo Sulaja	Dammaa						2	10	4	20	10	2	10			2	8		
		Singira						2	10	4	20	10	1	10			2	8		
		Wayu											1	10			2	8		
		Safo	1	12	3	15		2	10	2	10	10					2	8		
		Kereyu								2	10		2	10			2	8		
4	Gada Gute	Kemo	2	12	3	15	15	1	10	2	10				2	10			2	11
		Gute 1st	2	13	2	15		2	10	2	10				2	10	2	8	2	11
		Yetero						1	10	2	10				2	10	2	8	2	11
		Gute 2nd	2	10	1	11		2	10	2	10	10			2	10	2	8	2	11
5	Gaba Koro	Gaba	2	15	5	20		2	10	2	10				2	10	2	8	2	11
		Koro	2	12	3	15				2	10				2	10				
6	Gura Afalo	Bare															2	8		
7	Muje	Kombaa	1	7	6	13	13	2	10	2	10		2	10			2	8		
		Maruu	2	7	7	14	14	2	10	4	20		2	10			2	8		
		Danisa	2	6	6	12		2	10	4	20		2	10			2	8		
8	Secha	Qumbo	2	11	4	15		2	10	2	10	10			2	10			2	11
		Nocee	2	15	0	15	15	2	10	2	10	10	2	10					2	11
		Kata	2	13	2	15	15	2	10	4	20	10	2	10						
		Amushe	2	10	5	15							2	10						
9	Dusta	Bajige Cabaga	2	8	7	15		2	10	2	10	10					2	8		
		Wasa	2	9	6	15	15	2	10	2	10	10								
10	Gina Chola	Cholla-Gezagni	1	9	6	15		2	10	2	10	10					2	8		
11	Kaso Badeyi	Yabbo													2	10	2	8		
		Bedeyi													2	10	2	8		
12	Kombolcha	Geshe	2	10	5	15	15	2	10	2	10		2	10			1	8		
		Gatira	2	10	5	15	15	2	10	2	10		2	10	2	10	2	8		
13	Timba Chale	Qujja	2	15	0	15	15	2	10	4	20	10					2	8	2	11
		Xinbaa	2	14	1	15		1	10	4	20	10					1	8	2	11
		Askera Misra						2	10	2	10				2	10	2	8	2	11
14	Wagecha	Meda-doyo						2	10	2	10	10	2	10			2	8		
Benefitiaries			**47**	**266**	**104**	**370**	**162**	**51**	**270**	**74**	**370**	**150**	**32**	**170**	**24**	**120**	**52**	**216**	**20**	**110**
No. of WaBuB		35	25	25	25	25	11	27	27	30	30	15	17	17	12	12	27	27	10	10
Training participants from District Office		DA	13					17					17		10		10		6	
		Expert	10					8					10		4		5		1	
		Total	**23**					**25**					**27**		**14**		**15**		**7**	

Summary of Livelihood activity and Beneficieries (Shabe Sombo)

No.	Village	WaBuB	List of selected Enterprises																	
			Beekeeping					Wheat					Avocado		Apple		Vegetable		Bamboo	
			Training	Group member			Follow-up	1st		2nd		Follow-up	Training	Group	Training	Group	Training	Group	Training	Group
				Male	Female	Total		Training	Group	Training	Group									
1	Atro Gafare	Gafere	2	7	3	10	10	2	10	2	10	10	2	10						
		Atiro	2	12	3	15	15	2	10	2	10	10								
		Bore											2	10			2	8		
2	Dema Gemecho	Gemacho						2	10	2	10	10	2	10			2	8		
		Giche											2	10			2	8		
3	Sombo Deru	Deru Dusira	2	12	3	15	15	2	10	2	10	10	2	10						
		Gafere	2	12	3	15	15	2	10	4	20	10	2	10						
4	Mirgano Baso	Shabe 2ffa						2	10	4	20	10	2	10			2	8	2	11
		Togo Milki						2	10	4	20	10	2	10			2	8	2	11
5	Hane Do'o	Do'o						2	10	2	10	10	2	10	2	10	2	8	2	11
		Wegemo											2	10			2	8		
		Buyyo											2	10						
		Meti	2	12	3	15							2	10			2	8		
6	Machii Sadacha	Gesha	2	10	6	16	16	2	10	2	10		2	10			1	8		
		Indode	2	8	7	15		2	10	2	10		2	10			1	8		
		Bedhadhi	2	7	8	15	15			2	10		2	10						
7	Urgeyi	Kore Chola	2	10	4	14		2	10	2	10				2	10				
		Wedeyi	2	10	4	14	14	2	10	2	10				2	10				
		Kortu	2	10	4	14		2	10	2	10		2	10	2	10	2	8		
		Arjole	2	5	10	15		2	10	4	20								2	11
		Sombo	1	5	10	15		2	10	2	10				2	10	1	8		
		Togo	2	5	10	15		2	10	2	10									
Benefitiaries			**27**	**125**	**78**	**203**	**100**	**32**	**160**	**42**	**210**	**80**	**32**	**160**	**10**	**50**	**21**	**96**	**8**	**44**
No. of WaBuB		22	14	14	14	14	7	16	16	17	17	8	16	16	5	5	12	12	4	4
Trainiing participants from District Office		DA	10					13					9		4		10		5	
		Expert	10					7					9		3		5		1	
		Total	**20**					**20**					**18**		**7**		**15**		**6**	

ANNEX 9: Revised WaBuB Forest Management Agreement

WaBuB in Belete-Gera Forest

FOREST MANAGEMENT AGREEMENT

(Revised in 2020)

BETWEEN

WaBuB …..……..

And

The Jimma Branch Office of the Oromia Forest and Wildlife Enterprise

Joint Forest Management Agreement

Article 1. Preamble

Whereas

- This is revised version of the agreement signed in 2012. Based on changes in forest use conditions and progress of established WaBuB Association, the content is updated through discussion and commitment by all stakeholders.

- The Federal Forest Development, Conservation and Utilization Proclamation no. 1065/2018 has emphasized necessity to introduce community and association forest development to implement the policy and strategy that have formulated to enhance sustainable forest development, conservation and utilization through to recognizing community ownership and public participation.

- Section Five of the same proclamation classifes forest into productive, protected and preserved forests based on their environmental, social and economic significance. In the protected forest, the Government is responsible to prepare and implement participatory forest management plan.

- Article 4(3) of the Forest Proclamation no. 72/2003 of the Oromia Region stipulates: *"concerning the protection, development and management of the State Forest in Oromia Region the Authority shall strengthens community participation on forest development and protection".*

- Article 4(6) of the same proclamation stipulates: *"Development and Protection of the State Forest in Oromia Region: concerning the protection, development and management of the State Forest in Oromia Region the Authority shall sign agreement with non-governmental organizations, private company, individuals, appropriate party and conclude a bi-lateral agreement to strengthen forest protection, development and management"*.

- Article 9(5) of the same proclamation stipulates: *"The traditional user right of the local people to use the state forest resources such as fuel wood, construction wood, medicinal plants, grazing, etc. shall be permitted according to the regulations and directives*".

- Article 12(1) of the same proclamation stipulates: *"Utilization of Protected Forest: The authority may permit the utilization of identified forest products to the local community from the protected forest"*.

- The preamble of Regulation No.122/2009, A Regulation to Provide for the Establishment of Oromia Regional State Forest and Wildlife Enterprise states "it is required to promote the participation of local communities living around the forest, in forest and wildlife conservation and development activities, and in sharing the benefits from forest products".

- Article 6(1) of the same regulation stated among the objectives of the Enterprise that to protect and conserve forest and wildlife resources in its concession through participation of the local community.

- Article 22(3) of Proclamation No. 130/2007-Proclamation to amend the Proclamation No. 56/2002, 70/2003, 103/2005 of Oromia Rural Land

Administration and Use: "*Delineation, demarcation, development, protection, and rehabilitation and conservation of protected land shall be done by the participation of the local community.*";

- Article 22(4) of the same proclamation stipulates: *"The condition by which the local community may share the benefits from protected areas, shall be arranged".*

- The Guideline for Participatory Forest Management in Ethiopia issued by the Ministry of Agriculture in 2012 aims to consolidate the different approaches of PFM being introduced in the country and come up with more refined and simplified approach. It also empathizes that it is not compulsory but just a guide, so the final outputs will be the same but details can differ depending on the context of the area.

- Memorandum of Understanding for establishing the WaBuB PFM Steering Committee (SC) was agreed and signed among Oromia Forest and Wildlife Enterprise (OFWE), Oromia Environment, Forest and Climate Change Authority (OEFCCA) and Zonal Administrator in Jimma in July 2019. The Committee aims to collaborate for supporting implementation of PFM activities in the Belete-Gera Forest.

- The two WaBuB PFM Cooperatives; WALDAA BULCHIINSA BOSONAA TOKKUMMAA GEERAA and WALDAA BULCHIINSA BOSONAA MAGARIISA SHABEE SOMBOO were established as legal authority in December 2019. The PFM Cooperatives led by their board members are responsible for implementation of PFM activities based on their annual action plans by supervising all the 124 WaBuBs.

- Those above experiences in the Belete-Gera Forest through the Participatory Forest Management Project since 2003 and the Project for Supporting Sustainable Forest Management through REDD+ and Certified Forest Coffee Production & Promotion since 2014 have contributed to prepare and compile this Agreement.

Article 2. **Purpose of the Joint Forest Management Agreement**

The purpose of the Joint Forest Management Agreement is to jointly manage the Belete-Gera Forest in a sustainable manner by collaborating among forest users and the government organizations supervised by the WaBuB PFM Cooperatives and supported by the Steering Committee.

Article 3. **Definitions**

Cooperative is a legally registered institute organized and operated by local community members.

Customary use rights are use rights over forest land and forest products (e.g. fuel wood, construction wood, non-timber forest products such as medicinal plants, tree seeds, forest coffee, honey and spices) which are recognized by local communities as social traditions, legitimate practices and shared beliefs without causing deforestation and loss of biodiversity.

Farm land is a plot of land within forest land where WaBuB members cultivate plants to earn their living.

Forest coffee is an area where coffee trees are managed with minimum intervention by maintaining naturally grown trees under forest canopy within demarcated forest land.

Forest Coffee Certification Program (FCCP) is coffee-based livelihood supports targeting the WaBuBs in forest coffee area by adding-value of forest coffee as products harmonized as forest conservation through channelling to the international certification body such as the Rainforest Alliance.

Forest land is an area of land that the signatories recognize as part of Belete-Gera Forest located within the territory of a specific sub-village. In this case forest land comprises different land use types such as natural forest, plantation forest, homestead, farm land, pasture and forest coffee area.

Forest products include wood and non-timber forest products such as forest coffee, honey, medicinal plants, different spices and tree seeds that are directly obtained from forest land.

Forest User is a resident or non-resident community member(s) and dependents that have exercised customary use rights and have an access to forest land.

Garden coffee is an area where coffee trees planted and managed outside demarcated forest land.

Homestead is a piece of land where a household has a house and a surrounding garden and farmland.

Household is a social unit formed by a married couple or a single adult spouse, widow(er) or divorcee together with own children or first degree relatives.

Internal Control System (ICS) is a monitoring body responsible for ensuring the group's compliance with the rules and commitment. In the FCCP, ICS inspectors from each coffee cooperatives conduct annual inspection of the members on compliance with this agreement and standards of the Rainforest Alliance.

Joint Forest Monitoring (JFM) is an annual monitoring practice agreed as a responsibility for OFWE to allocate budget and assign staff for conducting forest monitoring in selected WaBuBs to assess the compliance with this agreement.

Seasonal users are people who do not permanently dwell in forest land but have a customary use rights of a plot in forest land and occasionally use forest products in the forest land.

Monitoring indicators are variables agreed upon by the signatories for the assessment of changes in a designated forestland to examine the changes as specified in this agreement.

Natural Forest is an area of forest primarily composed of woody vegetation that situated in forest land. The signatories specify and designate areas of the natural forest in forest land.

Number of Homesteads *is* the number of homesteads that have been already established in forest land.

Participatory Forest Management (PFM) means a forest management approach executed through the agreement between the state and the local community that inhabit inside or around the forest area over the management, protection and utilization of forests owned by the government on the basis of predefined responsibilities and benefit sharing mechanisms.

Resident users are people who permanently dwell in forest land and derive their livelihood from it.

Stakeholders are the people and organizations having interests in forest land and resources. They include the government, development partners and the local community. Within the community, the people who actually use a particular area of forest are forest users, sometimes referred to as forest user groups.

State Forest is any exclusively, conserved and protective forest, which is under the ownership of the Federal Government or a Regional Sate.

Subsidiary By-Laws are internal regulations set up by WaBuB for the purpose of forest management and institutional governance of the group.

WaBuB is an abbreviation of Oromo language *"Waldaa Bulchiinsa Bosona" (Forest Management Association)*.

Article 4. Identification of forest land and its users

a) The boundary of forest and homestead area are agreed in 2012

b) The total number of WaBuB members, residential forest users are listed and kept at the Village Administration Office. The list will be updated and reported to the Village Authority in annual monitoring.

Article 5. Duration and amendment of the Agreement

This Forest Management Agreement (FMA) remains valid for an indefinite period. Amendment of this agreement can be made when all of agreeing parties approve it.

Article 6. *WaBuB* Membership

a) Heads of families that have customary user rights of forest area and registered to continue to live around the forest area.

b) Heads of families that collect and use non-timber forest products and registered to continue to live around the forest area.

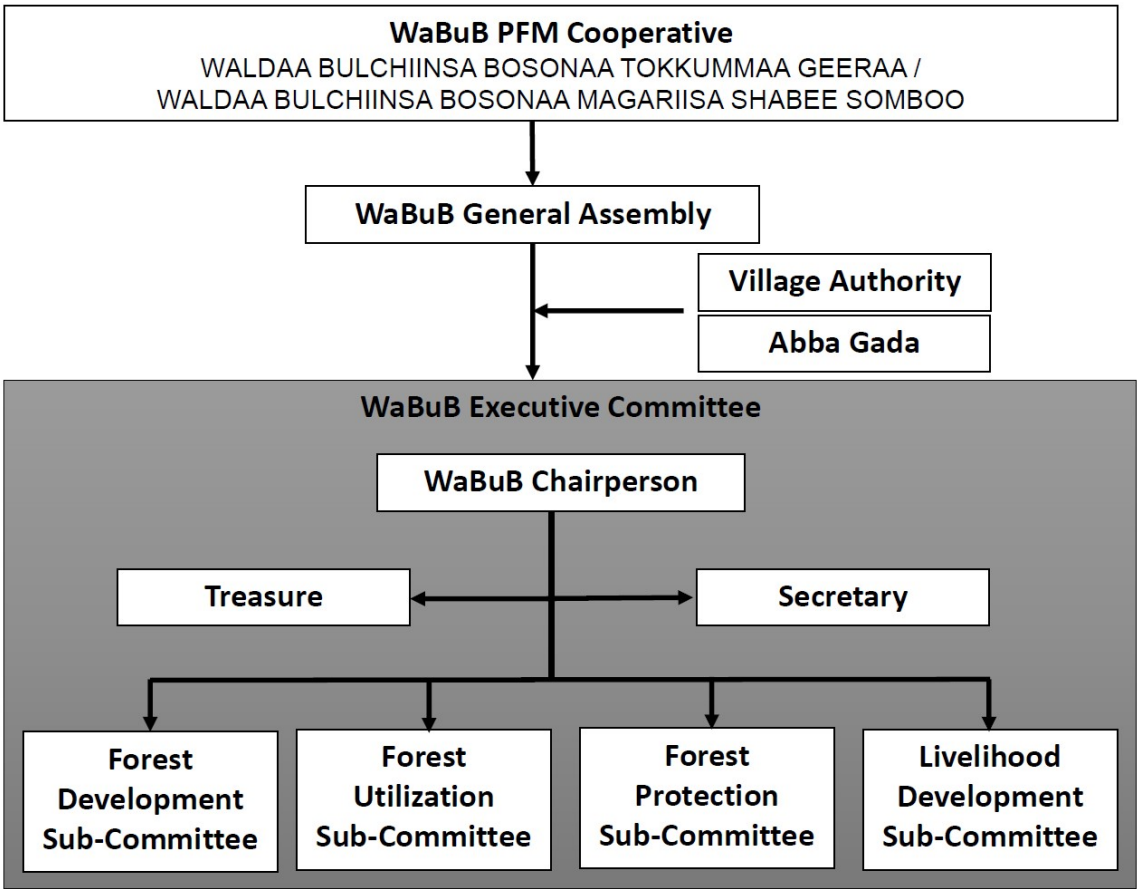
c) Married and independent youth and living homestead area those who use forest area also should be registered.

d) Heads of families that collect and use non-timber forest products as seasonal users

e) Every member has one vote of equal weight.

Article 7. *WaBuB* Organisation

As a formally appointed organization by the District Administrator, OEFCCA, and OFWE, WaBuB conducts forest and homestead management in their sub-village through close collaborating with Village Administration and Abba Gada. From among WaBuB members, a chairperson, a treasury and a secretary are elected to form an executive committee (EC). A fair representation of both sexes should be made in the leadership. Any replacement of the leadership as well as changes in membership is to be communicated immediately to the Village Administration and the Jimma Branch Office of the Oromia Forest and Wildlife Enterprise (hereafter referred to as JBO-OFWE).



Article 8. Rights of WaBuB

a) Settlement in the homestead area.

b) Collection and use of non-timber forest products such as forest coffee, honey, spice, and medicinal plants based on agreed obligation.

c) Collection of self-fallen trees and branches for domestic construction by resident users.

d) Hanging of traditional beehives on trees in forest coffee or managed forest area (not in natural forest).

e) Construct additional houses or shops in homestead area.

f) Allow to continue forest coffee management practices by participating in the WaBuB Coffee Cooperatives and being inspected by Internal Control System.

g) Sell non-timber products obtained in forest coffee or managed forest area.

h) Develop and use plantation forest, bamboo woodland, and garden coffee in homestead area.

i) Obtain services for livelihood improvement by government and other third parties.

Article 9. Duties and Obligations of WaBuB EC

a) Conduct the annual forest monitoring by mobilizing own resources.

b) Collaborate with JBOOFWE when selected as a target for the annual Joint Forest Monitoring (JFM).

c) Report to JBO-OFWE on the status of forest, forest use and homestead annually or as agreed upon.

d) Conduct quarterly EC meeting, annual forest monitoring and general assembly

e) Control WaBuB member list including seasonal users especially in coffee harvesting season

f) Responsible for recognizing the forest conditions and explaining it officially

g) Assess the condition of forest area of which any illegal activities were observed or occurred.

h) Report to Village Authority, Abba Gada and District experts immediately about the condition of illegal activities.

i) Stump should be kept in the Village Administration Office

j) Proper use and manage the stump which can be used only for PFM activities.

k) Manage budget for PFM activities and monitoring.

Article 10. Duties and Obligations of Abba Gaga

a) Attend in WaBuB general assembly meeting

b) Assist to handle conflict on forest conservation

c) Promote customary rule and rights with mind for worshiping nature

d) Advisory support on any forest-related activities and issues.

Article 11. Duties and obligations of JBO-OFWE

JBO-OFWE shall collaborate with OEFCCA Jimma Office for the followings:

a) Provide advice and support to WaBuB on technical and institutional matters.

b) Inspect forest condition and farmland expansion and conduct settlement census as necessary.

c) Take appropriate measures to legally defend the interests and rights of WaBuB.

d) Confirm that the designated forest land belongs to OFWE concession area, grant user rights of the registered WaBuB members (resident and migratory users) and ensure that no land lease rights have been granted to other parties prior to this agreement.

e) Conduct JFM by selecting at least 10 WaBuBs every year before coffee harvest season.

f) Allocate necessary budget and staff for annual JFM and other necessary actions for supporting the WaBuB PFM Cooperatives.

Article 12. Monitoring Indicators

The annual monitoring on the following indicators shall be carried out by each WaBuB and reported to JBO-OFWE though the Village Administration Office and District Offices.

a) The number of total homesteads and WaBuB members.

b) Farmlands shall be maintained within the registered border.

c) Inspection and observation inside forest area for any illegal activitiess.

Article 13. Signatures of Agreeing Parties

The signatories attest by their signatures and initials on every page of the document (including attachments) that they accept to adhere to the agreement terms, to fulfill their assigned duties and to impose or sustain the conflict resolution procedures drawn upon for breach of the agreement.

This agreement is concluded on this date of …… in ……

Representative,

The Jimma Branch Office of the Oromia Forest and Wildlife Enterprise

(Name and signature)

_____

……

Seal of JBO-OFWE

Representative,

WaBuB _____

(Name and signature)

_____

……

Seal of WaBuB

Representative,

The Jimm Office of the Oromia Environment, Forest and Climate Change Authority

(Name and signature)

_____

……

Seal of OEFCCA

Representative,

Village Administration

(Name and signature)

_____

……

Seal of Village Administration

Witnesses (Names and signatures)

1. …… District Administrator
2. …… District Agriculture Office
3. ……
4. ……

NB: This agreement contains 9 pages. Original copies of this agreement will be distributed to:

- *The Jimma Branch Office of the Oromia Forest and Wildlife Enterprise*
- *The Jimma Office of the Oromia Environment, Forest and Climate Change Authority*
- ____ *District Administration Office*
- ____ *District Agriculture Office*
- ____ *District Land Administration and Environmental Protection Office*
- ____ *District Police*
- ____ *District Court*
- ____ *Village Administration*
- *WaBuB* _____

ANNEX 10: Draft of Forest Coffee Management Guideline

Forest Coffee Management Guideline

August 2020
Addis Ababa

Content

List of Tables and Figures

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List of Acronyms

A	Allowed activities
AL	Allowed activities with limitations/ restriction
AoI	Area of Interest
BA	Basal Area
BoANR	Bureau of Agriculture and Natural Resources
CBD	Convention on Biological Diversity
CBD	Coffee Berry Disease
CLR	Coffee Leaf Rust disease
COVID-19	Coronavirus Disease
CWD	Coffee Wilt Disease
D	Diameter
EBI	Ethiopian Biodiversity Institute
ECFF	Environment and Coffee Forest Forum (formerly Ethiopian Coffee Forest Forum)
ECTA	Ethiopian Coffee and Tea Authority
ECX	Ethiopian Commodity Exchange
EFCCC	Environment, Forest and Climate Change Commission
ENVI	Environment for Visualizing Images, a software application for image analysis
ERDAS	Earth Resources Data Analysis System, remote sensing software, commonly known as ERDAS Imagine
EWNRA	Ethio-Wetlands and Natural Resources AssociationECFF
FAO	Food and Agriculture Organization of the United Nations
FUG	Forest User Groups
GEO	National Geography, Gemany
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GPS	Geographic Postioning System
IMO	Institute for Marketecology - an international agency for inspection, certification and quality assurance of eco-friendly products.
INDC	Intended Nationally Determined Contributions within UNFCCC framework
JICA	
NABU	The Nature And Biodiversity Conservation Union
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-Governmental Organization
NTFP	Non-Timber Forest Products
OEFCCA	Oromia Environment, Forest and Climate Change Authority
OFWE	Oromia Forest and Wildlife Enterprise
P4F	Partnership for Forests
SE	South East
SNNP	Southern Nations, Nationalities and Peoples Regional State
SP	Strictly prohibited
SW	South West
UNCCD	United Nation Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United National Framework Convention on Climate Chane
WaBuB	Waldaa Jiraattota Bosonaa (Forest dewllers association)

1 Introduction

1.1 Background

Coffee is the most popular soft drink in the world. Its popularity and volume of consumption are growing every year, and coffee shops are the fastest growing part of the restaurant business. Today, coffee is both a part of our social experiences as well as an accepted norm for doing business. Many business managers, scientists, politicians, and people of all walks of life relax having a cup of coffee during breaks in between meetings, busy research work and routine daily activities.

There are over 120 species of coffee (genus *Coffea*). However, there are only two species of economic importance: Arabica coffee (*Coffea arabica)* and Robusta coffee (*Coffea canephora*). Ethiopia is the center of origin and diversity of Arabica coffee. The wild Arabica coffee occurs as a shrub or small tree in the Moist Afromontane forest and Transitional Rainforest types in Ethiopia. Such forests are called 'coffee forest'. Since coffee is a shade loving crop, over 90% of coffees produced in Ethiopia are shade grown, with 40-60% canopy cover, except in a few home garden systems in Eastern Ethiopia. The coffee plants are also mainly either local varieties/ land races or of wild origin.

The traditional coffee production systems in Ethiopia span from picking /collecting from the wild plants in undisturbed natural forest to plantations with intensive management using coffee varieties developed by breeders. Broadly, coffee production systems in Ethiopia can be grouped into five categories as: forest coffee, semi-forest coffee, forest-garden coffee, garden coffee and coffee plantations. The first four are traditional production systems by small-scale subsistent farmers. Of these, the first three are forest-based coffee production systems and account for 50-60% of the total coffee production (Gole and Davis 2013; Gole et al. 2015).

The traditional coffee production systems in coffee forest areas in the SW and SE Ethiopia are initiated through management of wild coffee stands in the natural forests. Under undisturbed natural forests, coffee plants tend to grow taller in height, with few branches and produces only very few cherries due to high canopy cover and competition with small trees and shrubs in the under-story. Hence, farmers make open the canopy by thinning shade trees, and clear the understory vegetation to increase coffee yield. Forest based traditional management practices include, forest, semi-forest and forest garden coffee production systems with different degrees of management interventions.

As indicated above, 50-60% of the coffee produced in Ethiopia comes from the three forest-based production systems. What these production systems shows is the fact that they are grown under shades of indigenous tree species in an area that currently or previously constitute part of the natural forest. They differ in term of intensity of management, productivity or yield of coffee per unit area, diversity of shade trees and other co-occurring plant and animal species, structural complexity of the vegetation, genetic variability of the coffee trees and ecological integrity and function of the production systems.

Forest systems that are more intact and less intensively managed have higher ecological integrity and biodiversity provide diverse ecosystem services, but are lower in coffee yield compared to those intensively managed systems. Ethiopia's forests with higher ecological

integrity are important for the world coffee industry: conserve the most diverse coffee genetic resources *in situ* (in their natural habitat), where it continues to co-evolve with natural enemies, climate change and other abiotic variables, and develop tolerance to disease, pest, drought and other biotic and abiotic stresses. The traits that evolve in the natural habitat are used in breeding program to develop coffee cultivars that are high yielding, superior cup quality (flavor, low caffeine content), tolerant to disease, pest and drought.

On the other hand, coffee sector government agencies promote increasing production and productivity in order to increase income for the farmers, as well as foreign currency earnings of the country from coffee export. This leads to intensification, degradation of the forest, loss of indigenous coffee plant due to replacement with high yielding cultivars developed by breeders, and deterioration of the ecological integrity and ecosystem services. Since these forests are part of the state forest, conflict on land use between the forest and the coffee sector are also common.

In order to promote higher ecological integrity, conservation of coffee and forest biodiversity, and provision of essential ecosystem services, forest coffee certification was initiated some 15 years ago (Wiersum et al. 2008), using different international private standards. The intention of such certification was to attract premium price that compensates the lower yield of coffee produced in forests with better ecological integrity and biodiversity, including the native/wild coffee genes in the forest production system.

Some studies showed that certification has generated premium price for the farmers, and has contributed to maintain better ecological integrity than non-certified areas (Mitiku et al. 2017). Earlier studies in some areas, however, showed that certification and price hikes led to intensification of coffee production, including reduction of the shade trees and replacement of indigenous coffee trees with improved high yielding varieties, leading to loss of forest biodiversity and coffee genetic resources (Gatzweiler et al. 2008; Stellmacher and Grote 2011). Because, all the private certifications (Rainforest Alliance (RA), Utz, Fairtrade and Organic standards) used to certify forest coffee were developed for certification of agricultural products outside of Ethiopia, and their standards cannot help in maintaining the ecological integrity required in Ethiopia for sustainable forest coffee production. The farmers also information about these certification standards, minimum requirements of the standards, other than receiving premium prices for the coffee they have supplied to the international specialty coffee market.

There is confusion among forest coffee producers on appropriate management practices for sustainable forest coffee production. Farmers make decisions of which trees to thin out and which trees to retain as shade trees, whether to retain indigenous coffee stands or replace with high yielding varieties, which forest areas to spare for conservation and which ones to manage intensively, since there is no standard management guideline for forest coffee production. There is also no clear boundary and definition to separate forest-based systems under different management intensities to give differential price premiums for those that best maintain ecological integrity and conserve biodiversity. There is also a clear need to separate production conservation areas. It is with this understanding that this management guideline is prepared.

1.2 Objectives of the Guideline

The main objectives of this management guideline are:

- To promote sustainable forest management for forest coffee production
- To conserve Ethiopia's unique values as Arabica origin and the wild coffee genetic resources in situ;
- To clarify confusion about forest coffee definition and practices.

1.3 Approaches used in preparation of this guideline

The management guideline was prepared based on review of past research findings and documentations of traditional forest coffee production practices in different parts of the country, synthesis of the problems in the current practices both from conservation and promotion of coffee produced in managed natural forests. Besides, inputs from various discussion forums on forest coffee, review of relevant federal and regional government institutions and JICA experts, and validation workshops with key stakeholders were used. Earlier forest coffee guidelines prepared for specific areas like Harenna forest in Bale and the SW forest blocks were also reviewed and used as inputs. This management guideline is a more comprehensive and addressed forest coffee management practices in all ecological ranges. It also proposed monitoring system and key indicators. Based on the results of monitoring, it has to be regularly updated and revised.

1.4 Target audiences and organization of the guideline

This guideline can be used by all practitioners engaged in or promoting forest coffee production in one way or another, including agriculture and forest experts, development agents, and staff members of NGOs that promote and support sustainable forest coffee production.

The guideline is presented in four sections. The first section is introduction, which gives background of the coffee sector and different coffee production systems, problems associated with them, and main objectives of the guideline. The second part on the definition of the forest coffee, characterization of existing practices, grading and indicators for different grades or categories based on intensity of management. The third part presents appropriate forest coffee management practice, i.e., the guideline to ensure sustainability. The last part presents key institutions that have mandates in the forest and coffee sectors and the measures to be taken to get authorization of the guideline to promote sustainable forest coffee management practices.

2 Forest Coffee: definition, grading and indicators for monitoring

2.1 Definition of forest coffee and existing practices

The wild populations of Arabica coffee occurs in two major moist Afromontane forest blocks in Ethiopia:

2.1.1 The Afromontane forest in SW Ethiopia:

This is the largest forest block with wild Arabica coffee. Such forest primarily occurs in two regional states, Oromia and SNNP. The SW forests in Oromia that are known to have wild coffee are found in five zones: Jimma, Ilu Abbabor, BunnoBedele, KelemWellega and West Wellega. The SW forest blocks in the SNNP regional state that have wild populations of Arabica coffee occur in Kafa, Bench-Maji, Sheka and Dawro zones.

The Montane forests in SW Ethiopia are rich in species diversity. *Pouteriaadolfi-friederici* is the most emergent species in the 20-30-m-high canopy layer.The main canopy trees of 10-30 m height include: *Albiziagummifera, A. schimperiana, A. grandibracteata, Blighia unijugata, Cassipourea malosana, Celtis africana, Croton macrostachyus, Ekebergia capensis, Euphorbia ampliphylla, Ficus sur, F. ovata, F. thonningii, Hallea rubrostipulata, Ilex mitis, Macaranga capensis,Ocotea kenyensis, Olea capensis* ssp. *welwitschii, Polyscias fulva, Schefflera abyssinica, Prunus africana, Sapium ellipticum,* and *Syzygium guineense* ssp. *afromontanum*. A discontinuous lower canopy of small trees (less than 10 m high) includes *Allophylus abyssinicus, Apodytes dimidiata, Bersama abyssinica, Brucea antidysentrica, Calpurnia aurea, Canthium oligocarpum, Chionanthus mildbraedii, Clausena anisata, Coffea arabica, Cyathea manniana, Deinbollia kilimandscharica, Dracaena afromontana, D. fragrans, D. steudneri, Ehretia cymosa, Ensete ventricosa, Erythrina brucei, Galiniera saxifraga*, *Lepidotrichilia volkensii, Lobelia giberroa, Millettia ferruginea, Nuxia congesta, Oncoba routledgei, Oxyanthus speciosus* ssp. *stenocarpus*, *Phoenix reclinata, Pittosporum viridiflorum 'ripicola', Psychotria orophila, Ritchiea albertsii, Rothmannia urcelliformis, Solanecio gigas, Solanecio mannii, Teclea nobilis, Trema orientalis, Turraea holstii,* and *Vepris dainellii.* Lianas are common, and about 25 species have been recorded. Epiphytes are also numerous, and include ferns, lycopods, orchids, *Peperomia spp.* and *Scadoxus nutans.* The ground cover is very rich in herbs in areas where light is sufficient. More than 110 species have been recorded from such a forest.

2.1.2 The Afromontane forests in SE Ethiopia:

The moist Afromontane forests block in SE are also very rich in plant species diversity, though they are relatively smaller in geographic extent and found only in four zones of Oromia regional state: primarily in Bale and West Arsi, with some smaller escarpments in East Guji and West Guji zones.

The flora of Harenna forest has many species in common with those in the southwestern part, but differs in terms of dominant canopy tree species. Besides, the Harenna forest hosts higher number of Ethiopian endemics than forests in the southwest. Some of the unique floristic composition of this forest includes *Podocarpus falcatus, Ocotea kenyensis, Filicium decipiens* and *Warburgia ugandensis.* In particular, *P. falcatus*is one of the few best-quality timber

species that dominate the Haranna forest.

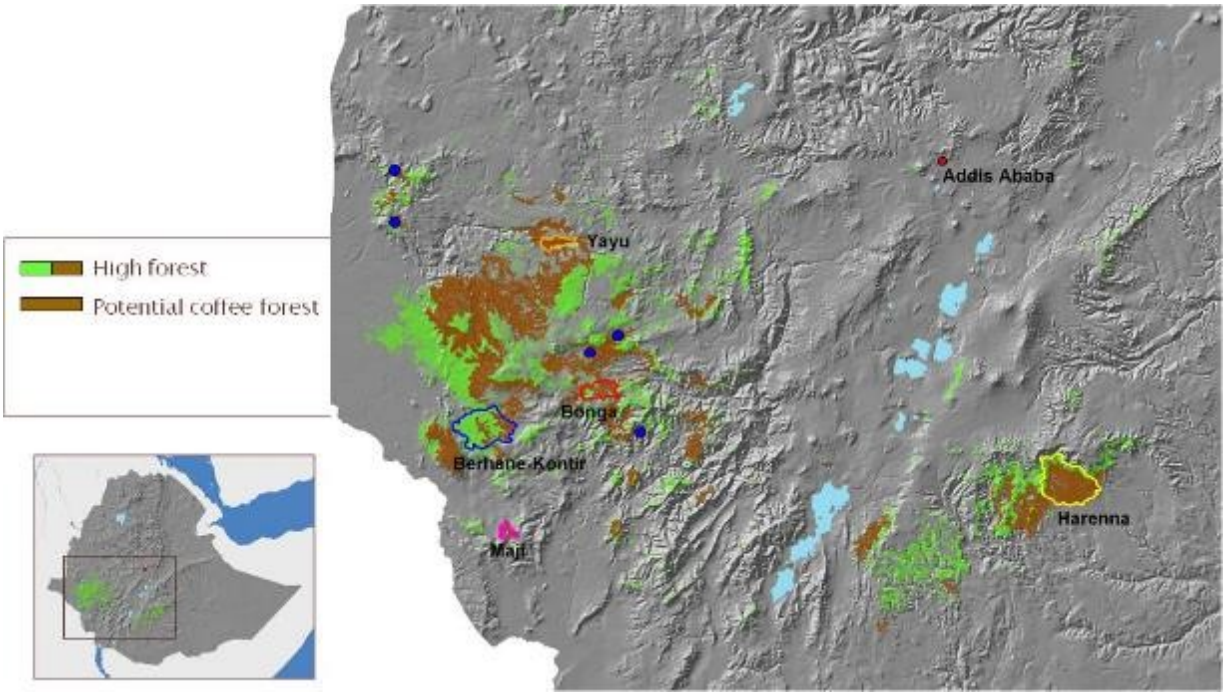

Figure 1. Distribution of moist forests with wild coffee populations in Ethiopia
(Source/; ZEF 2010; Gole and Davis 2013)

2.1.3 Trends of management practices and operations

The local communities in coffee forest areas have been producing coffee for centuries, managing coffee plants of wild origin, retaining the indigenous forest tree species as shade trees. Still today, one can observe coffee production systems spanning from collecting coffee cherries from unmanaged forests to intensively managed production systems, with regular agronomic practices like planting, weeding, pruning, stumping and soil nutrient management.

Traditional forest based coffee production systems are broadly categorized into three: forest coffee, semi-forest coffee and forest gardens. These production systems are characterized by high diversity of shade tree species, high shade cover (≥60%) and low yield.

Since there is no management guideline for forest coffee production systems, the intensity of management varies from one farmer to another, and from one coffee forest area to another. A number of studies have documented the practices of forest coffee production. These include the practices at Yayu in Ilu Abbabor (Gole 2003), Harenna in Bale (Senbeta and Denich 2005; Gole and Senbeta 2006), Sheko in Bench-Maji (Senbeta and Denich 2005), Kafa (Schmidt 2006) and Belete-Gera and in Jimma (Hundera 2020, unpublished data).

Under undisturbed natural forests, coffee plants tend to grow taller in height, with few branches and produces only very few cherries due to high canopy cover and competition with small trees and shrubs in the under-storey. Hence, farmers open up the canopy by thinning shade trees, and clear the understorey vegetation to increase coffee yield. Forest based traditional management practices may include, forest, semi-forest and forest garden coffee production systems with

different degrees of management interventions. Economical forest coffee production systems include semi-forest and forest garden types.

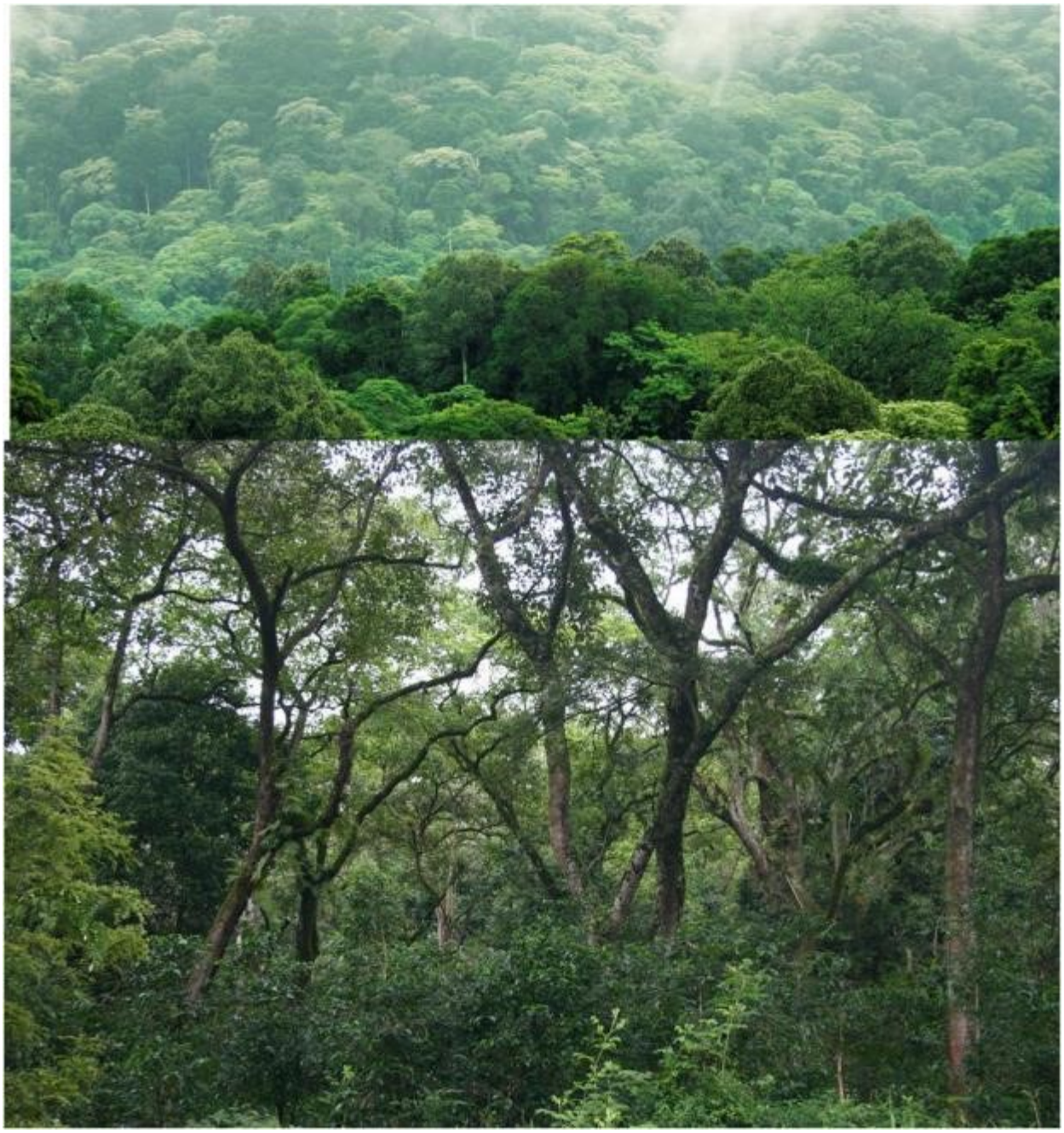

Figure 2. Undisturbed and managed coffee forests in SW Ethiopia
Source: Top- Detlef Overmann; bottom- Tadesse Woldemariam Gole

2.1.3.1 Initial opening up/ clearing

In natural forests managed for coffee production, farmers manage forest areas with wild populations of coffee. The first step in management of forest for coffee production is opening up undisturbed forest by clearing undergrowth vegetation competing with coffee and cutting some shade trees to open up canopy. Coffee yield is highly correlated with the number and size of the branches of coffee trees. This in turn is related to the amount of solar radiation reaching

the lower strata and the presence or absence of small trees and shrubs competing with coffee. Hence, to increase coffee yield to economically feasible level, clearing the undergrowth vegetation and opening up canopy is inevitable. During opening up phase, small trees, shrubs, and herbaceous vegetation competing with coffee are totally cleared as much as possible. There is no preferential selection whatsoever, whether the species is endemic or threatened. Among the canopy trees, those species with big leaves and dense canopy are targeted. However, if there are no preferred tree species within the plot, any canopy tree available is retained as shade trees. In newly opened up forests for coffee production, the amount of vegetation removed at initial stage can be critically high. For instance, the tables below (Table 1) summarize the vegetation characteristics of coffee forests with different management intensities, managed for coffee production in SW and SE parts of Ethiopia.

The definition of forest coffee and management intensity is quite broad and diverse, as its ecological range and diversity of culture of the involved community. The forest coffee management practices (forest, semi-forest) in different areas, and differences based on some common indicators are presented in the Table 1 below:

Table 1. Vegetation characteristics of forest coffee production systems in different parts of Ethiopia

	Parameter	Bale (Harenna)		Belete-Gera		Berhan-Kotir (Sheko)		Kaffa		Yayu	
		Forest	Semi -For	Forest	Semi -For	Forest	Semi -For	Forest	Semi -For	Forest	Semi-For
1	Canopy Cover (%)			80	73					85	58.7
2	Basal Area (m2/ha)	49	47	42	31	34	58			42	31
3	Density of shade trees (stems/ha)	472	578	606	361					863	101
4	Tree species richness	32	31	26	41	49	30	51	46	47	35
5	# coffee trees (stem/ha)			1852	5843					5,510	13,300
6	# seedlings & saplings			1410	811						
7	Shrub species richness	60	50			55	25	11	14	10	8
8	Climber species richness	45	40			70	41	23	31	16	8

As indicated in Table 1 above, there is a great difference between forest (unmanaged) and semi-forest (managed) production systems. There is also great variation among the semi-forest coffees of different areas, and even within the same geographic areas, from one farmer to another.

In many areas, older semi-forests are highly degraded, and managed more intensively like plantations. Further, in many areas, such degraded forest areas are converted into crop lands, while farmers continue to convert unmanaged forests to managed forests for coffee production, which is posing threats on the forest biodiversity, including wild coffee.

The most significant change in managed forest is the huge reduction in the density of saplings,

small trees and shrubs level. In managed forest, the only dominant stand is that of coffee. In most traditionally managed forests for coffee production, the changes in vegetation structure and composition are very drastic. In Yayu, for example, the number of species in managed coffee forest declined by 50% as compared to the undisturbed forest. Similar trend has also been reported from Sheko forest in Benh-Maji zone. In contrast, the difference between managed and undisturbed forest in the Harenna forest of Bale is relatively minimal. This can be due to damage to the so called undisturbed forest by seasonal grazing of cattle. The canopy cover in most semi-forest coffee production systems is between 60 and 80%.

As the managed coffee forest get old, and people begin to settle inside or near such managed forest, the densities of shade trees declines significantly. Intensively managed forest plots with settlement are considered as forest-garden, which are predominantly common in Kafa, Bench-Maji, Illubabor, Jimma and KelemWollega zones in the southwest. The canopy cover in such forests is reduced to about 45-60%. In such forests, most of the coffee stands are also planted, some even with selected varieties for certain agronomic qualities.

2.1.3.2 Weeding operations

Weeding is one of the regular annual management operations carried out by all farmers. Weeding operations can be 2-4 times per year, varying from farmer to farmer, which also depends on the proximity of the forest plot to the home/village of the owner. The two major weeding seasons are beginning of the rainy season and beginning of the harvesting season. Few weeks after onset of the main rainy season, most herbaceous vegetation, emerge and compete with coffee and should be cleared. During harvesting as well, weeding is must to create access to pick coffee cherries from the trees, and also to allow picking of early maturing coffee cherries dropped to the ground. Along with herbaceous vegetation, small seedlings of trees, climbers and shrubs are also cleared.

2.1.3.3 Shade trees management

When some canopy trees are removed to open up the forest for coffee production, the canopies of some of the remaining trees expand, and gradually close up after some years. Hence, even in old semi-forest coffee productions systems, farmers continue to reduce the number of canopy trees. For instance, in Yayu forest, the number of stems of canopy trees recorded in a 0.400 m2 plot in undisturbed forest, new semi-forest (< 5 years), old semi-forest (> 10 years) were 50, 41 and 36 respectively (Gole 2003). To reduce shade trees, farmers often debark trees at the bottom, which gradually dries. Trees preferred by farmers for coffee shade are *Cordia africana, Croton macrostachyus, Millettia ferruginea, Ekebergia capensis, Podocarpus falcatus, Pouteria adolfi-friederici, Diospyros abyssinica, Olea capensis,* and *Olea welwitschii.* Tree species which are not preferred for shade include *Vepris dainellii, Strychnos mitis, Warburgia ugandensis, Chionanthus mildbraedii, Celtis africana, Ocotea kenyensis, Syzygium guineense* and *Ehretia cymosa.*

2.1.3.4 Enrichment planting

The distribution pattern of wild coffee is not regular, and uniform throughout the forest. It is dense in some areas, and very sparse in other areas. In areas where the coffee trees are sparsely distributed, farmers often plant coffee seedlings to fill the gap. The sources of seedlings are mostly the wild seedlings collected from the forest itself, from those areas where there is high

density. Sometimes, however, the department of agriculture distributes seedlings to farmers, from state-run nurseries. Caution should be taken to avoid introduction of new coffee types not indigenous to the forest, which can lead to genetic erosion.

2.1.3.5 Disease management

The major diseases prevalent in coffee forest areas once include Coffee Wilt Disease (CWD), Coffee Berry Disease (CBD), Coffee Leaf Rust (CLR) and Coffee insect/pest. Farmers are regularly trained in different agronomic practices, including disease management, but are not practicing it due to different reasons. Especially with coffee wilt disease, it is not practical, since farmers are expected to disinfect machetes after cutting every diseased coffee tree, dig out all parts of diseased coffee tree and burn it at the spot. It is very routine, labor intensive and can cause forest fire if it is not handled with care. Unlike other diseases, CWD kills the whole plant, and can also be disseminated by water movement as well as people during different management operation. This disease is the greatest threat to coffee genetic resources.

2.2 Grading Existing Forest Coffee Management Systems

As explained in the preceding section, coffee production systems in Ethiopia span from wild collections to advanced intensively managed plantations. Such gradient in management and coffee production systems demonstrate different stages of crop domestication. For most cultivated crops, these stages of domestication happen during different periods of time. In coffee forest areas in Ethiopia, these different stages of domestication actually occur within one landscape in space.

Coffee used to be traded based on quality grade and geographic origin for decades. Recently, disaggregating coffee, including the production system has started. 'Forest coffee' is one of the categories stranded on ECX. But, forest coffee receives the lowest price on ECX. There are also efforts to promote forest coffee as a specialty coffee, with higher ecological integrity and conservation value. JICA has supported certification of forest coffee in Belete-Gera forest in Jimma zone. It is getting recognitions in Japanese market, despite logistic problems to satisfy the demand. Beside the logistic problems, there is also a need to clarify what is 'forest coffee', and if possible, categorize the production system based on their uniqueness and contributions to sustainability.

Further, the wild coffees in the forest are vital for genetic resources for the coffee industry in Ethiopia and around the world. Recent studies have shown that coffee in Ethiopia face uncertain future due to deforestation, forest degradation and climate change.

Recommended approaches for sustainable future of the coffee systems in Ethiopia is the spare and share approach, i.e., set aside areas for conservation, while managing the areas under production optimally for higher yield that meets demand (Aerts et al. 2017; Jiren et al. 2017).Some coffee forest areas have become UNESCO biosphere reserves, at least 20% of their forest are protected as core areas (e.g. Yayu Coffee Forest Biosphere Reserve, Gole et al. 2009). Forest coffee producing areas can also integrate participatory conservation within landscape by adopting FAO's Globally Important Agricultural Heritage Systems" (GIAHS) approach. The National Biodiversity Strategy and Action Plan (NBSAP) also targets putting up to 22% of all ecosystem types under protected areas system. Hence, even the pre-requisite to the practice

coffee production in coffee forests is to designate at least 20% of the remnant forests in the area that covers longest possible altitudinal gradient of such ecosystem as protected area/ conservation area, or forest reserve. Protected/conservation areas designation should be done using ecological knowledge/science and indigenous knowledge of the local community, i.e., with active participation of the community members in conservation and use planning. Extractive use in protected forests should be limited to cultural practices, not for commercial uses.

In order to promote common recognition on sustainable forest coffee systems, grading of the forest managed for coffee production is proposed. Grading is to differentiate the forests based on the intensity of management and associated human impacts on the forest ecosystem, and take appropriate management measures to ensure maintenance of the forest in good conditions for sustainable provision of goods and services, including forest coffee, and conservation of forest biodiversity. Key vegetation characteristics that can be used to differentiate forests based on management intensity and grade into different categories includes: (a) canopy cover, (b) diversity of forest tree species, (c) number of trees/stems per ha, (d) number of seedlings of forest tree species, (e) number of saplings, (f) number of coffee trees/ha and (g) variety of coffee used in the production system.

The grading applies only to areas that are demarcated for coffee production through agreements between producers and the state forest authority. All forests managed for coffee production are disturbed, though the degree differs, and may range from slightly disturbed to highly disturbed or degraded forest. Undisturbed natural forests have dense canopy cover, often well over 80%. Hence, if a forest has over 80% canopy cover, then it is not considered as a forest managed for coffee production. Most forests managed for coffee production are inside state forests.

This classification is for forests managed for forest coffee production (<80% canopy cover, and managed by smallholder farmers with use rights on such forests). Such forests are usually inside State Forest (forest concession) and or protected area, not for plantation and garden coffee around homestead. Due to lack of clear definition, there has been confusion regarding the distinction between Forest Coffee and Semi-Forest Coffee System. In this grading system, the definition would be Grading system rather than general categories like Forest Coffee and Semi-Forest Coffee System. Depending on degree of intervention, it will be categorized as Grade A to C.

Table 2. Forest categories and grades based on management intensity and associated indicators

Vegetation characteristics	Protected forest	Forest Coffee Productions & grade		
		A: slightly disturbed	B: Disturbed	C: degraded
Canopy Cover (%)	>80	60-80	50-60	<50
# tree species/ha	60	>40	30-40	<30
# tree stems/ha	>600	>400	400-250.	<250
# seedlings & sapling per ha	>1000	750-1000	500-750.	<500

# coffee trees/ha	Varies	<3000	3000-3500	>3500
Basal Area (m^2/ha)	> 45	40-45	40	< 40

2.3 Monitoring Indicator for Grading and management

2.3.1 Concepts of monitoring and uses of indicators

The main goal of any monitoring is to detect change systematically. Monitoring helps to document and understand the development of a site with and without interventions and actions. In General, monitoring helps to better understand the impact of human activities on the environment over time, and identify appropriate management responses. Adaptive management measures as a response of the impacts of human activities is based upon a learning process to advance and improve long-term management outcomes and is dependent on measurements derived from systematic monitoring initiatives to gauge whether and why the environment is improving or worsening. Hence, monitoring is not only useful to inform such management decisions at the local level, but also to contribute towards assessments of international commitments such as targets set by the Convention on Biological Diversity.

Monitoring is broadly defined as “the collection and analysis of repeated observations or measurements to evaluate changes in condition and progress toward meeting a management objective” (Elzigna et al 2009).

The United Nations Conference on Environment and Development (UNCED) in 1992 recognized the need to develop indicators to enable countries to make informed decisions regarding sustainable development. Specifically, the Convention on Biological Diversity (CBD) requires parties to identify and monitor "components of biological diversity important for its conservation and sustainable use" and to identify processes or activities likely to have adverse effects on biodiversity. It also recognizes the role of indicators in monitoring the status of biodiversity and the effects of measures taken for conservation and sustainable use.

Similarly, the "Forest Principles" in Agenda 21 and calls for the identification of criteria and indicators for evaluating progress in national efforts to practice sustainable forest management. As a result, a large number of national, regional and international initiatives have been developed. Most indicators have identified the conservation of forest biological diversity among the criteria for sustainability.

Commonly used indicators in forest monitoring may include forest area by type or management intensity, degree of fragmentation of forest types; rate of conversion of forest cover to other uses; area and percentage of forests affected by anthropogenic and natural disturbance; complexity and heterogeneity of forest structure; numbers of species and the like. The structural characteristics of forest stands are relatively easy to assess and are of fundamental importance for biodiversity. Forest stands tend to be structurally heterogeneous, both vertically and horizontally; structural complexity may determine habitat availability and may thus influence diversity of plant, animal and microbial communities (Ferris and Humphrey, 1999). Measures of forest structure that can contribute to indicators include canopy cover, vertical structure of the canopy, size or age distribution of trees and basal area.

2.3.2 Indicators and monitoring of forest coffee production systems

In the previous sections, we have seen how management interventions for forest coffee production affects the forest conditions. We have also tried to categorize traditional forest coffee systems based management intensities, including typical indicators that define each category. In this section, monitoring schemes are presented. The aim of monitoring is to maintain the conditions of the forest and coffee stands at Grade A and Grade B, and improve the conditions of the Grade C forest, upgrading it to B and A. Hence, monitoring is needed (a) to reduce degradation and enhance conservation of biodiversity, (b) continue Ethiopia's ages old traditional coffee production heritage at the center of origin, and (c) contribute to national targets in the biodiversity conservation, emission reduction through REDD+, and (d) meet growing global demand for forest coffee, while contributing to poverty reduction of the local community.

For forest coffee production monitoring, the assessment can be taken at two levels: landscape level and stand level monitoring.

- **Landscape level**- the overall forest cover, percent forest cover compared to other land uses, percentage of different forest categories, rate of deforestation, level of fragmentation, forest gaps and rate of conversion from one forest type to another or to other land use types. Such assessment is mainly conducted through analysis of satellite images or aerial photographs, supported with ground verification data to improve accuracy of interpretation.
- **Stand level**: this is mainly based on forest inventory and looks at vegetation characteristics of a forest stand. The main indicators are vegetation characteristics like: basal area, canopy cover, number of stems of shade trees per ha, diversity of shade tree species, number of coffee trees per ha and number of seedlings and saplings per ha. Most of the indicators used to define different forest categories under section 2.2 were derived from inventory data of the forest coffee systems.

Assessments for monitoring can be conducted in phases, depending capacity. The first feasible phase is stand level assessment/ monitoring. Even for stand level, it is very expensive to conduct all types of monitoring very frequently. Hence, for monitoring of forest coffee systems, two monitoring types with different frequencies are considered:

(a) **Annual community level monitoring**: this is mainly community led monitoring, with some technical support of experts, and focuses on assessment of illegal activities or activities that are not allowed within the different forest categories. Localized illegal activities like cutting of trees, use of chemical herbicides and fungicides, planting of improved coffee varieties, and charcoal making have to be avoided. Such incidence may happen anytime throughout the year, and reported by community members, rangers and development agents. Besides counting the number of illegal activities, it is important to clearly indicate the locations and assess the impacts on ground. When incidences of illegal activities are reported, local experts shall record location (woreda, kebele, name of locality and GPS coordinates), type of illegal activity, species of trees affect, number of stems/trees affected, and size of forest gap created due to the illegal activity.

(b) **Detailed assessment every three years**: this is experts led, with the support and participation of local communities, and includes forest inventory and land use land cover change using analysis of satellite images; to address both landscape and forest stand level dynamics. The protocol for forest inventory is described below.

2.3.2.1 Forest vegetation Inventory protocol

Many biodiversity indicators are generated from inventory data. Inventory data are collected in the different forest types or grades, including undisturbed forest areas designated for conservation.

Number of plots

The total number of plots depends on the area of the forested landscape in the target kebeles or woredas. Around 5 permanent plots each for types per kebele are recommended kebeles with over 50% cover, and 2 if the forest cover is less than 50%.

Monitoring plots selection and design

Plots are purposely selected from different forest types within the target sites, and systematically along altitude gradients with the forest type. Plots should be located at least 500 m away from the boundary within the forest type to be monitored.

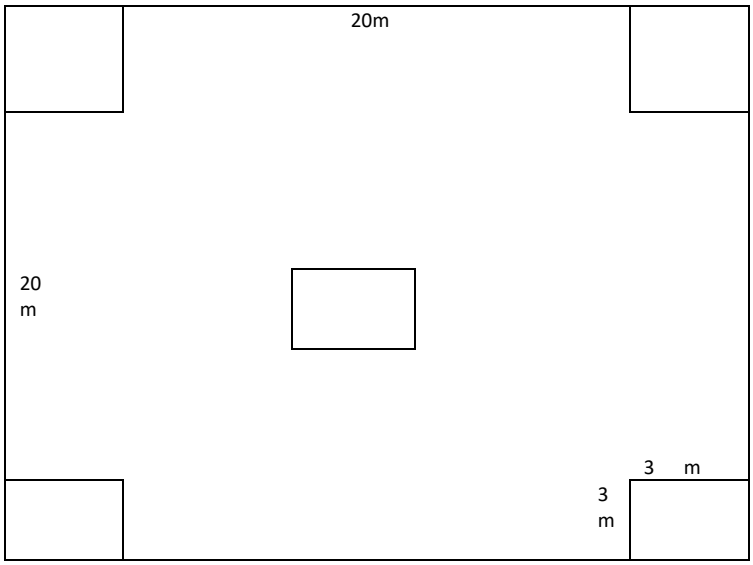

Figure 3. Forest inventory nested plot design

In order to cover ecological diversity along altitudinal gradient, plots are placed at 500 m difference in altitude, starting from the lowest to the highest. However, it is not necessary to follow a transect line, as long as the elevation differences within the same management unit are maintained.

The main plot is a square with dimension of 20 m x 20 m. In each major plot, there are 5 sub-plots of 3m x 3m. The plots are permanent, and have to be marked with signs that show their relative locations. The exact locations are identified by GPS coordinates at the four corners and the center.

Equipment needed for data collection

For field data collections, different equipment are required. These include: **caliper** and **diameter tape** to measure diameter of trees; **hypsometer** to measure heights of trees; **relascope**

(Spiegel relascope if possible) to estimate **mean basal area (BA)** of the plot; **GPS** to record coordinate points and altitudes of plots; **machete** to open up access and also collect herbarium samples; **plant press** for herbarium samples; all volumes of the **Flora of Ethiopia and Eritrea**; vocabulary of plant names and field guides; **magnifying lens** to study leaf surface and flower; **paint** and colored **ribbons** to mark the location of the permanent plots; two 50m **measuring tapes** to layout plots; **compass** for directions while layout plots; **data sheets**, pens and pencils.

Data to be collected

Main plot (20m x 20m): data regarding all woody plants with diameter at breast height (DBH) $\geq$ 5 cm will recorded. Data to be collected include species name, DBH and height. If a tree has two or main branches that fork below 1.3 m, the diameter of the biggest stem is measured. Basal area (BA) is estimated, standing at the center of the main plot and using Spiegel Relascope, if available.

Sub-plot (3m x 3m): two sets of vegetation data are collected in these sub-plots: (1) species names, diameters and heights of saplings that are < 5 cm and taller than 1.5 m in height; and (2) species names and number of stems of all seedlings of trees, shrubs and climbers will be recorded. Besides, foliage density (canopy cover) will be estimated at the center of each subplot using a forest densiometer.

Data analysis/ compilation

Abundance of all tree, shrub and limber species are compiled on a plot basis. Abundance is the number of stems per plot. The average abundance per plot is calculated by dividing the sum of the number of stems of a species from all plots by the total number of plots. The mean basal area (BA) per ha is as estimated by relascope is compiled for each plot location. If relascope is not available for inventory, then it is calculated based on the measured DBH. For this, BA per plot is calculated from diameter (D) of each stem using the formula $BA=\prod(D/2)^2$. The BA per plot is calculated adding up the BA of all stems, which is then used to calculate mean BA per ha.

2.3.2.2 Landscape level assessment

In areas where there is no local capacity for spatial analysis at zone level, this assessment should be considered as a second tier or phase. With implementation of REDD+ through OFLP and RIP, there is a growing capacity to conduct spatial analysis and local land use planning, as well as regular monitoring. Satellite images with high resolution are also increasingly made available for free by different organizations, e.g., sentinel images of the European Space Agency. When the REDD+ programs start MRV, land use land cover change data shall actually be available and easily accessed, without requiring the image analysis processes.

Data/image

To assesses and monitor changes in landscape level dynamics, analysis of satellite images from different time periods are used. The images to be used are the European Space Agency's Sentinel images. Sentinel images are freely available and are of good resolution for land use/land cover changes dynamics, as well as levels of forest degradation at very coarse canopy density level.

Analysis methods

The major software packages used in this study are ERDAS Imagine 9.1, mainly for image preprocessing, ENVI 4.3 for image classification and change detection analysis. All image scenes are subjected to the necessary pre-classification operations. These included band selection and layer stacking for interactive *false color* and *true color* displays, *sub-setting* each scene to the Area of Interest (AOI), *mosaicking, color balancing, haze reduction* and *masking* operations. The preprocessed images are aggregated into different land use/ land cover classes and then subjected to majority filtering and clamping to avoid the salt-and-pepper effect. After clean classified images are produced for each year, image differencing and change detection statistics generation are done using the post classification module of ENVI 4.3.

2.3.2.3 Indicators of annual monitoring

The annul monitoring by the local community or para-ecologists is mainly based on observation of illegal activities in forests designated for conservation as well as managed forest areas for forest coffee production.

The assessment unit can be kebele or woreda for which areas of the different forest categorizes are known. Assessment can be conducted twice a year, during the dry season and of rainy season or on-set of coffee harvesting season, and compiled on annual basis. The GPS locations of the observations of illegal activities should also be recorded. The main indicators are:

- Number of spots where canopy trees were cut
- Estimate areas affected by tree cutting
- Number of spots and areas with herbicide application
- Number of spots and areas with pesticide application
- Number of spots and areas with fungicide application
- Number of spots and areas deforested
- Number of spots and areas planted with improved coffee varieties

2.3.2.4 Indicators of detailed monitoring at 3 years interval

The detailed monitoring at three years interval includes assessment of landscape level dynamics as well as stand level dynamics.

The landscape level indicators to be monitored are: total forest cover (area), percent forest cover compared to other land uses, percentage of different forest types based on management intensity like dense forest, slightly disturbed forest (grade A), disturbed forest (grade B), degraded forest (grade C).

The forest stand indicators for the different categories are those presented in Table 2 above, and includes canopy cover (%), # tree species/ha, # tree stems/ha, # seedlings & sapling per ha and # coffee trees/ha.

Besides, ensuring sustainable management of the forest resources is critical for the livelihoods of the local community that depend on NTFPs including forest coffee.

Monitoring reports of the forest coffee production- can contribute to sustainable management of the forest, allowing taking mitigation measures in time, when there is degradation or any

deviation from the plan.It can also contribute to the national reporting requirements to different international conventions and commitments.

3 Applicable Forest Coffee Management

3.1 Optimal forest management for coffee production and conservation

For optimal forest management for coffee production and biodiversity conservation, different activities and operations have to be carried by developing guidelines, standards and indicators for monitoring. These include capacity building of the practitioners through training, baseline inventory of forest conditions, initial opening or clearing, weeding, enrichment planting, monitoring and rehabilitation of degraded forest areas. The activities are described as in the following subsections.

3.1.1 Training of monitoring team

Forest management practices for coffee production to date are based on individual farmers' decision. There is no guideline to follow, to ensure sustainability. The impacts on the forest, therefore, vary from one farmer to another. For sustainable management of the forest and coffee genetic resources, there is a need for standardized management guideline. To implement such guideline, building the capacity local monitoring team at woreda and community expects, development agents and farmers' representatives or key informants of indigenous ecological knowledge (para-ecologists), to enable them assess the resource base, follow the management guideline and also be able to monitor changes over time. The training covers the inventory protocols, and basic ecological and plant identification skills. Hence, the first step for optimal forest management for coffee production and conservation is to train the local monitoring team on the use of inventory protocol, basic ecological skills to make forest inventory and plant species identification, and observation changes in forest condition over time, against established indicators.

3.1.2 Plot inventory/ stocktaking

The second step is to take forest conditions inventory, including list of major plant species, density of canopy trees, and the coffee stand. This is the base for making management decisions like shade trees management, coffee stand management, clearing regime, weeding operations and monitoring over the course of forest management. This activity is done by trained experts, with the support of trained community key informants or para-ecologists. The expert team should include forest and land use experts from relevant woreda government regulatory bodies like OFWE and OEFCCA and community level Development Agents. During the inventory stage, trees, shrubs and climbers to be removed during initial thinning operation or opening of new forest area, weeding or further thinning of shade trees in old managed forest should also be identified and marked. Those species of high conservation value, like endemics, threatened species, and the like should also be identified.

3.1.3 Shade trees management

Forest coffee is produced in natural forest with diverse species of shade trees. The aim of shade trees management in forest coffee production is, therefore, for both production and conservation functions. At the initial stage of managing new forest areas for coffee production, the first step is thinning or carryout initial clearing of trees and shrubs to reduce canopy cover and the undergrowth vegetation competing with coffee. The major indicators to consider in initial thinning or clearing operation should be based on certain standard indicators for sustainable management. So far, there is no such standard for coffee forest management. As a base for

sustainable forest management (for both conservation and coffee production), some indicators were identified based on studies of traditional management practices in different coffee forests of the country (see section 2.13 and Table 1). The major indicators are: number of species, number of shade trees, basal area, forest area, and key species of special conservation importance. As the first step, the vegetation characteristics to be used as criteria and the recommended minimum values are summarized in Table 3.

Table 3. Vegetation characteristics and minimum indicator values

No.	Indicator	Minimum value
1	Number of species per ha	40
2	# of stems of shade trees/ha	250-400
3	Basal Area (m^2/ha)	40
4	Canopy cover (%)	65
5	# saplings & seedling of trees/ha	750
6	# coffee trees/ha	3000-3500

In order to conserve the genetic resources of coffee and forest biodiversity within their respective areas, some parts of the forest has to be demarcated and a set-aside area for *in-situ* conservation. Such areas should not be less than 20% of the total forest landscape. Besides, attempt should be made to maintain the natural species mix in forests managed for coffee production as much as possible. The shade tree species to be thinned out or cleared should only be those identified and marked during the inventory by the monitoring team. For both canopy trees and undergrowth shrubs, attention should be given to keep reasonable individuals of endemics, Afromontane endemics and threatened species (see the list in Annex 1). In degraded forests managed for coffee production, efforts have to be made to reach at least the minimum indicated in Table 3, with the aim of restoring to Grade A category (see Table 2; section 2.2) in the long term. To maintain the shade trees composition/diversity and structure near natural condition, continuous monitoring has to be conducted, and restoration activities carried out in degraded areas that are below the minimum requirement. Shade trees regeneration is carried out through assisted natural regeneration (ANR), which includes recruitment and retention of naturally regenerating seedlings and saplings and intentional enrichment planting with indigenous tree species seedlings.

3.1.4 Coffee stand management

In coffee forests, the density of coffee trees per hectare can be very high, as high as 20,000 stems, including saplings, like in Yayu. However, coffee trees are not regularly distributed, forming clusters in some parts, and sparsely distributed in other parts. Enrichment planting can be carried out in areas where the coffee stand is sparse. The spacing of 1.5 m between individual coffee trees will be used, since the branching nature of coffee in forest is not so wide. At this spacing, up to 4500 stems of mature coffee trees per hectare can be expected. The planting stock should be seedlings of the local coffee types. This can be obtained from the wild seedlings in the forest or seedling raised in nurseries using seeds collected from wild coffee plants in the target areas. This means, using coffee seeds sourced from Gera for Gera area only, and those sourced from Bale area only in Bale area. This is with intention of maintaining the natural genetic variability of the local coffee populations, since the objective of sustainable

management is also to conserve the coffee genetic resources of the wild populations. Strict regulation should be put in place to avoid planting seedlings of improved varieties or cultivars introduced from other coffee growing areas.

Coffee stand management also includes management of diseases and pests. Local coffee types of wild origin are believed to be genetically resistant to diseases and pests. In forest coffee production system, farmers should follow the cultural disease and pest management advises provided by extension agents, except application of chemicals. Application of chemicals is strictly prohibited. It is also important to note that maintaining diverse and structurally complex shade trees harbors birds that control insect population, and create micro climate that reduces rate of transmission of diseases.

Further, coffee stand management also includes pruning. Pruning is essential in coffee production to achieve the desired plant shape, to maximize the amount of new wood for the next season crop, to maintain a correct balance between leaf area and fruits, to prevent overbearing and thus reduce biennial production, stimulation of root growth, enhancement of light penetration, and also to facilitate disease and pest control. Four major pruning systems are practiced (Wrigley, 1988):

a) Single- or multiple- stem, capped at about 1.8 m height, accompanied by regular pruning of lateral branches and removal of suckers;

b) Multiple-stem with three to four uncapped stems with little maintenance pruning; rotational system of replacement of old stems (after three to four cropping years) by ne orthotropic shoots;

c) 'Agobiado', which is a multiple-stem system on one main stem that has been bent over at an early age;

d) Complete stumping to30 cm above ground level (with or without a temporary lung branch) to encourage re-growth of suckers, which, after thinning to 2-3 vertical shoots, will be brought up to form the vertical stems for the next cycle of production.

This last pruning system is applied on a rotational basis every fourth or fifth year in closely spaced arabica coffee blocks, usually planted with compact-type varieties, or rejuvenate an old block of conventionally spaced coffee after 8-12 years of production.

3.1.5 Weeding and soil nutrients management

Weeding is one of the critical management practices in coffee production. Because, yield loss due to weeds is quite significant and can reach up to 65%. In most areas, there is a need to carryout weeding at least three times per year: around end of March, August, the third just before harvesting season at the end of October. During weeding, care should be taken not to clear the seedlings of key plant species of conservation importance. Some individuals of such species can be reduced if the density is found to be too high after monitoring/inventory. Attempt should also be made to use the removed biomass as organic fertilizer through on site composting. Application of chemical herbicides is strictly prohibited to suppress weeds.

For soil fertility management, the recommended practice is application of organic fertilizer (compost), use of native cover crops, and construction of soil and water conservation in degraded areas that experience soil erosion.

3.1.6 Monitoring of coffee / forest conditions

In any ecosystem managed for economic use, change is inevitable. In order to achieve sustainability, regular monitoring of changes must be conducted so that corrective measures are taken in cases of deviations from the plan. Two types of monitoring are suggested:

- Annual inspection: simple measurements like canopy density, and visual assessment of the forest conditions;
- Detailed inventory every third year.

The focus of the inspection should be on species composition, shade trees condition, coffee stand condition, and suggestions of better management practice for both conservation and sustainable use.

3.1.7 Degraded forest rehabilitation and coffee planting

Forest areas are declining from time to time due to expansion of agriculture, damage by cattle grazing and other anthropogenic factors. Besides, even those managed as semi-forest and forest garden coffee production areas can be degraded after several years, in terms of structure and species composition. Rehabilitation can be achieved if it is economically attractive to the local community. In any case, the best option is managing the rehabilitated forest areas for coffee production. Degraded areas at forest edges should be rehabilitated by planting indigenous shade tree species and coffee. Degraded semi-forest coffee areas should also be rehabilitated through enrichment planting of both coffee and shade trees.

3.2 Allowed and prohibited management activities in different forest categories/ grades

Management activities that are prohibited or allowed in optimal forest management for coffee production were discussed in the preceding section. Here, the allowed and prohibited management practices are summarized in Table 4 below. The categories of restrictions are: strictly prohibited (SP); Allowed with limits/regulation (AL) & Allowed (A).

Table 4. Management practices allowed or prohibited in different categories of forest coffee systems

No.	Management Practices	Dense forest	Coffee Forest System Grade		
			A	B	C
1	Planting improved coffee variety	SP	SP	SP	SP
2	Planting local/wild coffee type	SP	A	A	A
3	Weeding	SP	A	A	A
4	Pruning	SP	AL	A	A
5	Stumping	SP	AL	A	A
6	Thinning shade trees	SP	AL	SP	SP
7	Planting seedlings of indigenous shade trees	SP	A	A	A
8	Restoration of degraded forest	SP	A	A	A
9	Natural regeneration	A	A	A	A
10	Soil & water conservation: mulching	SP	A	A	A
11	Organic fertilizer application- compost	SP	A	A	A
12	Chemical fertilizer application	SP	SP	SP	SP

No.	Management Practices	Dense forest	Coffee Forest System Grade		
			A	B	C
13	Herbicide application	SP	SP	SP	SP
14	Pesticide application	SP	SP	SP	SP
15	Fungicide application	SP	SP	SP	SP
16	Insecticide application	SP	SP	SP	SP
17	Beekeeping	SP	A	A	A
18	Planting exotic shade and fruit trees	SP	SP	SP	SP

3.3 Certification and branding

Certification is increasingly accepted as a tool to defining standards for social and environmental performance in forest management. In Ethiopia, the first effort to certify forest coffee was initiated in Kafain 2003, in a cooperative effort of the two German conservation and development organizations GEO Schützt den Regenwald and the Amber Foundation. Since there was lack of clarity on what to certify, be it wild coffee or coffee from a sustainably managed forest, and lack of clear measurable indicators, this initiative was not sustainable. Later, different certification standards like Utz Kapeh, IMO and the SAN standard of Rainforest Alliance (RA). Of all certification standards, the SAN standard of RA is relatively more relevant for coffee forest certification in Ethiopia. Because, it has a good mix of necessary criteria to achieve social and environmental sustainability in agricultural production system. The SAN standard has 10 principles, which include: social and environmental management system, ecosystem conservation, wildlife protection, water conservation, fair treatment and good working conditions for workers, occupational health and safety, community relations, integrated crop management, soil management and conservation, and integrated waste management. Since the SAN standard is developed primarily for agricultural production systems, with the focus on coffee production as agricultural crop in non-native producing countries in Latin America, it also does not adequate address sustainability issues of forest coffee systems in Ethiopia. Hence, RA in collaboration key stakeholders in Ethiopia has developed Local Interpretation Guidelines for the coffee sector in Ethiopia. RA has certified a number of forest, garden and plantation coffee over the past few years, and is increasing in importance, especially for forest coffee.

Certified coffee is exported as specialty coffee, and fetches premium price over conventional coffee. However, individual smallholder farmers cannot afford the cost of internal control, audit and certification. Most certified coffee forests up to now are those managed by cooperatives or WaBuB forest user groups (FUGs), and financed by development agencies like JICA in Belete-Gera Forest. RA certified forest coffee could fetch up to 15-20% higher premium prices over conventional coffee from the region at farm gate. A recent study in Jimma area has shown that RA certified has higher environmental and economic benefits compared to other private standards.

Generally, the cost of certification is too high for smallholder farmers, or even small group of farmers. The cost of certification can be affordable through different mechanisms:

(1) training adequate number of qualified RA auditors and certifiers locally to reduce costs of audit fees

(2) organize several cooperatives or FUGs for group certification to reduce the costs per member

(3) initially cover the expenses of certification and market-linkage through development project funds, since farmers do not take risk and begin certification on their own.

Besides certification, developing quality profile of coffee from different localities and promoting as unique brand similar to Sidama and Harar can also attract premium prices. The conservation values, like coffee from UNESCO biosphere reserves Yayu Coffee Forest and Kafa biospheres can also branded as specialty products. Coffee forests are different local climatic condition, coffee genes and topography, and hence differ in quality of coffee produced. Such branding can contribute to environmental sustainability by providing incentives (premium prices) to continue their conservation practices.

3.4 Improved coffee marketing

To overcome the problems of existing long-marketing chain, one possible option is to bring farmers together as a group and produce better quality coffee that can attracts buyers (specialty exporters) both in terms of quantity as well as in quality. This will allow producers establish direct and sustainable link with exporters and avoid the problems associated with long chain of intermediaries. Forest coffee is special due to its contribution to environmental sustainability. Maintenance of such production system contributes conservation of associated plant species diversity and coffee genetic diversity, and watershed and other ecosystem services. The production system is free from any chemical in puts as well. Hence, efforts have to be made to certify sustainably produced forest coffee as a specialty coffee, which can fetch premium price. Hence, improved marketing of forest coffee can fetch higher price for the farmers by both cutting the market chain short and attracting premium price.

4 Measures for authorization and promotion of the guideline

Different federal and regional government sector institutions have mandates related coffee, forest and biodiversity resources management within the coffee forest landscapes. In order to authorize and use the guidelines in forest management and coffee production, it is important to get endorsement and approval of these different institutions.

The relevant federal government organizations are the Environment, Forest and Climate Change Commission (EFCCC), Ethiopian Coffee and Tea Authority (ECTA) and the Ethiopian Biodiversity Institute (EBI). EFCCC is responsible to enact forest policies, laws and regulations. It is also a nationally designated authority for many forest, environment and climate change related multilateral agreements and conventions like the UNCCD, UNFCCC and INDC. EFCCC also coordinates climate change mitigation and adaptation programs, including the national REDD+ program. Similarly, the ECTA is responsible for coffee development and marketing and promotes increasing production and productivity, and improving quality through improved practices. ECTA works on market development for coffee, tea and spices. The EBI, on the other hand, promotes conservation of biodiversity, and equitable and sustainable use of biological resources. The EBI is national designate authority to the UN CBD and other

biodiversity related conventions. The EBI has also developed the National Biodiversity Strategy and Action Plan, and has targeted to put up to 22% of each ecosystem types under protected areas system like national parks, UNESCO biosphere reserves or forest reserves.

The relevant regional institutions are the Bureau of Agriculture and Natural Resources (BoANR), Oromia Environment, Forest and Climate Change Authority (OEFCCA) and Oromia Forest and Wildlife Enterprise (OFWE). The BoANR is in charge of agricultural development, provision of extension services and inputs to increase productivity and production of crops, including coffee. BoANR also implements different programs related to natural resources management, watershed protection and restoration of degraded areas. The OEFCCA is the regional state level replica of EFCCC and has similar mandates/ responsibilities within the Oromia regional state. Hence, OEFCCA is responsible to enact regional forest management guidelines, conservation of biodiversity, climate change mitigation and adaptation, including REDD+. OFWE on the other hand, is a state forest and wildlife enterprise with the mandate of managing and utilizing forest and wild life resources in the region. The regional government has given most highland natural forests and forest plantations as concession to OFWE. OFWE has the right to manage and use forests and national parks in the region on its own, and jointly with the local communities, through PFM arrangements.

Besides, the public institutions, there are many development partners (bilateral and multi-lateral donors), research organizations, universities and NGOs that are working on forests, forest coffee and related rural developments. These may include JICA, GIZ, Norway, Denmark, Sweden, UNDP, EU, Jimma and Mettu Universities, Jimma Agricultural Research Centers, NABU, ECFF, P4F, EWNRA, Farm Africa and CARE Ethiopia.

In order to get authorization and use this guideline, it has to be reviewed and endorsed by the relevant federal and regional government agencies. It should also be validated by all key stakeholders that may use it their forest management and forest coffee production interventions.

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Annex 1. List of common trees and shrubs in coffee forest areas

AFM= Afromontane species; GC= Guineo-Congolian flora element; lin= Linking species; T=tree; S= shrub

No.	Species	Family	Distribution type	SE forest block	SW Forest Block	Growth form
1	*Acacia abyssinica*	Fabaceae	AFM		x	T
2	*Alangium chinense*	Alangiaceae	lin	x	x	T
3	*Albizia grandibracteata*	Fabaceae	AFM		x	T
4	*Albizia gummifera*	Fabaceae	AFM		x	T
5	*Albizia schimperiana*	Fabaceae	AFM		x	T
6	*Allophylus abyssinicus*	Sapindaceae	AFM	x	x	T
7	*Allophylus macrobotrys*	Sapindaceae	lin		x	T
8	*Alstonia boonei*	Apocynaceae	GC		x	T
9	*Anthocleista schweinfurthii*	Loganiaceae	GC		x	T
10	*Antiaris toxicaria*	Moraceae	lin		x	T
11	*Apodytes dimidiata*	Icacinaceae	AFM	x	x	T
12	*Argomuellera macrophylla*	Euphorbiaceae	GC		x	S
13	*Baphia abyssinica*	Fabaceae	GC		x	T
14	*Bersama abyssinica*	Melianthaceae	AFM	x	x	T
15	*Blighia unijugata*	Sapindaceae	lin		x	T
16	*Breonadia salicina*	Rubiaceae	lin	x	x	T
17	*Bridelia atroviridis*	Euphorbiaceae	GC		x	T
18	*Bridelia cathartica*	Euphorbiaceae	GC		x	T
19	*Bridelia micrantha*	Euphorbiaceae	lin		x	T
20	*Bridelia scleroneura*	Euphorbiaceae	lin		x	T
21	*Brucea antidysenterica*	Simaroubaceae	AFM	x	x	T
22	*Buddlea polystachya*	Loganiaceae	AFM	x	x	T
23	*Calpurnia aurea*	Fabaceae	AFM	x	x	S
24	*Canthium oligocarpum*	Rubiaceae	AFM	x	x	T
25	*Cassipourea malosana*	Rhizophoraceae	AFM	x	x	T
26	*Celtis africana*	Ulmaceae	lin	x	x	T
27	*Celtis gomphophylla*	Ulmaceae	lin	x	x	T
28	*Celtis philippensis*	Ulmaceae	lin		x	T
29	*Celtis toka*	Ulmaceae	GC		x	T
30	*Celtis zenkeri*	Ulmaceae	lin		x	T
31	*Chionanthus mildbraedii*	Oleaceae	lin	x	x	S
32	*Clausena anisata*	Rutaceae	lin	x	x	S
33	*Coffea arabica*	Rubiaceae	AFM	x	x	S
34	*Cordia africana*	Boraginaceae	lin	x	x	T
35	*Craterispermum schweinfurthii*	Rubiaceae	lin		x	S

No.	Species	Family	Distribution type	SE forest block	SW Forest Block	Growth form
36	*Crossopteryx febrifuga*	Rubiaceae	lin		x	T
37	*Croton macrostachyus*	Euphorbiaceae	lin	x	x	T
38	*Cyathea manniana*	Cyatheaceae	AFM	x	x	T
39	*Deinbollia kilimandscharica*	Sapindaceae	AFM	x	x	T
40	*Diospyros abyssinica*	Ebenaceae	lin	x	x	T
41	*Diospyros mespiliformis*	Ebenaceae	lin	x	x	T
42	*Dodonea angustifolia*	Sapindaceae	lin	x	x	S
43	*Dombeya torrida*	Sterculiaceae	AFM		x	T
44	*Dracaena afromontana*	Dracaenaceae	AFM	x	x	T
45	*Dracaena fragrans*	Dracaenaceae	lin	x	x	S
46	*Dracaena steudneri*	Dracaenaceae	AFM	x	x	T
47	*Ehretia cymosa*	Boraginaceae	lin	x	x	T
48	*Ekebergia capensis*	Meliaceae	AFM	x	x	T
49	*Elaeodendron buchananii*	Celastraceae	AFM	x	x	T
50	Erythrina brucei	Fabaceae	AFM	x	x	T
51	*Erythroxylum fischeri*	Erythroxylacea e	lin		x	S
52	*Euclea racemosa*	Ebenaceae	lin		x	S
53	*Eugenia bukobensis*	Myrtaceae	lin		x	S
54	*Euphorbia ampliphylla*	Euphorbiaceae	AFM		x	T
55	*Fagaropsis angolensis*	Rutaceae	AFM	x	x	T
56	*Ficus asperifolia*	Moraceae	GC		x	T
57	*Ficus exasperata*	Moraceae	lin		x	T
58	*Ficus lutea*	Moraceae	lin		x	T
59	*Ficus mucuso*	Moraceae	GC		x	T
60	*Ficus ovata*	Moraceae	lin		x	T
61	*Ficus palmata*	Moraceae	lin		x	T
62	*Ficus sur*	Moraceae	lin	x	x	T
63	*Ficus sycomorus*	Moraceae	lin	x	x	T
64	*Ficus thonningii*	Moraceae	lin	x	x	T
65	*Ficus umbellata*	Moraceae	GC		x	T
66	*Ficus vallis-choudae*	Moraceae	lin		x	T
67	*Ficus vasta*	Moraceae	lin		x	T
68	*Filicium Decipiens*	Sapindaceae	lin	x		T
69	*Flacourtia indica*	Flacourtiaceae	lin	x	x	T
70	*Galiniera saxifraga*	Rubiaceae	AFM	x	x	S
71	*Garcinia buchananii*	Guttiferae	lin		x	S
72	*Garcinia livingstonei*	Guttiferae	lin		x	S
73	*Garcinia ovalifolia*	Guttiferae	GC		x	S
74	*Hagenia abyssinica*	Rosaceae	AFM	x		T

No.	Species	Family	Distribution type	SE forest block	SW Forest Block	Growth form
75	*Hallea rubrostipulata*	Rubiaceae	lin		x	S
76	*Halleria lucida*	Scrophulariaceae	AFM	x		S
77	*Hymenodictyon floribundum*	Rubiaceae	lin		x	S
78	*Hypericum revolutum*	Guttiferae	AFM	x	x	S
79	*Ilex mitis*	Aquifoliaceae	AFM		x	T
80	*Juniperus excelsa*	Cupressaceae	AFM	x		T
81	*Lannea welwitschii*	Anacardiaceae	Lin		x	T
82	*Lecaniodiscus fraxinifolius*	Sapindaceae	Lin		x	T
83	*Lepidotrichilia volkensii*	Meliaceae	AFM	x	x	S
84	*Lepisanthes senegalensis*	Sapindaceae	Lin		x	S
85	*Macaranga capensis*	Euphorbiaceae	lin	x	x	T
86	*Maesa lanceolata*	Myrsinaceae	lin	x	x	S
87	*Manilkara butugi*	Sapotaceae	AFM		x	T
88	*Margaritaria discoidea*	Euphorbiaceae	lin		x	S
89	*Maytenus arbutifolia*	Celastraceae	AFM	x	x	S
90	*Maytenus gracilipes*	Celastraceae	AFM		x	S
91	*Maytenus senegalensis*	Celastraceae	lin	x	x	S
92	*Maytenus undata*	Celastraceae	lin	x		S
93	*Milicia excelsa*	Moraceae	lin		x	T
94	*Millettia ferruginea*	Fabaceae	AFM	x	x	T
95	*Mimusops kummel*	Sapotaceae	lin	x	x	T
96	*Morus mesozygia*	Moraceae	lin		x	T
97	*Myrsine africana*	Myrsinaceae	AFM	x		T
98	*Nuxia congesta*	Loganiaceae	AFM	x	x	T
99	*Ocotea kenyensis*	Luraceae	AFM	x	x	T
100	*Olea capensis ssp. macrocarpa*	Oleaceae	AFM	x		T
101	*Olea welwitschii*	Oleaceae	AFM	x	x	T
102	*Olinia rochetiana*	Oliniaceae	AFM	x	x	T
103	*Oncoba routledgei*	Flacourtaiceae	AFM	x		S
104	*Oxyanthus speciosus*	Rubiaceae	AFM	x	x	T
105	*Pappea capensis*	Sapindaceae	lin		x	S
106	*Phoenix reclinata*	Arecaceae	lin		x	T
107	*Pittosporum viridiflorum*	Pittosporaceae	lin	x	x	T
108	*Podocarpus falcatus*	Podocarpaceae	AFM	x	x	T
109	*Polyscia fulva*	Araliaceae	AFM	x	x	T
110	*Pouteria adolfi-friederici*	Sapotaceae	AFM	x	x	T

No.	Species	Family	Distribution type	SE forest block	SW Forest Block	Growth form
111	*Pouteria alnifolia*	Sapotaceae	lin		x	T
112	*Pouteria altissima*	Sapotaceae	GC		x	T
113	*Prunus africana*	Rosaceae	AFM	x	x	T
114	*Pseudocdrela kotschyi*	Meliaceae	GC		x	S
115	*Psychotria orophila*	Rubiaceae	AFM	x	x	S
116	*Psydrax parviflora*	Rubiaceae	lin		x	S
117	*Psydrax schimperiana*	Rubiaceae	lin	x		S
118	*Rinorea friisii*	Violaceae	GC		x	S
119	*Rinorea ilicifolia*	Violaceae	AFM		x	S
120	*Ritchiea albersii*	Cappardiaceae	AFM	x	x	S
121	*Rothmannia urceliformis*	Rubiaceae	lin	x	x	S
122	*Rytigynia neglecta*	Rubiaceae	AFM	x	x	S
123	*Sapium ellipticum*	Euphorbiaceae	lin		x	T
124	*Schefflera abyssinica*	Araliaceae	AFM	x	x	T
125	*Schefflera myriantha*	Araliaceae	AFM		x	T
126	*Schrebera alata*	Oleaceae	AFM	x	x	S
127	*Senna petersiana*	Fabaceae	AFM		x	S
128	*Solanecio gigas*	Asteraceae	AFM	x	x	S
129	*Strychnos henningsii*	Loganiaceae	GC		x	S
130	*Strychnos innocua*	Loganiaceae	GC		x	S
131	*Strychnos mitis*	Loganiaceae	lin	x	x	S
132	*Suregada procera*	Euphorbiaceae	lin	x		S
133	*Syzygium guineense ssp. afromontanum*	Myrtaceae	AFM	x	x	T
134	*Syzygium guineense ssp. guineense*	Myrtaceae	lin	x	x	T
135	*Syzygium guineense ssp. macrocarpum*	Myrtaceae	lin	x	x	T
136	*Teclea nobilis*	Rutaceae	AFM	x	x	S
137	*Teclea simplicifolia*	Rutaceae	AFM	x	x	S
138	*Trema orientalis*	Ulmaceae	AFM	x	x	T
139	*Trichilia dregeana*	Meliaceae	lin		x	T
140	*Trichilia emetica*	Meliaceae	lin		x	T
141	*Trichilia prieuriana*	Meliaceae	GC		x	T
142	*Trilepisium madagascariense*	Moraceae	lin		x	T
143	*Vepris dainellii*	Rutaceae	AFM	x	x	T
144	*Vernonia amygdalina*	Asteraceae	lin	x	x	S
145	*Vernonia auriculifera*	Asteraceae	lin	x	x	S
146	*Warburgia ugandensis*	Canellaceae	AFM	x		T
147	*Wendlandia arabica*	Rubiaceae	lin	x		S

No.	Species	Family	Distribution type	SE forest block	SW Forest Block	Growth form
148	*Whitfieldia elongata*	Acanthaceae	GC		x	S
149	*Xylopia parviflora*	Annonaceae	lin		x	T
150	*Zanha golungensis*	Sapindaceae	lin		x	T
151	*Zanthoxylum leprieurii*	Rutaceae	GC		x	S

Annex 2. Forest Coffee in Belete-Gera Forest

1. Overview of coffee production in Ethiopia

There are only two species of commercially cultivated coffee: Arabica coffee (*Coffea arabica)* and Robusta coffee (*Coffea canephora*). Ethiopia is the center of origin and diversity of Arabica coffee. Nearly all coffees produced in Ethiopia are shade grown, with 40-60% canopy cover, except in a few home garden systems in Eastern Ethiopia.

Arabica coffee naturally grows as an understory shrub in the Afromontane rainforests of Ethiopia. Parts of the Afromontane forest where wild Arabica coffee populations naturally occur are usually named "Coffee Forests." From a biodiversity pointof view, the Afromontane forests of Ethiopia-including coffee forests have already been globally recognized as hotspot areas for biodiversity conservation, as the Eastern Afromontane Biodiversity Hotspot (Mittermeier et al. 2005) due to their exceptionally high level of diversity and regional endemism, and high level of threat.

Arabica coffee grows over a wide range of agro-ecological zones and geographical regions in Ethiopia (Senbeta 2006), both as wild and cultivated plant. Across these coffee growing regions, it is common to observe different coffee production systems. On the basis of management level, vegetation, structural complexity, and agronomic practices, coffee production systems in Ethiopia can be categorized into four; namely: forest coffee (FC), semi-managed forest coffee (SFC), garden coffee (GC) and plantation (Gole et al. 2002; Gole 2003; Senbetaand Denich 2006). The first three production systems have been practiced for centuries by smallholder farmers, and therefore, are considered as **'traditional' coffee production systems** (Gole et al. 2001).

General description of the two main forest based production systems, name forest and semi-forests systems is presented below, based research reports of different author (Gole et al. 2002; Gole 2003; Senbetaand Denich 2006; Gole et al. 2015). The differences between the systems are manifested by the intensity of forest management applied.

1.1 The forest coffee system

In this system, coffee is harvested directly from spontaneously regenerating natural populations of the coffee trees in the montane rainforests of Ethiopia. This system is found in southeastern and southwestern parts of the country, mainly in Bale, Bench-Maji, Illubabor, Kafa, Jimma, Qelem Wollega, Shaka, and West Wollega.

Figure 4. View of Forest Coffee System at Gera Forest, Jimma zone

The local communities living in and around the forest simply pick the wild coffee berries from naturally growing coffee plants and there is no management to improve coffee productivity. The floristic composition, diversity and structure is close to the natural situation, with little human intervention. The only management practice in the forest system is access clearing to allow movement in the forest during harvesting time (Gole et al. 2001). There is a high density of trees (Table 1), small trees, and shrubs in this system. The average number of canopy trees with dbh[1]>10 cm is about 460 stems/ha.

Table 5. Vegetation characteristics of forest and semi-forest coffee systems in SW Ethiopia (trees with of dbh>10 cm and matured coffee trees are considered).

System	Canopy cover (%)	Trees per ha	Number of canopy tree species	Coffee plants per ha
Forest	84	460	32	3600
Semi-forest	40-60	155	19	5800

Forest strata are characteristically made up of different tree species, and coffee is one of the understory plants. Depending on the prevailing ecology, the forest may possess 3-4 strata: emergent/upper stratum (>30 m tall), middle tree stratum (15-30 m tall) and small trees and shrub layer (2-15 m tall) and forest floor (Senbeta 2006).

Gole et al. (2001) reported a high density of mature trees and seedlings of coffee in such system at Yayu forest. The average density of coffee trees is about 3,600 stems/ha. Since coffee grows

[1] dbh- stands for diameter at breast height, which is a standard way of measuring tree size at 1.3 m above ground.

spontaneously like any other plant community, seedling density can even be much higher, ranging from 10,000 to over 30,000 per hectare. The wild coffee trees tend to be taller with few side branches, growing up to 12 m. This system is the lowest in coffee yield, with an average of around 200-250 kg/ha of green beans with some management practices. It only accounts for a small proportion (less than 5%) of the total production.

1.2 The semi-forest coffee system

Semi-forest coffee represents a system in which the forest is managed or manipulated mainly for coffee production. It is a type of coffee production where very quickly the forest coffee system is converted to a semi-managed forest coffee system through reduction of plant composition, diversity and density. The structure of the forest is also modified while converting from forest coffee to semi-managed forest coffee. The structural modification of the forest leads to the formation of a tall tree canopy or a few shade trees over the coffee layer with a limited number of intermediate canopy layers. This is the dominant production system in southwestern Ethiopia (mainly Bench-Maji, Illubabor, Jimma, Kafa, Shaka, and Wollega) and in the Bale Mountains of southeastern Ethiopia. In this system, small trees and shrubs competing with coffee are cleared away. Clearing is twice a year, one before the harvesting season and another after harvesting, before the main rainy season starts. The number of large canopy trees is highly reduced in order to open up the canopy to enhance the potential of coffee trees to bear more berries.

Coffee yield is directly proportional to the current growth of primary and secondary branches (Tewolde 1978), among other yield parameters like shade level and agronomic management practices. Opening up the canopy and clearing of competing lower strata vegetation enhance the vegetative growth of the side branches, and hence increases yield. Preference as shade trees is mainly given to legumes, since they fix nitrogen and contribute to the improvement of soil fertility. Broad-leaved and deciduous trees are considered as “undesirable” for use as coffee shade unless there are no legumes or other ‘desirable’ tree species in a plot. There is a considerable change in vegetation structure and species composition when the forest system is a converted to a semi-forest system (Table 1, Figure 2). This change in forest structure is highly significant in the lower height classes representing shrubs, and small trees.

Figure 5 Semi-forest production system

This coffee production system suppresses tree regeneration, reduces tree density as well as some forest tree species due to repeated removal of non-coffee plants. It subsequently leads to the dominance of coffee plants in the semi-managed forest coffee system, both in the vertical and horizontal structures (Gole et al. 2001; Gole 2003; Senbeta and Denich 2006). A study by Senbeta and Denich (2006) recorded 17 plant species in a 400 m^2 plot of a semi-managed coffee system as compared 49 plant species in a forest coffee system. This system usually differs from place to place due to differences in management intensity.

2. Jimma Zone as a center of origin and diversity for coffee

Jimma is one of the major coffee producing areas in Ethiopia. It has long history of coffee production and trade, and probably one of the areas where it has all started. Currently, a number of remnant forests in Jimma zone are known to have the wild coffee populations, especially in Belete and Gera forests. These forests fall within similar eco-region with other remnant forests in Kafa and Illubabor zones.

Besides the wild populations, there are several cultivated land races known from Jimma (Gole et al. 2001; Gole et al. 2015). Though there is no legally designated *in situ* conservation sites for coffee, the Jimma zone has the largest collections and *ex situ* coffee conservation in two field gene banks, located at Jimma Agricultural Research Center (JARC) and the Choche field gene bank managed by the Ethiopian Biodiversity Institute (EBI). The two field gene banks have over 10,000 accessions collected from both wild and cultivated coffees in the country.

2.1 Forest coffee production system

2.1.1 Belete Forest

The forest is located in Shabe-Sombo woreda of Jimma zone. Mostly, the forest is quite disturbed, with estimated canopy cover of 40-50%. The dominant shade/canopy trees include *Cordia africana, Olea capensis, Schefflera abyssinica, Polyscias fulva, Bersema abyssinica, Sapium elipticum* and *Pouteria adolfi-friederici*. The forest is rich in diversity of plants. Previous floristic studies by Hundera and Gadissa (2008) have reported 74 species of woody plants from the forest.

Figure 6. Semi-forest coffee plot at Belete Forest, Dabiyyee WaBuB

The forest is quite disturbed. There are also large blocks of monoculture plantations of eucalyptus, Cupressus and Pinus forests in the area, with OFWE sawmill operation. In the Dabiyyee WaBuB forest block, some exotic trees were seen planted at the edges of the forests and near residential areas. The major exotics include *Cupressus lusitanica, Gravillea robusta* and fruit trees like avocado. Overall, the Dabiyyee WaBuB site is quite disturbed with low canopy cover (40-50%). The coffee trees are also not well managed. During the visit, charcoal making in the site was observed. Few indigenous tree species are retained, and the forest strata are predominantly of two layers

The forested landscape is increasingly dominated by agriculture/ food crops, as can be seen in the picture below.

Figure 7. Typical agriculture-forest landscape mosaic around Belete forest area.

2.1.2 Gera forest

Gera forest is located in the Gera Woreda of Jimma zone. The forest cover of the woreda is relatively high (over 40%) compared to other woredas in Jimma zone. The forest is characterized by tall trees, and abundant naturally regenerated coffee. The lower stratum is relatively open, indicating some management interventions. Some of the common trees observed during the visit include *Olea capensis, Olea welwitschii, Schefflera abyssinica, Millettia ferruginea*, *Polyscias fulva, Pouteria adolfi-friederici* and *Vepris danieli*. The forest is rich in diversity of plants. A previous study (Mulugeta et al 2015) has recorded 132 plant species. Coffee is among the dominat shrub layer plants, especially in forest areas that are dominated tree species like *Prunus abyssinica, Millettia ferruginea, Olea capensis* and *Schefflera abyssinica*. The coffee trees at Gera tend to be tall and with few branches.

The forest is composed of tall trees, with high canopy cover. Visually, the canopy cover is estimated to be around 60%. Regeneration of the canopy trees and coffee is fairly good. This may no be true for all species. Mulugeta et al (2015) have noted that many canopy trees have good population structure with healthy regeneration. Examples include *Millettia ferruginea*, *Podocarpus falcatus*, *Cordia africana*, and *Syzygium guineense*. On the other hand, few species have poor regeneration, which include: *Polyscias fulva*, *Pouteria adolfi-friederici* and *Schefflera abyssinica*. This could be due to the inability of seeds to germinate readily under the parent plants.

Figure 8. Gera forest- view of the canopy layer (above and the lower stratum

The landscape is dominated by forest, dotted with few settlements and agricultural lands. There also no exotic trees plantations in the forest, except few trees in villages. From this preliminary assessment, Gera forest can be considered as typical forest coffee area, with minimum level of human intervention. But, from discussions with some farmers and JICA experts, there is an increasing trend of intensive management, including planting coffee in areas with low density. In the nearby woredas like Goma, coffee management is quite intensive, and the diversity of shade trees is lower. With increase in population and demand for land to produce crops and coffee, intensification of forest management as well as conversion to agriculture are unavoidable. Hence, there is a need to balance conservation of the forest and wild coffee, and development, through appropriate planning.

2.2. Summary of the Forest Coffee Inventory Survey

The project has conducted forest coffee inventory survey in 2019 by setting 70 plots in the three forest types; forest coffee, semi-forest coffee, and garden coffee inside the Belete-Gera Forest. The methodology followed the previous research in the other forest coffee in Ethiopia for making ease the comparison of the forest characteristics.

The results are summarized as the following table and utilized for preparation of this Forest Coffee Management Guideline. It would be desirable to conduct the similar survey will be conducted every-three-year to monitor the management conditions as mentioned in the guideline. Since the Jimma University has conducted periodical inventory in the Belete-Gera, it would be optimum to collaborate with the University to monitor and collaborate for appropriate management of forest coffee over Ethiopia.

Table 2. Vegetation characteristics of each forest coffee type in Belete-Gera Forest

Parameter	Belete-Gera Forest		
Parameter	**Forest Coffee**	**Semi-Forest Coffee**	**Garden Coffee**
Canopy Cover (%)	80	73	57
Basal Area (m2/ha)	42	31	18
Density of shade trees (stems/ha)	606	361	315
Tree species richness	26	41	40
# mature coffee trees (stem/ha)	1852	5843	3533
# seedlings & saplings	1410	811	130
# coffee trees (stem/ha)	1852	5843	3532

Table 3. Main shade tree species of each forest coffee type in Belete-Gera Forest

Forest Coffee	Semi-forest Coffee	Garden Coffee
Ritchie asteudneri gilg	*Millettia ferruginea Bak*	*Millettia ferruginea Bak*
Cassipourea malosana Alston	*Syzigium guineense F. white*	*Cordia africana*
Chionanthus mildbraedii Stearn	*Cordia africana*	*Vernonia amygdalina*
Vepris dainelli Kokwaro	*Cassipourea malosana Alston*	*Croton macrostachyus*
Olea welwitschii Gilg. & Schellenb	*Olea welwitschii Gilg. & Schellenb*	*Ficus sychomorus*
Sapium ellipticum	*Chionanthus mildbraedii Stearn*	*Cassipourea malosana Alston*
Millettia ferruginea (Hochst.) Bak	*Croton macrostachyus*	*Olea capensis*
Scheffleria abyssinica Hochst	*Capparis tomentosa Lam.*	*Oxyanthus speciosus ssp. globosus*
Teclea nobilis Del.	*Vepris dainelli Kokwaro*	*Vernonia auriculifera Hiern*
Oxyanthus speciosus ssp.	*Mimusops kummel*	*Albizia gummifera C.A.Sm*

Annex 3. Sample of Forest Coffee Monitoring Format

Date	Name:	Age:	Male/Female:
District:	Village:	Sub-village:	

Forest Coffee Production

Plot No.	Forest Coffee Area (ha)			Yield(Dried cherry)				Inspection
	Young	Mature	Total	Last year		2 years ago		
1				Bags	Kg	Bags	Kg	
2				Bags	Kg	Bags	Kg	
3				Bags	Kg	Bags	Kg	
4				Bags	Kg	Bags	Kg	
Total				Bags	Kg	Bags	Kg	

Forest Condition

No.	Indicator	Counted number
1	Number of species in a plot	
2	# of stems of shade trees/plot	
3	Canopy cover (%)	
4	# saplings & seedling of trees/plot	
5	# coffee trees/plot	

Management Practice

No	Management Practices	Apply	Number or Kg /Year
1	Planting improved coffee variety	YES / NO	
2	Planting local/wild coffee type	YES / NO	
3	Weeding	YES / NO	
4	Pruning	YES / NO	
5	Stumping	YES / NO	
6	Thinning shade trees	YES / NO	
7	Planting seedlings of indigenous shade trees	YES / NO	

No	Management Practices	Apply	Number or Kg /Year
8	Restoration of degraded forest	YES / NO	
9	Conserve natural regeneration	YES / NO	
10	Soil & water conservation: mulching	YES / NO	
11	Organic fertilizer application- compost	YES / NO	
12	Chemical fertilizer application	YES / NO	
13	Herbicide application	YES / NO	
14	Pesticide application	YES / NO	
15	Fungicide application	YES / NO	
16	Insecticide application	YES / NO	
17	Beekeeping	YES / NO	
18	Planting exotic shade and fruit trees	YES / NO	

Applicant's Declaration

I understand and accept the result of the Internal Inspection

Applicant's Name: Signature: