Annual Report

EthioTrees – Tembien Project

February 2018 – February 2019

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Submitted by: EthioTrees vzw

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Summary

Project overview	
Reporting period	February 2018 – February 2019
Geographical areas	Dogua Tembien (Tembien Highlands), Tigray Region, Ethiopia
Technical specifications in use	See approved PDD EthioTrees

Table 1: Summary table

Project indicators	Historical	Added/ Issued this period (2018-2019)	Total
No. smallholder households with PES agreements	N/A	0	0
No. community groups with PES agreements (where applicable) by Feb 2019	6	3	9
Approximate number of households (or individuals) in these community groups	1350	300	1650
Area under management (ha) where PES agreements are in place	726	448	1174
Total PES payments made to participants (USD**)	N/A	31,793	31,793
Total sum held in trust for future PES payments (USD**)	N/A	2947	2947
Allocation to Plan Vivo buffer (tCO_2)	1,463	815*	2,278*
Saleable emissions reductions achieved (tCO_2)	10,729	9,769*	20,498*

Unsold Stock at time of Submission (PVC)	
Vintage 2016-2017	0
Vintage 2017-2018	729

Plan Vivo Certificates (PVCs) issued to date	**10,729**
Plan Vivo Certificates requested for issuance (Feb 2018 - Feb 2019 Vintage)	**9,769***
Plan Vivo Certificates available for future issuance	**0**
Total PVCs issued (including this report)	**20,498***

* Buffer credit and issuance values have been revised based on updated calculations in previous issuances (see Section C5).

** USD values based on EUR to USD conversion rates on 28/02/2019 (source: www.xe.com)

Part A: Project updates

A1: Key events

- Formation of the associations / focus groups in the three added exclosures was completed at the earliest phase of the vintage period, i.e. by February 2018. The three new exclosures are: Zban Dake, Adilal and Gemgema. Collection of baseline data was finished at these 3 exclosures by February 2018 (see Annex 2).
- The baseline data of 10 new sites were gathered and the data collection at these sites was finalized in July 2018 (full baseline presentation will be presented in the next annual report).
- In one site, Seret, EthioTrees is working together with the NGO WeForest. The site Seret is to be added in the PES project, as the project development there is fully in line with the approved PDD of EthioTrees. While EthioTrees is the main developer of the PES project, serving as the Coordinator, the project at Seret is managed in the field by WeForest. A memorandum of understanding was concluded between the two parties. EthioTrees Ethiopia will audit the Seret project once per year, in order to ensure that the project complies with the EthioTrees PDD and PES agreement.
- Several trainings have been organised over the reporting period: 1 training per exclosure (n = 9) was organized, including the already existing and newly added exclosures. Training focussed either on environmental management of the exclosure, or on the valorization of the non-timber forest products derived from these exclosures. Special attention was given to marketing training, in order to strengthen the negotiation position of the participating communities when selling the non-timber forest products. Environmental investments (percolation ponds, planting) were made.
- Further developments of the scientific VLIR-South Initiative between Ghent University (Belgium) and Mekelle University (Ethiopia) over the course of 2018. The aim of this 2-year SI project is to estimate the valorization potential of ecosystem services from exclosures in the Tembien Highlands. The project analyses different ecosystem services and estimates their potential for involvement in the Plan Vivo scheme. The project is also investigating whether sustainable essential oil production can increase the cash income of landless farmers. In so doing, the project (i) gives scope for future valorization of ecosystem services in larger parts of north Ethiopia (thus outreaching to include other potential exclosures), and (ii) enhances the capacity of the Departments at Mekelle University (Business, Environmental Management and Chemistry), including their capacity to conduct participatory action research. Over the course of 2018, five Ethiopian MSc. students and 2 Belgian MSc. students enrolled in the South Initiative programme, supported by EthioTrees. Final results are expected by August 2019.
- At the beginning of January 2019, the EthioTrees project was showcased on Tigray Television – the regional television station – thus presenting the project mission to a broad audience across Tigray.

- In its long-term strategy, EthioTrees aims to regenerate forest patches in two altitudinal belts of Dogua Tembien Highland - an upper belt in the May Zegzeg catchment (draining towards Geba, where roughly 15 smaller exclosures are located) and a lower belt (steep slopes towards Geba, where roughly 4 larger exclosures are located) - following best practices in forest landscape restoration, with the aim to support naturally-assisted regeneration, improve ecosystem services and community resilience.
- EthioTrees cooperated with the Springer (publishing house) initiative to finalize a "tourist" GeoGuide for the Tembien Highlands. The GeoGuide series publishes travel guide type short monographs focused on areas and regions of geo-morphological and geological importance including Geoparks, National Parks, World Heritage areas and Geosites. The GeoGuide of Dogua Tembien is to be published in May 2019.
- With the Plan Vivo funds, the following socioecological investments were made over the period February 2017 – February 2018, based on the decisions made by the communities:

1. For the Meam Atal site
    1.1 Excavation of pond for drinking water collection (20m*10m*4m)
    1.2 Construction of stone bunds and moisture harvesting structures in the exclosure (500 m)
    1.3 Silviculture management of exclosure including planting activities
    1.4 Installing feeding boxes (n = 20)
    1.5 Purchasing beehives to support the cooperative (n = 5)

2. For the Gidmi Gestate site
    2.1 Excavation of a pond for drinking water collection (20m*10m*3.5m)
    2.2 Construction of stone bunds and moisture harvesting structures in the exclosure (n = 3)
    2.3 Purchasing beehives for supporting the cooperative (n = 3)
    2.4 Support for the fattening association after legal establishment. Fattening is a cut-and-carry system for grasses in the exclosures that are cut once a year, dried and stored, and used for feeding livestock at the homestead, e.g. using feeding boxes.

- For the May Genet site
    3.1 Construction of moisture harvesting structures and stone bunds in the exclosure (n = 2)
    3.2 Purchasing beehives to support the cooperative after legal establishment (n = 5)
    3.3 Silviculture management of the exclosure including planting activities

- For the May Hibo site
    4.1 Excavation of a pond for drinking water collection (10m*10m*2.5m)
    4.2 Construction of stone bunds and moisture harvesting structures on exclosure (n=3)

- For the Afedena site
    5.1 Class building in May Anatsu school near the village Afedena
    5.2 Participation on management and protection of the exclosure

6. For the Adi Lihsti site
    6.1 Excavation of a pond for drinking water collection (29m*20m*3.5m)
    6.2 Construction of stone bunds and moisture harvesting structures in the exclosure (n = 10)
    6.3 Installation of 20 feeding boxes
    6.4 Construction of a storage house for the local incense cooperative (4*5m)

A2: Successes and challenges

- Main successes included the collection of all required baseline data in the new exclosures, the successful execution of the first Plan Vivo investments (see above), the organisation of trainings, and the accomplishment of the formation of the associations and focus groups in the new exclosures.
- The main challenge included the creation of awareness of environmental degradation and management by the local population (still in terms of cattle grazing).
- Trainings and group discussions have taken place. The main focus of these discussions was the protection of the exclosures (keeping out the grazing) and on management of the exclosures (seedling planting and seedling irrigation, and soil and water conservation (percolation ponds, soil bunds and trenches)). Site-specific trainings were also organized, concerning improved market access for incense at incense-producing exclosures and management of bee hives at honey-producing exclosures.

A3: Project developments

Below, we give an overview of the project developments that have affected the governance, operations, contractual relationships or legal basis of the project:

- Expansion of the closely connected scientific VLIR-South Initiative between Ghent University (Belgium) and Mekelle University (Ethiopia) over the course of 2018. Seven MSc. students are involved, as well as 4 University departments. One chemistry thesis focuses on the optimization of the extraction of aromatic oil from *Boswellia papyrifera* (the dominant frankincense tree of Tigray) resins.
- Plan Vivo maps and PES-agreements, also supported by the *tabia* administrations, have been made.

- Formations of some associations were formalized. Examples of certificates of registration are available upon request.
- There are no relevant updates to the project documentation.

A4 Future Developments

- Further activities this year will included trainings, seedling planting and seedling irrigation, and the installation of soil and water conservation structures such as percolation ponds, trenches and soil bunds. This applies to the already existing exclosures and the newly added exclosures.
- The baseline data of the exclosures added to the project in July 2018 is provided in Annex 2. Plan Vivo Certificates for these sites will be requested for issuance *ex post*.

- # Project activities

B1: Project activities generating Plan Vivo Certificates

- We list the technical specifications being used in the project, the area covered and participants using these specifications in table 2 below. We only include those areas where PES agreements have been signed.

Table 2: Project activity summary

Name of technical specification	Area (Ha)	No smallholder households	No Community Groups
Ecosystem Restoration in the Tembien Highlands	1174 ha	1650	9

- EthioTrees had expanded the number of exclosures with three new sites by February 2018. These included Zban Dake, Adilal and Gemgema. The three exclosures Zban Dake, Adilal and Gemgema comply with the following criteria:

1. These 3 project sites are located on limestone lithology;
2. Soils of these project sites are dominated by Leptosols, Regosols, and Cambisols and not by Vertisols;
3. Sites are located between 12–15° N latitude and 36° 30'–40° 30' E longitude;
4. All sites have tropical semi-arid climate;
5. The altitude of the project sites varies between 1500 and 3000 m ASL;
6. Grass harvesting (using a cut and carry system) is permitted in accordance with the PES agreement;
7. The exclosures are located on former degraded rangelands or wastelands and not on former croplands or important grazing lands;
8. There is a set of clear rules (village by-laws) to regulate exclosure establishment and to ensure that the local population can receive ecosystem services of non-forest timber products;
9. There was willingness to establish a formal association or focus group of landless farmers;
10. To avoid increased grazing pressure elsewhere in the village, there is clear effort by the local population to encourage livestock feeding in the stable.

B2: Project activities in addition to those generating Plan Vivo Certificates

- Trainings were organized to support non-timber forest production, including incense production in Adi Lehtsi and Zban Dake and honey production in Gidmi Gestet, May Genet and Meam Atali. In May Genet, the potential of combined irrigation and conservation

agriculture in the valley downslope of the exclosure was extensively discussed and a decision is due by mid-2019. In Adi Lehtsi, the training focused on the linkages with market access in Mekelle (merchants) and discussions focused on the possibility to build a new storage house.

- # Plan Vivo Certificate issuance submission

C1: Contractual statement

- This issuance is based on Plan Vivo maps and signed PES agreements with participants complying with all the minimum requirements stated in these agreements.

C2: Issuance request for projects where issuance is made on the basis of ongoing activities on land already managed by the project (calculated *ex-post*).

Table 3: Statement of tCO2 reductions available for issuance as Plan Vivo Certificates based on activity for reporting period February 2018 – February 2019.

Area ID	Total area (ha)	Tech. Spec	Saleable ER's (tCO_2) available from previous periods	Total ER's (tCO_2) achieved this period	ER's minus leakage of 2%	% Buffer	No. of PVCs allocated to buffer from ER's achieved this period	Saleable ER's (tCO_2) from this period	Issuance request (PVCs)	ER's (tCO_2) available for future issuances
Adi Lehtsi	*412*	*Ecosystem restoration*	0	4536	4445	10	445	4001	4001	-
Gidme Gestet	*46*	*Ecosystem restoration*	*0*	270	265	10	26	238	238	-
Meam Atali	*83*	*Ecosystem restoration*	*0*	731	716	10	72	645	645	-
May Getnet	*51*	*Ecosystem restoration*	0	281	275	10	28	248	248	-
May Hibo	*53*	*Ecosystem restoration*	0	272	267	10	27	240	240	-
Afedena	*81*	*Ecosystem restoration*	0	565	554	10	55	498	498	-
Adilal	*83*	*Ecosystem restoration*	0	671	658	10	66	592	592	-
Gemgema	*65*	*Ecosystem restoration*	0	309	303	10	30	273	273	-
Zban Dake	*300*	*Ecosystem restoration*	0	3413	3345	10	334	3010	3010	-
TOTAL	1174		**0**	11048	10827	10	1083*	9744	9744*	**-**

*These values do not consider the adjustments made due to revision in previous calculations (see section C5)

C3: Allocation of issuance request

- The table below details the allocation of issuances from this project.

Table 4: Allocation of issuance request

Buyer name/ Unsold Stock	No. PVCs transacted	Registry ID (if available) or Project ID if destined for Unsold Stock	Tech spec(s) associated with issuance
Ethiotrees (first issuance)	*4,873*	*104000000014099*	*Ecosystem Restoration*
Ethiotrees (second issuance)	*5,856*	*104000000014099*	*Ecosystem Restoration*
Ethiotrees (this issuance)	*9,769**	*104000000014099*	*Ecosystem Restoration*
TOTAL	**20,498***	*104000000014099*	*Ecosystem Restoration*

* Buffer credit and issuance values have been revised based on updated calculations in previous issuances (see Section C5).

C4: Data to support issuance request

- We provide the monitoring data for areas of land and participants which support our issuance request in Annex 1.

C5: Updating Issuance Calculations

- Amendments have been made to the level of buffer and issuance credits due to a systematic error in the calculations of leakage, buffer, and issuance requests in the reporting years 2016 and 2017. Tables 5 & 6 illustrate the process by which the amendments were calculated. For more information, please contact Plan Vivo.

Table 5: Correction in issuance credits for 2016 & 2017 reporting years

Reporting year	Gross sequestration	Issuance request	Adjusted issuance request	Difference in credits issued
2016	5537	4873	4884	+11
2017	6655	5856	5870	+14
TOTAL	12192	10729	10754	+25

Table 6: Correction in buffer credits for 2016 & 2017 reporting years

Reporting year	Gross sequestration	Buffer credits issued	Adjusted buffer credits	Difference in credits issued
2016	5537	664	543	-121
2017	6655	799	652	-147
TOTAL	12192	1463	1195	-268

Part D: Sales of Plan Vivo Certificates

D1: Sales of Plan Vivo Certificates

- To date, 10,000 Plan Vivo Certificates have been sold.

Table: Sales of Plan Vivo Certificates

Buyer	Year of transaction	Credits bought (tCO2-e)	Value per tonne (USD*)
Carbon Sink (IT)	2018	5000	
Zero Mission (SE)	2018	5000	

*USD values based on EUR to USD conversion rates on 28/02/2019 (source: www.xe.com)

Part E: Monitoring results

E1: Ecosystem services monitoring

- We provide annual monitoring results that support the request for new issuances in Annex 1.
- We also provide annual monitoring results for all participants/areas where Plan Vivo Certificates have been issued before in Annex 1.
- All monitoring targets were achieved.
- No corrective actions needed to be agreed with participants during this reporting period.

E2: Maintaining commitments

- As no participants have resigned or been removed from the project, or had Plan Vivo Certificates allocated against their activities, we do not provide a table with their details in Annex 3.

E3: Socioeconomic monitoring

- We provide the results of monitoring of socioeconomic impacts (survey) every 5 years after baselining (impact indicators). Nevertheless, on a yearly basis, the project monitors its activities (yearly activity-based indicators).

  These activities include in this reporting period the organization of 9 training sessions at the different sites.

The restoration project has also clear benefits for the wider communities living around the project exclosures (estimation is 1650 households). The most important factors include reduction of erosion and gullying, conservation of soil nutrients and groundwater. For instance, forest restoration will locally benefit water availability for the upslope communities. Overall, we expect a net gain in (ground)water availability, also for the upslope communities. For instance, in the village of Adi Lehtsi, the walking distance to drinking water during the driest months of the year (i.e. downslope to the Geba river) is at least 4 hours. The establishment of a large drinking water pond is starting to benefit this upslope community as of 2019. In May Genet, the potential of combined irrigation and conservation agriculture in the valley downslope of the exclosure was still under discussion. Most probably, the required investments for these activities will be made in 2019, through project support.

Guarding of lower quality was observed in the sites Afedena and Meam Atali over the course of 2018. Corrective actions were taken, including 2 community discussions, 2 (warning) letters of information, and extra incentives for the guards.

E4: Environmental and biodiversity monitoring

- The South Initiative of Mekelle and Ghent University is expanding the existing monitoring program that is successfully applied to the 9 exclosures towards >2000 hectares (19 exclosures), in order to achieve (statistically) meaningful monitoring data distributed across the Tembien Highlands. The used monitoring activities are already tested within the 9 exclosures, but a dataset of 19 exclosures will allow comparisons and seek relations between different environmental-explaining factors.

- Besides biomass and soil carbon estimations, the South Initiative also includes monitoring of hydrology. Samples for hydraulic conductivity were taken from different exclosed and adjacent non-exclosed area.

- Based on correlations between soil carbon, above-ground biomass and explaining factors (topography, geomorphology, human activity), the Initiative will create a map of carbon storage potential in the Tembien Highlands. Based on the datasets and the participatory "plan vivo" maps, different scenarios of long-term carbon sequestration will be developed by the end of 2019.

- The Initiative is further examining hydrodistillation activities. The Initiative experimented with different distillation set-ups at the Chemistry Department of Mekelle University to enhance the quantity (yield) and quality (chromatography) of the incense oil. Chromatography was performed on the samples to identify the abundances of the different (organic-) chemical components of the oil. Results of the analysis will be used to expand the distillation innovation center and organise different trainings on aromatic oil distillation.

- The research results will be finalized by 5 MSc candidates from Mekelle University and two MSc candidates from Ghent University (separate funding). A research assistant is permanently assisting with monitoring activities in the field, and will join the EthioTrees project in 2020. The Initiative will also provide two training sessions on environmental economics and GIS at Mekelle University. Dissemination of the results and developments is planned in joint meetings / training days between EthioTrees, Mekelle University researchers and local communities.

- No other changes to the monitoring plans or protocols of the project need to be reported in the updates section of this report.

Part F: Impacts

F1: Evidence of outcomes

- We report research outcomes, patterns or trends from ongoing monitoring or other information which supports the impacts – socio-economic, environmental or cultural – which the project has had every 5 years after baselining. In annex 3, we provide a short description of activities with photographs. Up to date, no scientific publications resulting from the project are available yet.

Part G: Payments for Ecosystem Services

G1: Summary of PES by year

- To date, 31,795 USD* in PES payments were made, in accordance with the PES agreements. There is no participants' failure to achieve monitoring targets. The budget was allocated in line with the PES allocation key:
    - Adi Lehtsi: 8,321 USD = 236 776 ETB (budget of VP Feb 2016 – Feb 2017)
    - Gidmi Gestet: 2,759 USD = 78 513 ETB (budget of VP Feb 2016 – Feb 2017)
    - Meam Atali: 3,360 USD = 95 587 ETB (budget of VP Feb 2016 – Feb 2017)
    - Adi Lehtsi: 7,361 USD = 209 444 ETB (budget of VP Feb 2017 – Feb 2018)
    - Gidmi Gestet: 1,798 USD = 51 180 ETB (budget of VP Feb 2017 – Feb 2018)
    - Meam Atali: 2,399 USD = 68 255 ETB (budget of VP Feb 2017 – Feb 2018)
    - May Genet: 1,812 USD = 51,557 ETB (budget of VP Feb 2017 – Feb 2018)
    - May Hibo: 1,801 USD = 51,233 ETB (budget of VP Feb 2017 – Feb 2018)
    - Afedena: 2,183 USD = 62,115 ETB (budget of VP Feb 2017 – Feb 2018)

*USD values were based on EUR to USD conversion rates on 28/02/2019 (source: www.xe.com)

- There are no funds being held by the project coordinator at reporting period end and there are no withheld payments at reporting period end.

- All payments are made in line with the terms of PES agreements signed.

Part H: Ongoing participation

H1: Recruitment

- Recruitment of the associations / focus groups in the three added exclosures was completed at the earliest phase of the vintage period, i.e. by February 2018. Collection of baseline data was finished at these 3 exclosures by February 2018 (see Annex 2). Besides, EthioTrees recruited 10 new exclosures in July 2018. All sites comply with the eligibility criteria set out in the PDD. The baseline data of the 10 new exclosures will be added in the next annual report.

H2: Project Potential

- No participant or area under management is on the project's 'waiting list' i.e. where a PES agreement is not yet signed but a *plan vivo* is in use.

H3: Community participation

- We briefly report on the community meetings held throughout the reporting period and attach the pictures of these to annex 2 and 3.

Part I: Project operating costs

I1: Allocation of costs

- We completed the table below summarizing project costs during the reporting period and the sources of income used to meet these costs. The costs (excluding Plan Vivo investments) were fully covered using private donations and limited subsidies.

Table 7: Allocation of costs

Expense	Narrative	Amount (USD$)	Contribution from sale of PVCs	Contribution from other sources
Investments	Costs for soil and water investments, planting	8,500	0%	100%
Functioning	Materials, paper, equipment, transport costs	4,200	30%	70%
Personnel	Wages for project coordinator and distillation expert	5,600	30%	70%
Plan Vivo investments	See the socioecological investments described in section A1	31,233	100%	0%

Annexes

Annex 1. Monitoring results that supports the issuance request

Carbon estimation of the issuance period (see PDD)

Total Carbon Benefits = "Total Carbon" x "Area" x "Molar Conversion Factor" (see PDD)

TCB (Adi Lehtsi) = 3.0 x 412 ha x 3.67 = 4,536 tCO_2 per year

TCB (Gidmi Gestet) = 1.6 x 46 ha x 3.67 = 270 tCO_2 per year

TCB (Meam Atali) = 2.4 x 83 ha x 3.67 = 731 tCO_2 per year

TCB (May Getnet) = 1.5 x 51 ha x 3.67 = 281 tCO_2 per year

TCB (May Hibo) = 1.4 x 53 ha x 3.67 = 272 tCO_2 per year

TCB (Afedena) = 1.9 x 81 ha x 3.67 = 565 tCO_2 per year

TCB (Adilal) = 2.2 x 83.1 ha x 3.67 = 671 tCO_2 per year

TCB (Gemgema) = 1.3 x 64.7 ha x 3.67 = 309 tCO_2 per year

TCB (Zban Dake) = 3.1 x 300.0 ha x 3.67 = 3413 tCO_2 per year

Total Carbon Benefits of the Project = 11,048 tCO_2 / year (excluding 10% risk buffer & leakage)

Ecosystem Services Monitoring (note: red circle indicates which target value was met)

Activity	**Activity Indicator (measure annually)**	**Annual Targets**			**Results**
		Full Target Achievement	**Partial Target Achievement**	**Missed Target**	
Restoration activities	Area of each exclosure undergoing active restoration activities	>10%	=10%	<10%	Meam Atali >10% Gidmi Gestet >10% Adi Lehtsi >10% May Getnet >10% May Hibo >10% Afedena > 10% Zban Dake >10% Adilal >10% Gemgema >10% → *Guarding and*

					restoration activities were covering all areas
Tree Planting	Number of seedlings	4000 seedlings	3000-4000	<4000 seedlings	*→ 13516 seedlings were planted in total, across all exclosures*
	Survival Rate	>30%	25-30	<30%	*→ Preliminary survival rate is 40.1% across all exclosures. Please note that a recounting will take place in summer 2019.*

Socioeconomic Monitoring

Activity	**Activity Indicator (measure annually)**	**Annual Targets**			**Results**
		Full Target Achievement	**Partial Target Achievement**	**Missed Target**	
Capacity-Building	Number of organized trainings for landless farmers (M/V) per year per exclosure	1		0	*Meam Atali = 1* *Gidmi Gestet = 1* *Adi Lehtsi = 1* *May Getnet = 1* *May Hibo = 1* *Afedena = 1* *Zban Dake = 1* *Adilal = 1* *Gemgema = 1*
	Participants from more vulnerable groups (women, youth, elderly people)	>25%		<25%	*Meam Atali ≈ 35%* *Gidmi Gestet ≈ 30%* *Adi Lehtsi ≈ 40%* *May Getnet ≈ 55%* *May Hibo ≈ 60%* *Afedena ≈ 50%* *Zban Dake ≈ 40%* *Adilal ≈ 40%*

					Gemgema ≈ 35%
Availability of grass fodder	Beneficiaries of grass fodder per exclosure	>3	<3	<1	*In all exclosures: cut-and-carry system implemented*
Countering displaced grazing	Number of observations of displaced grazing mentioned during the yearly meeting of association, other NTFP users and the village council	<2	2	>2	*Meam Atali = 2* *Gidmi Gestet = 0* *Adi Lehtsi = 1* *May Getnet = 0* *May Hibo = 0* *Afedena = 2* *Zban Dake = 0* *Adilal = 0* *Gemgema = 0* *→ Guarding of less quality was observed in Afedena and Meam Atali in 2018. Corrective actions were taken (including community discussions, letters of information & extra incentives for the guards).*
Countering timber harvesting on public lands	Number of observations of timber harvesting on public lands mentioned during the yearly meeting of association, other NTFP users and the village council	<2	2	>2	*Meam Atali = 1* *Gidmi Gestet = 0* *Adi Lehtsi = 0* *May Getnet = 0* *May Hibo = 0* *Afedena = 0* *Zban Dake = 0* *Adilal = 0* *Gemgema = 0*

Environmental Monitoring

Activity	Activity Indicator (measure annually)	Annual Targets			Result and mitigating actions
		Full Target Achievement	**Partial Target Achievement**	**Missed Target**	
Water Management	Number of Percolation Ponds per exclosure	2	<2	<1	*Meam Atali = 4* *Gidmi Gestet = 4* *Adi Lehtsi = 2* *May Getnet = 2* *May Hibo = 2* *Afedena = 2* *Zban Dake = 2* *Adilal = 2* *Gemgema = 2*

Annex 2. Baseline data

Here we add the baseline data and credit estimation for the three new sites: Zban Dake, Adilal and Gemgema (Adi Meles). We follow the same methodology and table formats as described in the approved PDD.

Soil and biomass data

Table G6: Summarized results of the vegetation survey

Area	Compartment	Average circumference (cm)	Average diameter (cm)	St. dev. Diam. (cm)	Average crown diam. (cm)	Av. Height (m)	Average numer of trees per plot	Carbon content per compartment (ton C / ha)	Carbon content all comp (ton C /ha)	SOC (ton C / ha)
Adilal	A (20x20 m)	13.08	2.28	2.12	2.13	2.28	169.6	16.0	18.1	41.1
	B (10x10 m)									
	C (5x5 m)	5.03	1.60	0.68	0.75	1.31	8.7	2.1		
Gem-gema	A (20x20 m)	13.29	4.23	2.06	1.86	2.12	65.1	5.8	9.1	67.8
	B (10x10 m)									
	C (5x5 m)	4.18	1.33	0.58	0.71	1.04	20.8	3.3		
Zban Dake	A (20x20 m)	40.8	13.0	8.34		4.02	18.1	14.0	14.1	
	B (10x10 m)									
	C (5x5 m)	5.83	1.86	0.08		0.68	0.38	0.07		

Carbon benefit calculation

TCB = (TCclimax – TICS) / 20

This yields:

TCB (Adilal) = (TCclimax – TICS) / 20 = (102.5 – 59.2) / 20 = 2.2 tC/ha/yr TCB

(Gemgema) = (TCclimax – TICS) / 20 = (102.5 – 76.9) / 20 = 1.3 tC/ha TCB

(Zban Dake) = (TCclimax – TICS) / 20 = (102.5 – 39.96) / 20 = 3.1 tC/ha.

Summary

By taking into account the area of each exclosure (Adilal = 83.1 ha; Gemgema = 64.7 ha; Zban Dake = 300 ha) and the project period (20 years), as well as the molar conversion factor of 3.67 (Mekuria et al., 2011), we calculated the total benefits for all project areas combined.

TCB (Adilal) = 2.2 x 83.1 ha x 3.67 = 671 tCO_2 per year

TCB (Gemgema) = 1.3 x 64.7 x 3.67 = 309 tCO_2 per year

TCB (Zban Dake) = 3.1 x 300 x 3.67 = 3413 tCO_2 per year

Total Carbon Benefits of the added sites = 4,393 tCO_2 per year

Plan Vivo maps

Map of Gemgema (Adi Meles):

Figure 1: Base map of Gemgema

Figure 2: Future map of Gemgema

Maps of Zban Dake:

Figure 3: Base map of Zban Dake

Figure 4: Future map of Zban Dak

Figure 5: Base map of Adilal

Figure 6: Future map of Adilal

Annex 3. Community meeting records (summary)

Meetings at Zban Dake, Adilal and Gemgema

We refer to the annex 2 of these three sites, where pictures of the meetings are presented.

Training sessions

See summary below

Code+A2:E21	Number	2018-01	2018-02	2018-03	2018-04	2018-05	2018-06	2018-07	2018-08
Code of activity	Code corresponding with plan	Act 1.1	Act 1.2	Act 1.2	Act 1.2	Act 1.2	Act 1.2	Act 1.4	Act 1.1
When	Date	12-14/05/2018	3/06/2018	14/06/2018	28/10/2018	4/11/2018	17/11/2018	21/11/2018	
What	Main theme of training	beekeeping management	environmental disscussion with community	meeting with guards	meeting and Mgt	meeting and discussion	yearly conference	exposure visit and experience sharing	nursery management
	Second theme of training	enhancing productivity	protection of exclosure	keeping exclosure management	proposed work and approved	proposed new work and approved the site	awareness on how to keep the exclosure well	beekeeping	pot filling
	Third theme of training	control mechanism of honey quality	site section and approval	implementing rule and law of the exclosure			approved budget carbon credit	irrigation activities	arranging plastic pot
Who	Name of trainer	Team Tsige and Ashenafi Taye	Seifu and Gebrekidan	DA and Seifu	Seifu	Seifu	Seifu		
For whom	Name of local group/association	Meam Atal - beekeepers	Togogua community	all site guards	Afedena community	Meam Atal community	EthioTrees association	stakeholder participants	
	Name of local promotor	EthioTrees (Seifu)	EthioTrees and VEST	EthioTrees and tabia	EthioTrees	EthioTrees	EthioTrees	EthioTrees	
	# total participants	21	100	30	145	120	12	24	10
	# women participants	6	35	0	25	30	0	0	3
	# male participants	15	65	30	120	90	12	24	7
	# of participants < 30 years	19	0	0	50	30	12	13	10
	# of participants > 60 years	2	100	30	95	90	0	11	
	# of landless participants	19	20	0	50	30	7	12	10
Where	Venue	Togogo FTC	Togogua church	Togogua FTC	Afedena church	Meam Atal church	Hagere Selam EthioTrees office	Enderta woreda	on-spot nursery site
How	Average appreciation score	Very good	very good	very good	very good	very good	excellent	very good	
	Strong points	Clear information and good trainer	free discussion and interest of the community	warm participation	great participation	hot participation	free participation	getting good experience	
	Weak points	Few participants are coming on time, practical training is not included here	some people did not change their mind (not accepting to avoid sending their cattles)	Still having problems on monthly payment	few farmers did not avoid free grazing	Confusion on how to excavate the pond	no	no	we did not evaluate
	Observations from the trainer	Dynamic group with lots of interest in learning about beeking practices. Needs follow up for keeping the exclosure well	most of the people are interested on exclosure results	discomfort on per diem and less attention on meeting	less awareness on benefits of the exclosure and less participation of women	less focus on free grazing	dynamic group discussion and sharing experience	asking and sharing the experience to each other	should be followed-up on daily activities