Biannual Report

EthioTrees Project

August 2022 – July 2023

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Submitted by: EthioTrees

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Summary

Project overview	
Reporting period	1st August 2022 – 31st July 2023
Geographical areas	Tigray Region, Ethiopia
Technical specifications in use	See approved PDD EthioTrees: Ecosystem Restoration and Agroforestry

Note: Exceptionally, EthioTrees submits this biannual report, in order to request issuance for the 44 new sites that were added in August 2022. As of 2023-2024, these new sites will be incorporated in the standard annual report, running from February till January.

Table 1: Summary table

Project indicators	Historical	Added/ Issued this period (Aug 2022 – July 2023)	Total
No. smallholder households with PES agreements	0	144	144
No. community groups with PES agreements (where applicable) by July 2023	21	32	53
Approximate number of households (or individuals) in these community groups	4,402	16,403	20,805
Area under management (ha) where PES agreements are in place	4,151	7025	11,176
Total PES payments made to participants (USD)	195,308 USD*	140,332 USD** (= from issuance Feb. 2022)	335,640 USD
Total sum held in trust for future PES payments (USD)	0	0	0
Allocation to Plan Vivo buffer (tCO_2)	11,364	7,246	18,610
Saleable emissions reductions achieved (tCO_2)	102,273	65,217	167,490

Unsold Stock at time of Submission (PVC)	
Vintage Feb 2022 – Jan 2023	To be reported in the Feb2024 report

Plan Vivo Certificates (PVCs) issued to date	**102,273**
Plan Vivo Certificates requested for issuance (Aug. 2022 – July 2023 Vintage)	**65,217**
Plan Vivo Certificates available for future issuance	**0**
Total PVCs issued (including this report)	**167,490**

* see previous annual report.
** based on ETB to USD conversion rates on 11/11/2022 (source: www.xe.com).

Part A: Project updates

A1: Key events

- During spring 2023, the project has successfully undergone a verification audit by Mutu International. The VVB concluded that the project is fully complying with the Standard.
- The project continued its operations in the four "neighboring" districts: Kolla Tembien, Keyh Tekli, Enderta and Tankamlash.
- The agroforestry technical specification was approved and the first certified agroforestry plantings were accomplished during the rainy season in July 2023.
- The project established two tree nurseries and nurtured 12,060 native tree seedlings.
- In March 2023, the Tigray region's interim administration was formally appointed. This appointment was a key political step following the ongoing implementation of the Pretoria peace agreement.
- UN (World Food Program) and USAID food aid was suspended to the entire Ethiopian territory in early June. As a consequence, millions of people in need of vital assistance have been deprived of food aid. Such food aid suspension is neither humane nor moral.

A2: Successes and challenges

- The project launched a workshop at regional level to create general awareness on the importance of environmental management of the exclosures across Tigray. Pushed by increasing food insecurity, many non-project exclosures in Tigray are under pressure of grazing and timber harvesting. The workshop was organized to foster awareness on the importance of the ecosystem services provided by exclosures in Tigray.
- More group discussions with community members were organised in each new site to follow-up on the project progress.
- The project continued its impact in the Kola area at the request of the communities.
- There is a continued shortage of basic livelihood needs in the region and particularly food in rural areas.
- Slow transportation services, particularly to rural areas.

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:

- The Agroforestry Technical Specification for the EthioTrees Project has been approved. Agroforestry is a key land management strategy that has significant potential for increasing tree cover while improving rural livelihoods directly. Through agroforestry practices, the project will further strengthen its landscape impact, by working on ecosystem restoration on the slopes and with smallholder farmers on agroforestry in the valleys.
- We celebrated the first anniversary of the Kola office in Abiy Adi. The team in Abiy Adi consists of 1 coordinator with many years of experience in the Natural Resource Management department of the woreda, and 4 field experts.
- In the Mekelle office, a fulltime accountant joined the EthioTrees Staff. The project was successfully verified by Mutu certification in spring 2023

A4 Future Developments

- Further activities next year will focus on the existing exclosures, including trainings, seedling planting and seedling irrigation, and the installation of soil and water conservation structures such as percolation ponds, trenches and soil bunds. We aim to invest the plan vivo funds in cash-for-food and “village recovery projects”, at the initiative of the citizens.
- In 2023, the project objective is to further scale its impact to contribute to the post-conflict reconstruction in the region.

A5: Field stories

Project stories from the EthioTrees News letter of June 2023

School building

—

EthioTrees continued to build four new schools in Dogua Tembien over the course of 2022. The construction was funded using the sale of Plan Vivo Certificates (PVCs). Four community councils decided to build primary schools in Afedena, May Genet, Amanit, and May Baati. As of April 2023, the new schools are open and welcome more than 200 new students.

Picture: the community council of Afedena used the Plan Vivo fund to replace the old classrooms (lower) by a new school building (upper).

Frankincense regeneration

—

Thanks to the generosity of their trunks, providing high-value incense, frankincense trees (*Boswellia papyrifera*) may be the most wonderful trees on Earth. Adding to their mystique is the fact that it remains impossible to plant their seedlings. Over the past years, EthioTrees and the community of Amanit worked on a strategy of intensive natural regeneration. Finally, the hard work pays off. During a field survey with the teams of EthioTrees Ethiopia and Belgium in May 2023, an incredible density of new *Boswellia* babies was observed!

Food aid

—

In response to the famine last year, EthioTrees used carbon finance to provide support to vulnerable communities. From sustainably managing their land during the crisis, the communities earned approximately 200,000 USD from the sale of Plan Vivo Certificates. This money was distributed as cash-for-food and allowed farmers to buy food in the city, which they then took back to their villages, a half day's walk away. Within their villages, the 18 communities then collectively allocated food and funds towards 29,135 people who needed support most.

Water reservoirs

—

As elsewhere in the world, men and women in Tigray often have different priorities for the future of their village. When designing "plan vivo maps" with women-only groups, it became clear that women generally wanted to invest most in drinking water infrastructure. This is no big surprise, since fetching water is a burden falling hardest on women. In Adi Lehsti, Meam Atali, and Gidmi Gestet, fetching water during the dry season required a walk of 4 hours per day. The opening of 3 new water reservoirs, paid for using PVCs, has reduced that time consumption sixfold.

Soil and water conservation

—

In total 6566 m stone bunds and 100 percolation ponds have been constructed in 2022. These walls are not meant to lock people out, but to keep fertile soil inside the forest. The captured soft sediment provides water and nutrients to the young plants. It stimulates the growth of seedlings and natural regeneration. Our little plants had a survival rate of over 90% last year, an internal record, and a milestone to be proud of!

102,273

tCO2e sequestered
Since the project started, EthioTrees has issued more than one hundred thousand carbon credits, supporting 18 communities at the forefront of the climate crisis.

29,135

people supported
Last years' PVCs were mainly distributed to the most vulnerable households in the project areas as cash-for-food, in such providing community resilience in times of famine.

6566

meter of soil bunds and 100 percolation ponds have been constructed in 2022. Such soil and water activities conserve the fertile soils and feed the groundwater table, enabling ecosystem restoration.

'My fields are just downslope of the EthioTrees forest in Meam Atali. Before, the springs in the valley supplied groundwater only during the first months of the dry season. Since two years, the groundwater is recharging. Now, I can irrigate all year round.'

Nugus Gebremariam, farmer in Meam Atali

EthioTrees News, June 2023: https://mailchi.mp/40aaa352ad58/climate-lab-news-june-2023

Part B: Project activities

B1: Project activities generating Plan Vivo Certificates

- We list the technical specifications being used in the project, the area covered and participants 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 Tigray	7010 ha	16,403	32
Agroforestry	15 ha	144	-

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

- The EthioTrees team joined the Tigray stakeholder meeting organized by FAO, OCHA and others at the Bureau of Agriculture addressing the current socioenvironmental situation of Tigray and how to rehabilitate and support people and environments in need.
- The team participated in a post-war socio-environmental impact assessment in 10 villages from different tabias, jointly with Mekelle and Ghent University.
- The Hagere Selam Health Centre is in shortage of medication and materials to take care of their patients. The project provided direct support in the form of medication.

Part C: 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 1st August 2022 – 31st July 2023 for all sites.

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
Adienkrti (AdEn)	*447*	*Ecosystem restoration*	0	4162	4078	10	408	3671	3671	-
Adikilte (AdKl)	*171*	*Ecosystem restoration*	*0*	1592	1560	10	156	1404	1404	-
Akeb hidmo (AkHd)	*42*	*Ecosystem restoration*	*0*	393	385	10	39	347	347	-
Ba'ati Haile (BtHl)	*167*	*Ecosystem restoration*	0	1558	1527	10	153	1374	1374	-
Barajira (Brjr)	*150*	*Ecosystem restoration*	0	1397	1369	10	137	1232	1232	-
Chemate	*92*	*Ecosystem restoration*	0	859	842	10	84	758	758	-
Chike	*452*	*Ecosystem restoration*	0	4206	4122	10	412	3710	3710	-

Daengule	*132*	*Ecosystem restoration*	0	1229	1204	10	120	1084	1084	-
Daerotimqet	*97*	*Ecosystem restoration*	0	900	882	10	88	794	794	-
Da'kakwey	*66*	*Ecosystem restoration*	0	614	602	10	60	542	542	-
Dakuakuat	*130*	*Ecosystem restoration*	*0*	1210	1186	10	119	1067	1067	-
Dastenay	*91*	*Ecosystem restoration*	*0*	849	832	10	83	749	749	-
Da'tsehagat	*198*	*Ecosystem restoration*	0	1843	1807	10	181	1626	1626	-
Deguagush	*159*	*Ecosystem restoration*	0	1480	1451	10	145	1306	1306	-
Emba	*53.7*	*Ecosystem restoration*	0	500	490	10	49	441	441	-
Emba newi	*142*	*Ecosystem restoration*	0	1322	1296	10	130	1166	1166	-
Emure	*314*	*Ecosystem restoration*	0	2922	2864	10	286	2577	2577	-
Endahibey	*142*	*Ecosystem restoration*	0	1322	1296	10	130	1166	1166	-
Endalibanos	*70*	*Ecosystem restoration*	0	655	642	10	64	578	578	-
Endanebrey	*57*	*Ecosystem restoration*	0	526	515	10	52	464	464	-
Fereqdre	*99*	*Ecosystem restoration*	0	924	905	10	91	815	815	-
Gedmi tsitsewhiey	*51*	*Ecosystem restoration*	0	473	463	10	46	417	417	-
Gogon-Kojejar	*134*	*Ecosystem restoration*	0	1248	1223	10	122	1100	1100	-
Gra emba araya	*100*	*Ecosystem restoration*	0	931	912	10	91	821	821	-

Hzaeti B'eray (HzBr)	*302*	*Ecosystem restoration*	0	2812	2755	10	276	2480	2480	-
Jira	*123*	*Ecosystem restoration*	0	1145	1122	10	112	1010	1010	-
Kbret	*175*	*Ecosystem restoration*	0	1629	1597	10	160	1437	1437	-
Maekeldur	*141*	*Ecosystem restoration*	0	1313	1286	10	129	1158	1158	-
May agualat-Enderta	*219*	*Ecosystem restoration*	0	2039	1998	10	200	1798	1798	-
Mhdar Abuer	*121*	*Ecosystem restoration*	0	1121	1099	10	110	989	989	-
Mierafchege	*337*	*Ecosystem restoration*	0	3137	3075	10	307	2767	2767	-
Miska	*90*	*Ecosystem restoration*	0	842	825	10	82	742	742	-
Quaya	*260*	*Ecosystem restoration*	0	2421	2372	10	237	2135	2135	-
Sequrti	*355*	*Ecosystem restoration*	0	3305	3239	10	324	2915	2915	-
Shegalu	121	*Ecosystem restoration*	0	1127	1104	10	110	994	994	-
shegere	*53*	*Ecosystem restoration*	0	491	481	10	48	433	433	-
Sito	*196*	*Ecosystem restoration*	0	1825	1788	10	179	1609	1609	-
Wetlaqo	*65*	*Ecosystem restoration*	0	600	588	10	59	530	530	-
Wukro and gdmi awuhi	*168*	*Ecosystem restoration*	0	1565	1534	10	153	1380	1380	-
Zaka	*256*	*Ecosystem restoration*	0	2383	2336	10	234	2102	2102	-
Kurara	*46*	*Ecosystem restoration*	0	430	422	10	42	379	379	-

werasige	*267*	*Ecosystem restoration*	0	2486	2436	10	244	2192	2192	-
Busha	*79*	*Ecosystem restoration*	0	734	719	10	72	647	647	-
Tsiwtsiwa	*85*	*Ecosystem restoration*	0	745	730	10	73	657	657	-
TOTAL	7010	*Ecosystem restoration*	*0*	*65264*	*63959*	*10*	*6396*	*57563*	*57563*	-

C3: Issuance request for agroforestry planting

The table below provides a summary of agroforestry plantings per technical specification. Detailed monitoring results are listed in annex 3.

Table 4: Statement of tCO2 reductions available for issuance as Plan Vivo Certificates based on activity for reporting period 1st August 2022 – 31st July 2023 for agroforestry plantings

Technical specification	Total Area planted (area equivalent): 50% of the trees planted	Planting target (area equi-valent)	Total Area (area equi-valent): 100%	Carbon benefit per hectare (tCO2e/ha)	% Buffer	No. of PVCs allocated to buffer from ER's achieved this period	Saleable ER's (tCO2) from this period	Issuance request (PVCs
Low-density homegarden	0.24	0.48	0.48	511	10	25	221	221
High-density homegarden	3.55	7.11	7.11	895	10	636	5728	5728
Boundary planting	3.67	7.34	7.34	258	10	189	1705	1705
Total	7.46	14.92	14.92	1664	10	850	7654	7654

C4: Allocation of issuance request

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

Table 5: 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 (third issuance)	*9,769*	*104000000014099*	*Ecosystem Restoration*
Ethiotrees (fourth issuance)	*5,572*	*104000000014099*	*Ecosystem Restoration*
Ethiotrees (fifth issuance)	*12,530*	*104000000014099*	*Ecosystem Restoration*
EthioTrees (sixth issuance)	*14,819*	*104000000014099*	*Ecosystem Restoration*
EthioTrees (seventh issuance)	*20,259*	*104000000014099*	*Ecosystem Restoration*
EthioTrees (eighth issuance)	*28,595*	*104000000014099*	*Ecosystem Restoration*
EthioTrees (This issuance)	*57,563*	*104000000014099*	*Ecosystem Restoration*
EthioTrees (This issuance)	*7,654*	*104000000014099*	*Agroforestry*
TOTAL	**167,490**	*104000000014099*	

C5: Data to support issuance request

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

Part D: Sales of Plan Vivo Certificates

D1: Sales of Plan Vivo Certificates

- By January 2023, 73,678 Plan Vivo Certificates have been sold (not including the Feb2022-Feb2023 issuance, which credits are sold over the course of 2023 and reported in the February 2024 report).

Table 6: Sales of Plan Vivo Certificates to date

Buyer	Year of	Credits bought	Value per tonne (EUR)

	transaction	(tCO2-e)	
Carbon Sink (IT)	2018	5000	Internal reporting only
Zero Mission (SE)	2018	5000	Internal reporting only
Carbon Sink (IT)	2019a**	5000	Internal reporting only
Zero Mission (SE)	2019a**	5450	Internal reporting only
Carbon Sink (IT)	2019b**	5000	Internal reporting only
Victor Buyck (BE)	2019	162	Internal reporting only
Zero Mission (SE)	2020a**	550	Internal reporting only
Zero Mission (SE)	2020b**	5696	Internal reporting only
Carbon Sink (IT)	2020a**	5000	Internal reporting only
Zero Mission (SE)	2020c**	1660	Internal reporting only
Carbon Sink (IT)	2021 (April)***	10,000	Internal reporting only
Carbon Sink (IT)	2021 (Feb)***	941	Internal reporting only
Victor Buyck (BE)	2021	159	Internal reporting only
Zero Mission (SE)	2021	3800	Internal reporting only
Davines (IT)	2022****	9260	Internal reporting only
Climate Partner (DE)	2022	11000	Internal reporting only

*USD values based on EUR to USD conversion rates on 05/09/2019 (source: www.xe.com)
** letters a, b and c refer to the sales of credits in spring, summer and in autumn respectively
***USD values based on EUR to USD conversion rates on 17/03/2022 (source: www.xe.com)
****1 EUR = 1.0275 USD: 11/11/2022 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.
- All monitoring targets were achieved, except for the soil and water conservation activities that started post-conflict (but these are ongoing and expected to be finalised in the coming months).

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 an Annex.

E3: Socioeconomic monitoring

- We provide annual monitoring results that support the request for new issuances in Annex 1.
- These activities include in this reporting period the organization of 32 training sessions at the different community groups and a general workshop at regional level.
- The restoration project has also clear benefits for the wider communities living around the project exclosures. 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. More socioenvironmental investments will be made in 2023 and 2024, through the sales of the Plan Vivo credits.

E4: Environmental and biodiversity monitoring

- The project expanded with 7010 ha in four neighboring districts, including 44 exclosures.
- In total, 763 monitoring plots were established to measure aboveground biomass and below ground carbon.
- This summer (July 2023), 118 smallholder farmers planted 5910 seedlings in the following agroforestry species: Ziziphus was planted in boundary systems, and Moringa and Acacia albida were planted in a high density homegarden system. In addition, one association in Agbe (with 26 members) planted 150 Mango trees in a low-density homegarden system.
- 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.

Part G: Payments for Ecosystem Services

G1: Summary of PES by year

- In 2023, a total of 7 425 000 ETB, 136 620 EURO or 140 332 USD was allocated to food aid.
- The funds were allocated to 29,135 families from the project zones who got direct cash-for-food support.
- 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.
- Note that the February issuance will be reported in the Annual Report of February 2024.

Part H: Ongoing participation

H1: Recruitment

- Recruitment of the associations / focus groups of all exclosures was completed before. All sites comply with the eligibility criteria set out in the PDD.

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.
- In total 32 trainings and group discussions were held in the past year. In total 374 community representatives attended these meetings. The focus of these meetings

was on maintaining project awareness, on continued exclosure protection and management, grass management for cut-and-carry purposes and non-timber forest production by landless farmers. Note that these non-timber forest products have provided vital livelihood resources during the humanitarian blockade.

- On average 28% of the attendees to the trainings and group discussions were women.

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.
- Last year, in total 140 332 USD were used for socioecological investments (A1), this is slightly more than 60% of the revenues from the sale of PVCs from the last vintage.

Table 7: Allocation of costs (for the Aug 2022 – July 2023 reporting period).

Expense	Narrative	Amount (USD$)	Contribution from sale of PVCs	Contribution from other sources (Belgian subsidies)
Investments and Functioning	Costs for soil and water investments, planting, equipment, transport	Internal monitoring only	Internal monitoring only	Internal monitoring only
Personnel	Wages for project coordinators and personnel	Internal monitoring only	Internal monitoring only	Internal monitoring only
Plan Vivo investments	See the socioecological investments described in section A1	Internal monitoring only	Internal monitoring only	Internal monitoring only

Annexes

Annex 1. Monitoring results that supports the issuance request

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%	*Guarding and restoration activities were covering all expansion sites*
Tree Planting	Number of seedlings	>=4000 seedlings	<4000 and >=3000	<3000 seedlings	*6000 seedlings planted*
	Survival Rate	>=30%	<30 and >=25	<25%	*Survival Rate will be (again) assessed after 6 months.* *Preliminary assessment indicates a survival of 97%.*

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	*Trainings are organized for all community groups of the expansion sites*
	Participants from more vulnerable groups	>25%		<25%	*At all sites > 25%*

	(women, youth, elderly people)				
Availability of grass fodder	Beneficiaries of grass fodder per exclosure	>=3	<3 and >=2	0	*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	*Observations of displaced grazing in the expansion sites are below category 2.*
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	*Observations of timber harvesting in the expansion sites are below category 2.*

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 and >=1	0	Soil and water conservation activities started post-conflict, but are ongoing and expected to be finalised in the coming months.

Annex 2. Monitoring results that supports the agroforestry issuance request

Table A2.1: Agroforestry monitoring results – 2023

Year planted	Monitoring year	Parcel ID	Full name*	Seedllings planted in 2023	Technical specification	Area (ha-eq) in 2023	Target met?	Saleable tCO2 (after deducting risk buffer)
2023	0	KT_Bgshka_Wtlko_1.1		18	Boundary planting	0.05	Yes: 50% planted in year 0	21
2023	0	KT_Bgshka_Wtlko_1.2		32	High density homegarden	0.03	Yes: 50% planted in year 0	41
2023	0	KT_Bgshka_Wtlko_2.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Bgshka_Wtlko_3.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Bgshka_Wtlko_4.1		10	Boundary planting	0.03	Yes: 50% planted in year 0	12
2023	0	KT_Bgshka_Wtlko_4.2		40	High density homegarden	0.03	Yes: 50% planted in year 0	52
2023	0	KT_Bgshka_Wtlko_5.1		7	Boundary planting	0.02	Yes: 50% planted in year 0	8
2023	0	KT_Bgshka_Wtlko_5.2		43	High density homegarden	0.03	Yes: 50% planted in year 0	55
2023	0	KT_Bgshka_Wtlko_6.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Bgshka_Wtlko_7.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Bgshka_Wtlko_8.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Bgshka_Wtlko_9.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64

2023	0	KT_Bgshka_Wtlko_10.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Bgshka_Wtlko_11.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Bgshka_Wtlko_12.1		18	Boundary planting	0.05	Yes: 50% planted in year 0	21
2023	0	KT_Bgshka_Wtlko_12.2		32	High density homegarden	0.03	Yes: 50% planted in year 0	41
2023	0	KT_Bgshka_Wtlko_13.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Bgshka_Wtlko_14.1		18	Boundary planting	0.05	Yes: 50% planted in year 0	21
2023	0	KT_Bgshka_Wtlko_14.2		32	High density homegarden	0.03	Yes: 50% planted in year 0	41
2023	0	KT_Bgshka_Wtlko_15.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KT_Bgshka_Wtlko_16.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Bgshka_Wtlko_16.2		18	Boundary planting	0.05	Yes: 50% planted in year 0	21
2023	0	KT_Bgshka_Wtlko_16.2		32	High density homegarden	0.03	Yes: 50% planted in year 0	41
2023	0	KT_Bgshka_Wtlko_17.1		18	Boundary planting	0.05	Yes: 50% planted in year 0	21
2023	0	KT_Bgshka_Wtlko_17.2		32	High density homegarden	0.03	Yes: 50% planted in year 0	41
2023	0	KT_Bgshka_Wtlko_18.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KT_Bgshka_Wtlko_19.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Bgshka_Wtlko_20.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Bgshka_Wtlko_21.1		15	Boundary planting	0.04	Yes: 50% planted in year 0	17
2023	0	KT_Bgshka_Wtlko_21.2		35	High density homegarden	0.03	Yes: 50% planted in year 0	45
2023	0	KT_Mrrre_Mska_1.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64

2023	0	KT_Mrrre_Mska_2.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_3.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_4.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_5.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_6.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_7.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KT_Mrrre_Mska_8.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_9.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KT_Mrrre_Mska_10.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_11.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_12.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_13.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_14.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KT_Mrrre_Mska_15.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_16.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KT_Mrrre_Mska_17.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_18.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KT_Mrrre_Mska_19.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KT_Mrrre_Mska_20.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64

2023	0	KT_Mrrre_Mska_21.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_22.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_23.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_24.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KT_Mrrre_Mska_25.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_26.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KT_Mrrre_Mska_27.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KT_Mrrre_Mska_28.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_29.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_30.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_31.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_32.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_33.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KT_Mrrre_Mska_34.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Drtklti_Kyzba_1.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Drtklti_Kyzba_2.1		33	Boundary planting	0.08	Yes: 50% planted in year 0	38
2023	0	KhTi_Drtklti_Kyzba_2.2		17	High density homegarden	0.01	Yes: 50% planted in year 0	22
2023	0	KhTi_Drtklti_Kyzba_3.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64

2023	0	KhTi_Drtklti_Kyzba_4.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Drtklti_Kyzba_5.1		27	Boundary planting	0.07	Yes: 50% planted in year 0	31
2023	0	KhTi_Drtklti_Kyzba_5.2		23	High density homegarden	0.02	Yes: 50% planted in year 0	30
2023	0	KhTi_Drtklti_Kyzba_6.1		15	Boundary planting	0.04	Yes: 50% planted in year 0	17
2023	0	KhTi_Drtklti_Kyzba_6.2		35	High density homegarden	0.03	Yes: 50% planted in year 0	45
2023	0	KhTi_Drtklti_Kyzba_7.1		15	Boundary planting	0.04	Yes: 50% planted in year 0	17
2023	0	KhTi_Drtklti_Kyzba_7.2		35	High density homegarden	0.03	Yes: 50% planted in year 0	45
2023	0	KhTi_Drtklti_Kyzba_8.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Drtklti_Kyzba_9.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Drtklti_Kyzba_10.1		15	Boundary planting	0.04	Yes: 50% planted in year 0	17
2023	0	KhTi_Drtklti_Kyzba_10.2		35	High density homegarden	0.03	Yes: 50% planted in year 0	45
2023	0	KhTi_Drtklti_Kyzba_11.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KhTi_Drtklti_Kyzba_12.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Drtklti_Kyzba_13.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Drtklti_Kyzba_14.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Drtklti_Kyzba_15.1		15	Boundary planting	0.04	Yes: 50% planted in year 0	17
2023	0	KhTi_Drtklti_Kyzba_15.2		35	High density homegarden	0.03	Yes: 50% planted in year 0	45
2023	0	KhTi_Drtklti_Kyzba_16.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Drtklti_Kyzba_17.1		25	Boundary planting	0.06	Yes: 50% planted in year 0	29

2023	0	KhTi_Drtklti_Kyzba_17.2		25	High density homegarden	0.02	Yes: 50% planted in year 0	32
2023	0	KhTi_Drtklti_Kyzba_18.1		60	High density homegarden	0.05	Yes: 50% planted in year 0	77
2023	0	KhTi_Wrkmba_Endjwrgs_1.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_2.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_3.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KhTi_Wrkmba_Endjwrgs_4.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KhTi_Wrkmba_Endjwrgs_5.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KhTi_Wrkmba_Endjwrgs_6.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KhTi_Wrkmba_Endjwrgs_7.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KhTi_Wrkmba_Endjwrgs_8.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_9.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_10.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_11.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_12.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_13.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KhTi_Wrkmba_Endjwrgs_14.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KhTi_Wrkmba_Endjwrgs_15.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64

2023	0	KhTi_Wrkmba_Endjwrgs_16.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_17.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KhTi_Wrkmba_Endjwrgs_18.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_19.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_20.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_21.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_22.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_23.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KhTi_Wrkmba_Endjwrgs_24.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KhTi_Wrkmba_Endjwrgs_25.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KhTi_Wrkmba_Endjwrgs_26.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_27.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_28.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_29.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_30.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_31.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_32.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64

2023	0	KhTi_Wrkmba_Endjwrgs_33.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_34.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_35.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_36.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_37.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_38.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_39.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_40.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_41.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_42.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	KhTi_Wrkmba_Endjwrgs_43.1		50	Boundary planting	0.13	Yes: 50% planted in year 0	58
2023	0	KhTi_Wrkmba_Endjwrgs_44.1		50	High density homegarden	0.04	Yes: 50% planted in year 0	64
2023	0	Tnqa_Mlsh_Agbe_1.1		150	Low density homegarden	0.24	Yes: 50% planted in year 0	221

*Removed from public-facing document for GDPR purposes

Annex 3. Photo report

Figure A3.1 Stakeholder meeting

Figure A3.2 Example of Plan Vivo maps

Figure A3.3 Example of community meetings

Figure A3.4 Example photographs preparation, transportation and planting seedlings

Annex 4. Baseline of Expansion sites

All baseline data collections of the sample plots from the expansion sites are inventoried in an Excel spreadsheet, provided in addendum to the biannual report. All sample plots will be resampled after 5 years, to verify the final sequestration rates achieved.

Annex 5. Future carbon benefit calculations

Aligning EthioTrees promptly with Plan Vivo Module PU001, we estimate the sequestration rates of the 44 expansion sites as follows:

- Biomass carbon sequestration is quantified using AR-TOOL14: Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities, Version 4.2. Section §6.2 prescribes the direct estimation of change by re-measurement of sample plots. It is therefore more reliable to use the EthioTrees biomass carbon sequestration rate verified in 2023 for the expansion sites (rather than the past ex-ante model of Mekuria et al., 2011). The analysis of biomass carbon sequestration, verified by Mutu Certification in 2023, shows that carbon stock in trees has significantly increased in resampled plots (average = 22.70 tC/ha) as compared to the baseline biomass carbon stock (average = 14.36 tC/ha) over the average period of 4.8 years ($p<0.05$, n = 159 plots). The EthioTrees biomass sequestration rate is thus **verified at 1.74 tC/ha/yr**.

- SOC changes can be calculated using AR-TOOL16: Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities, Version 1.1. Based on §11 of the tool, considering uncertainties and inherent limitation of the precision of a factor-based estimation, the value of the rate of change of SOC stock must be accounted as **0.8 tC/ha/yr**.

- Applying a molar conversion of 3.67, the applicable carbon sequestration rate is thus **9.31 tCO2e/ha/yr**. Note that this rate remains very close to the original sequestration rate predicted in the PDD of 2017 (which was 9.2 tCO2 per hectare per year).

Annex 6. Example of PES agreements

See attachment.

Annex 7. Resampling results

See attachment.