Final Project Verification Report Farm Africa

Name of Reviewers:
Mateo Cariño (Senior internal reviewer)
Audit team:
Pablo Rodríguez-Noriega (Lead auditor)
Andrew Mbogholi (Local expert)

Date of Review: 5 September 2024

Project Name: Farm Africa – Kenya (Incentivizing Regenerative Agriculture Project farmers to an Agroforestry System in Eastern Kenya).

Project Description:

Agroforestry project led by Farm Africa that started in 2020. At first, farmers were planting 20 trees (species including *Persea americana, Mangifera indica, Citrus sp, Macadamia intedriflora, Moringa stenopetala, Calliandra calothyrsus, Gliricidia sepium,* and *Greviella robusta*) per year over a period of 3 years for community purposes, however, raised concerns on being able to continue planting or maintain trees over the long-term due to lack of seedlings, knowledge on agroforestry and an additional financial incentive for planting trees. Due to the findings of limited seedling availability and lack of financial incentive for trees planted from the needs assessment, carbon finance was requested from Acorn. Project participants are smallholders who practice subsistence agriculture. However, productivity is decreasing which leads to low income, hence poverty. As a result, farmers do not have the financial means to invest in sustainable and long-lived agroforestry models. It is intended, with this project, that carbon finance will provide farmers with the investment for agricultural inputs and sustainable approaches, as well as information.

This existing agroforestry project aims to contribute to the development of a food and farming system within a sustainable framework by employing regenerative, context-specific innovation and models that appreciate local diversity and attain climate resilience and food security for smallholder farmers in Kenya. The agroforestry system implemented by the farmers will contain a mix of fruit-bearing, leguminous, medicinal, and shade trees, crop farming for subsistence purposes, and animal rearing. The trees are planted along the farm borders and in the homestead for shade, except for the fruit trees, which are intercropped with cash crops (each farmer will have a combination of different tree species). Through the income from carbon removal units (CRUs), this project will help farmers transition to a long-lived and sustainable agroforestry system by creating awareness of the benefits of agroforestry, linking village-based advisors (VBAs) or lead farmers to input-output markets, establishing community agroforestry tree nurseries, and providing the necessary training to farmers (through the VBAs). Carbon finance will therefore, give some financial relief to farmers, as well as an incentive for them to maintain the trees on a long-term. At the time of project verification the total number of

onboarded farms with CRUs calculated was 8,563 with a total area of 7,122.01 ha, and a total amount of CRUs generated of 18,448 (crediting period from 1st February 2022 to 1st December 2023).

List of Principal documents reviewed:

- Project ADD
- Laws/regulations:
  - Kenya National Agroforestry Strategy (2021-2030)
  - Kenya Climate Smart Agriculture Strategy
  - National Climate Change Action Plan (NCCAP, 2018-2022).
  - Forest Conservation and Management Act, 2016.
- Legal/contractual documents
  - Participant agreement
  - Farm Africa-Rabobank Partnership agreement
  - Memorandum of Understanding Farm Africa and the Ministry of Agriculture
- Farm Africa Staff Handbook
- Training documents
- Council meeting minutes
- Farmers database
- NGO registration document
- Project Business Case
- Land tenure documents Letter to the National Environment Management AuthorityCalculation
- Remote sensing process description
- Excel files:
  - Verification Data Package_Farm Africa
  - METADATA Verification Data Package.
  - Growth_curves_Farm Africa_Kenya_50

Visited sites:

Plot ID	Local Partner ID	Area (ha)	County	Plot group	Field day visited	X centroid	Y centroid
KE072469 - 88335	3710066_1	0.15	Embu	1	1	37.553	-0.768
KE072469 - 88336	3710066_2	1.05	Embu	1	1	37.552	-0.768
KE073129 - 89021	9413847_1	0.51	Embu	1	1	37.549	-0.771
KE112163 - 129953	6062161_1	1.23	Embu	1	1	37.546	-0.769
KE071262 - 87110	22055694_1	0.11	Embu	2	2	37.539	-0.483
KE072514 - 88383	3748602_1	0.66	Embu	2	2	37.54	-0.484
KE072737 - 88615	5086333_2_0	0.41	Embu	2	2	37.537	-0.484

KE073065 - 88953	9062419_1	4.32	Embu	2	2	37.544	-0.487
KE069875 - 85681	0716166_1	2.06	Embu	3	2	37.588	-0.444
KE071987 - 87839	31169551_1	0.51	Embu	3	2	37.588	-0.443
KE111774 - 129514	0267681_1	1.63	Embu	3	2	37.592	-0.443
KE111828 - 129582	11211493_1	0.31	Embu	3	2	37.592	-0.443
KE069954 - 85768	0719432_1	1.69	Embu	5	3	37.517	-0.405
KE070541 - 86371	1292644_1	0.26	Embu	5	3	37.519	-0.405
KE072929 - 88811	7465397_1	0.33	Embu	5	3	37.516	-0.405
KE070203 - 86028	10797313_1	0.36	Embu	6	3	37.523	-0.373
KE071316 - 87164	22309726_1	1.74	Embu	6	3	37.521	-0.368
KE073150 - 89042	9678231_1	2.34	Embu	6	3	37.517	-0.367
KE071274 - 87121	22100720_1	1.03	Embu	7	3	37.455	-0.373
KE072490 - 88354	3738040_1	0.76	Embu	7	3	37.453	-0.375
KE142535 - 161616	23911749_1	2.16	Tharaka Nithi	9	4	37.74	-0.23
KE184085 - 283207	0a19bcaa-4805-4834-997f-9f43fe3b7acf	2.32	Tharaka Nithi	9	4	37.741	-0.228
KE185337 - 285730	3b8d54b0-31bf-4d29-8842-962f88252178	0.31	Tharaka Nithi	9	4	37.741	-0.229
KE186516 - 288100	4a4325b7-215d-4469-8f82-93285d1d422c	3.87	Tharaka Nithi	9	4	37.746	-0.225
KE142890 - 162669	29588292_1	0.19	Tharaka Nithi	10	4	37.94	-0.092
KE143218 - 163686	4518917_1	0.77	Tharaka Nithi	10	4	37.942	-0.091
KE184362 - 283770	2a3a3ac5-f60a-40ab-9c15-6293a89e2b81	0.32	Tharaka Nithi	10	4	37.94	-0.097
KE185705 - 286469	455c2717-5b18-408e-a98b-969991964c2e	0.56	Tharaka Nithi	10	4	37.939	-0.096

Ground truth data plots visited and measured: the Validation and Verification site visit of this project was done the previous week of the Validation and Verification site visit of the Trees for Kenya project. Both projects are implemented in the same region of the country and the remote sensing model developed for the estimation of biomass in both projects uses the same ground truth information. During these combined field visits, as part of the verification process, some of the plots used for the development of the remote sensing model were visited:

- GTD ID: KEN_TreesforKenya_20230130_139218_5. 2 subplots were measured and another one visited.
- GTD ID: KEN_TreesforKenya_20230131_178462_30. 1 subplot measured.
- GTD plots between plots IDs: KE068012 – 82824 and KE067854 – 82662

List of individuals interviewed:

Farm Africa Staff
- ████████ (Online meeting) (Senior Technical Manager)
- ████████ (Online meeting) Country Programmes Manager
- ████████ (Project Coordinator)
- ████████ (Project Officer)
- ████████ (Project Officer)
- ████████ (VBA on boarding)

Stakeholders:
- ████████ (Embu County Environmental department representative)
- ████████ (Forestry Office, Department of Environment Climate Change and Natural Resources of Embu County)
- ████████ (Kenya Agricultural and Livestock Research Organization (KALRO) Embu Center Director)
- ████████ (AGRA Program officer)
- ████████ (Head of Remote Sensing in Rabobank)

Lead Farmers/VBAs (Village Based Advisors) (8 Lead farmers)

Project participants (farmers)
- Embu County
  - Katuanya and Mashaba (3 farmers)
  - Gitakari (4 farmers)
  - Gatitu and Kiamigaa (3 farmers)
  - Kathande y Kioreri (3 farmers)
  - Kiathari, Kanja and Iriari (3 farmers)
  - Kiandari and Kagumori (2 farmers)
- Tharaka Nithi County
  - Ngonya and Turima (4 farmers)
  - Makiuni (4 farmers)
  - Karurini (4 farmers, not visited, interviewed by phone)

Description of field visit:

The field visit was a 5-day onsite work, interviewing the local partner, project participants and other stakeholders, and visiting project farms and nurseries, as described in the following table.

Activity	Location	Date/time
Travel Nairobi-Embu	Nairobi-Embu	13 Nov 2023 Morning
Meeting with Farm Africa local staff	Farm Africa local office Embu	13 Nov 2023 Morning
Meeting ███████████ (Embu County Environmental department representative)	Farm Africa local office Embu	13 Nov 2023 Morning
Site visit and data collection; Interviews with farmers and lead farmer ████████ ████████ also member of the council), plot and trees measurement.	Embu region 4 plots visited in Katuanya and Mashaba of these farmers: • ████████████ • ████████████ • ████████████████	13 Nov 2023 Afternoon
Meeting ████████ (Forestry Office, Department of Environment Climate Change and Natural Resources of Embu County)	Farm Africa local office Embu	14 Nov 2023 Morning
Meeting with ███████████ (Kenya Agricultural and Livestock Research Organization (KALRO) Embu Center Director)	KALRO office in Embu	14 Nov 2023 Morning
Site visit and data collection; Interviews with farmers and lead farmer ██████ ███████ plot and trees measurement.	Embu region 4 plots visited in Gitakari	14 Nov 2023 Afternoon
Site visit and data collection; Interviews with farmers and lead farmer ██████ ████████ plot and trees measurement.	Embu region 4 plots visited in Kamica, Gatitu and Kiamigaa	14 Nov 2023 Afternoon
Site visit and data collection; Interviews with farmers and lead farmer ██████ ██████ plot and trees measurement.	Embu region 3 plots visited in Kathande and Kioreri	15 Nov 2023 Morning

Site visit and data collection; Interviews with farmers and lead farmer ███████ plot and trees measurement.	Embu region 3 plots visited in Kiathari, Kanja and Iriari	15 Nov 2023 Morning
Visit a Farm Africa farmers´ meeting	Embu region	15 Nov 2023 Morning
Site visit and data collection; Interviews with farmers and lead farmer ███████ ██████, plot and trees measurement.	Embu region 2 plots visited in Kiandari and Kagumori	15 Nov 2023 Afternoon
Travel Embu-Marimanti	Embu-Marimanti	15 Nov 2023 Afternoon
Site visit and data collection; Interviews with farmers and lead farmer ██████ ███████████ plot and trees measurement.	Tharaka Nithi county 4 plots visited in Ngonya and Turima	16 Nov 2023 Morning
Site visit and data collection; Interviews with farmers and lead farmer █████ ████████ plot and trees measurement.	Tharaka Nithi county 4 plots visited in Makiuni	16 Nov 2023 Afternoon
Travel Marimanti-Embu	Marimanti-Embu	16 Nov 2023 Afternoon
Meeting with ████████ (Head of Remote Sensing in Rabobank)	Embu hotel	17 Nov 2023 Morning
Meeting with Farm Africa Staff	Farm Africa local office Embu	17 Nov 2023 Morning
Online Meeting with project donor, ████████████ AGRA Program officer	Online meeting in Farm Africa local office Embu	17 Nov 2023 Morning
Interviews with farmers (Telephone)	Telephone calls (4 farmers)	17 Nov 2023 Morning
Audit team internal meeting	Farm Africa local office	17 Nov 2023 Afternoon
Closing meeting	Farm Africa local office	17 Nov 2023 Afternoon

Verification Opinion: It can be concluded that the project meets all the verification requirements of the Acorn Framework and Methodology (**Positive Verification Opinion**)

Table 1. Summary of draft report on Corrective Actions

Theme	CARs	NIRS	PCARs
Applicability conditions	0	0	0
Biomass measurement	0	0	0
TOTAL	**0**	**0**	**0**

Table 2– Summary of open Forward Actions (if any)

Forward Action Requirement (FAR)	Description	Process to Resolve	Time Frame to be Closed By
NA	NA	NA	NA

Table 3– Assessments requested by reviewers from ADD and/or technical specification review process

Relevant requirements within Methodology	Description of concern	Validator comments	Corrective actions (if any)	ACORN response	Resolved?
NA	NA	NA	NA	NA	NA

Methodology requirements to assess

Theme: Applicability Conditions

<table>
<tr>
<td colspan="2" align="center">Section 4 applicability condition a</td>
</tr>
<tr>
<td>A. Requirement:</td>
<td>The project intervention meets the agroforestry definition (see Section 3), and any trees planted are native or naturalized species.</td>
</tr>
<tr>
<td>B. Guidance Notes for Validators</td>
<td>Please give an opinion as to whether the concept of agroforestry is followed or pursued and tree species being planted meet these criteria. This can be checked using a number of sources:

• Visual observations of local tree-growing practices
• Discussions with farmers, communities, and project staff
• Discussions with local experts (forestry and biodiversity experts)
Published information (refer to this in the validation report if used)

Through interviews with Local Partner and participants, assess whether the Local Partner promotes the use of native species in agroforestry systems.</td>
</tr>
<tr>
<td>C. Findings (describe)</td>
<td>Findings of requirement 4.1.7 of the Validation report:

"The ADD describes in its Part D the 4 indicators considered to monitor local livelihood and environmental improvement. This section of the ADD shows the results of the first survey and a description of each indicator. Based on the information included in the ADD, on the observations during the farms visit and on the different interviews undertaken, it can be concluded that thanks to the project intervention an improvement of the KPIs is expected. On the one hand, by planting fruit trees there will be an increase in the farm income (i.e., selling fruits and CRUs), in the agricultural productivity (i.e., new products, improve of cash crop productivity thanks to soil quality improvement and/or shade creation), and in the nutritional variety (i.e., new food products). The planned agroforestry system with different tree species will contribute to improve the agricultural biodiversity.

Although it has been possible to gather enough evidence to confirm the potential positive impacts of the project, based on the identified KPIs, only one survey is available in the current stage of the project, therefore no quantitative information is available in this validation phase. In future verifications and in the corresponding project annual reports it will be necessary to confirm the potential positive impacts of the project intervention.

The monitoring plan is described in the ADD and it was corroborated during the validation that indicators are SMART, that the Project partner was in charge of the first survey and that will be responsible for the monitoring following the same approach."

See also findings in requirement 4.2.22. in the Validation report.</td>
</tr>
</table>

D.	Conformance	Yes	X	No		N/A	
E.	Corrective Actions (describe)	*None*					
F.	Acorn's Response (if applicable)	*N/A*					
G.	Status (if applicable)	*N/A*					
H.	Forward Actions (describe, if applicable)	*None*					
I.	Others	*None*					

Section 4 applicability condition b

A.	Requirement:	*The project area must not have been cleared of native vegetation within 5 years of the start of the project intervention.*
B.	Guidance Notes for Validators	Assess the evidence to demonstrate that the land was not cleared prior to the project intervention. If:
		a. The evidence provided by satellite imagery that shows the absence of trees in the smallholder land at T-5 (5 years prior to the smallholder joining the project), confirms that the satellite image used appears to match the smallholder land that it is ascribed to.
		b. The evidence provided through other forms of proof, assess the accuracy of this proof by e.g. speaking to the smallholder and communities.
		c. If b, assess an appropriate number of smallholder plots whose evidence was provided through non-satellite-imagery means, i.e. other forms of proof.
		d. If the Local Partner confirms that deforestation has occurred 5 years prior to the start of project activities: Confirm whether the deforestation was caused by the perverse incentive to later claim CRUs and give an opinion as to whether, based on the Local Partner's mitigation measures, it is likely to occur again.
C.	Findings (describe)	Findings of requirement 4.1.2 and 5.1.1 of the Validation report:
		"In the field visit, it has been confirmed by direct observation, in the 28 plots visited, and in the interviews with the farmers and with Local Partner staff that the farms have been agricultural or agroforestry lands for more than 5 years, in most cases for more than 15-20 years. In the interviews with the Local Partner, it was confirmed that in the onboarding process, it is necessary to confirm that the farmer's land is an agroforestry land that was not converted from forest land to agricultural land in the past five years.
		During the review of the GIS information, it was corroborated that project lands are in an agricultural region with no evidence of recent deforestation in the area. Although some project plots are close to the forest, to the

	agricultural frontier, no evidence of recent deforestation was found in these areas either.	
	The ADD includes information to confirm the fulfilment of this requirement (see Part B and Part M.1), and Acorn has confirmed that a T-5 check was performed for all project parcels. However, in the review of the ADD it was confirmed that section E. 3 "Provide T-5 check data to evidence loss of tree cover over the past five years from project start date." was not fulfilled."	
D. Conformance	Yes [X] No [ ] N/A [ ]	
E. Corrective Actions (describe)	*None*	
F. Acorn's Response (if applicable)	*N/A*	
G. Status (if applicable)	*N/A*	
H. Forward Actions (describe, if applicable)	*None*	
I. Others	This was an open CAR in the Validation report that was closed in the Final Validation Report, once the ADD was updated.	

Section 4 applicability condition c

A. Requirement:	*The project area consists of individual plots that are between 0.1 and 10 ha.*	
B. Guidance Notes for Validators	Prior or during the site visit, the validator can check that the areas of sampled project sites are less than 10 ha via the remote-sensing polygons previously obtained by Acorn. If, when visiting the site, the boundary of the polygon appears to map appropriately onto the boundary of the smallholder's land, then the smallholder's land is likely less than 10 ha.	
C. Findings (describe)	As stated in the ADD, confirmed in the GIS file that includes the polygons of the project parcels, and confirmed during the site visit (in the interviews with the farmers and in the GPS measurements) all project parcels are between 0.1 and 10 ha. (See also findings of requirement 4.2.2. in the Validation report).	
D. Conformance	Yes [X] No [ ] N/A [ ]	
E. Corrective Actions (describe)	*None*	
F. Acorn's Response (if applicable)	*N/A*	
G. Status (if applicable)	*N/A*	
H. Forward Actions (describe, if applicable)	*None*	
I. Others	*None*	

Section 4 applicability condition d

A.	**Requirement:**	*All land within the project area is either cropland or degraded land and not on wetlands in the baseline scenario.*
B.	**Guidance Notes for Validators**	Prior or during the site visit, the validator can check on what type of land the areas of sampled project sites are located and are in line with the land cover assessment information previously obtained by Acorn in the leakage assessment. • Give your opinion on whether activities are taking place, and/or have taken place, on land that is degraded, damaged or destroyed or existing cropland. • Give your opinion on whether you believe that the activities being employed by the project participants will enhance/improve the land. This may be assessed during visits to project sites and discussions with project participants and staff of the local coordinating organization.
C.	**Findings (describe)**	During the field, in the document review, and in the interviews with different stakeholders, enough evidence was gathered to confirm that project lands were agroforestry or agricultural lands when the project started. The project activity consists basically of planting trees to create and/or improve an agroforestry system, contributing to the enhancement of the land (i.e. improve and diversify crop production, improve soil quality, and reduce soil erosion). No wetlands were identified during the visit and based on the reviewed documentation, the project boundary does not include wetlands.
D.	**Conformance**	Yes [X] No [ ] N/A [ ]
E.	**Corrective Actions (describe)**	*None*
F.	**Acorn's Response (if applicable)**	*N/A*
G.	**Status (if applicable)**	*N/A*
H.	**Forward Actions (describe, if applicable)**	*None*
I.	**Others**	*None*

Section 4 applicability condition e

A.	**Requirement:**	*The project interventions must not include activities that increase the total number, weight or number of grazing days for any livestock type, relative to the baseline scenario.*

B.	Guidance Notes for Validators	During site visits and interviews with the smallholders, check with the smallholders whether the activities of the project, or income from the project, have or will likely result in an increase in their total number, weight or number of grazing days for any livestock type.
C.	Findings (describe)	During the site visit and in the interviews with project participants it has been confirmed that most of the visited farmers have grazing animals (mainly cows and goats) in the project area. The number of animals per farm is usually 1-3 cows and 1-10 goats, and this livestock seems to be for family consumption. In the plots visited, these animals are stabled or confined and are fed with fodder obtained on the farm, from fodder crops and pruning material from planted trees. No evidence was gathered that the project activity may contribute to an increase in grazing activities. The main activity in the project parcels is agriculture (e.g. coffee, tea, corn,…). Livestock activity is secondary, and farmers did not show any interest in increasing the number of animals.
D.	Conformance	Yes [X] No [ ] N/A [ ]
E.	Corrective Actions (describe)	*None*
F.	Acorn's Response (if applicable)	*N/A*
G.	Status (if applicable)	*N/A*
H.	Forward Actions (describe, if applicable)	*None*
I.	Others	*None*

Section 4 applicability condition f	
A. Requirement:	*The project intervention must not include the planned harvesting of planted trees during or after the crediting period.*
B. Guidance Notes for Validators	During interviews with the smallholders, gauge the participants' likelihood of cutting down any trees during or after the crediting period. If they plan to cut trees after the crediting period, check whether the trees will be planted trees or pre-project trees. Avoid leading questions.
C. Findings (describe)	During the validation, it was evidenced that harvesting is not planned in the project. This is clear for the local partner, as discussed with Farm Africa staff, and is indicated in the Participants Agreement. However, during the interviews with the farmers, some of them mentioned that part of the planted trees will be used for fuel wood or timber. It is a common practice in the area that farmers plant timber trees for fuel wood production; they do frequent pruning and they also harvest the trees with this objective. This type of tree is planted at high densities (usually in rows in the plot limit every 1-2 meters) and is replanted after harvesting.

		It was corroborated during the visit that Lead Farmers and Farm Africa are sensitizing the farmers about this issue, and it is clear to the validation team that harvesting is not a planned project activity. The local partner understands that, even though harvesting is not planned, there is a logging risk, and it has been identified in Part L of the ADD (Reversal Risk Assessment).					
D.	Conformance	Yes	X	No		N/A	
E.	Corrective Actions (describe)	*None*					
F.	Acorn's Response (if applicable)	*N/A*					
G.	Status (if applicable)	*N/A*					
H.	Forward Actions (describe, if applicable)	*None*					
I.	Others	*None*					

Section 4 applicability condition g		
J.	Requirement:	*Heavy machinery must not be used for site preparation or management.*
K.	Guidance Notes for Validators	Ask Local Partner about use of heavy machinery and note any sightings of heavy machinery in and around project areas.
L.	Findings (describe)	Interviewed farmers confirmed that tree planting was done and will be done manually. Heavy machinery has not been observed in the project area nor signs of its use. Likewise, considering the final expected planting density and the characteristics of the project sites (e.g. with current perennial crops) it will not be feasible to use heavy machinery in terms of access and costs.

M.	Conformance	Yes	X	No		N/A	
N.	Corrective Actions (describe)	*None*					
O.	Acorn's Response (if applicable)	*N/A*					
P.	Status (if applicable)	*N/A*					
Q.	Forward Actions (describe, if applicable)	*None*					
R.	Others	*None*					

Section 4 applicability condition h

A.	**Requirement:**	*The project intervention must not increase the use of synthetic (nitrogen-containing) fertilizers relative to the baseline scenario.*
B.	**Guidance Notes for Validators**	Ask Local Partner and participants about use of synthetic fertilizers. Also note any sightings of synthetic fertilizer containers in and around project areas.
C.	**Findings (describe)**	Interviewed farmers confirmed that they do not use synthetic fertilizers for the planted trees. They use fertilizers for their crops and other type of agricultural activities, but not for project trees. It does not seem to be a common practice in the area to use synthetic fertilizers when planting trees. In the nurseries they use organic fertilizers and no evidence of other fertilizers used has been found.
D.	**Conformance**	Yes [X] No [ ] N/A [ ]
E.	**Corrective Actions (describe)**	*None*
F.	**Acorn's Response (if applicable)**	*N/A*
G.	**Status (if applicable)**	*N/A*
H.	**Forward Actions (describe, if applicable)**	*None*
I.	**Others**	*None*

Section 6 Carbon Baseline pre-project tree adjustment factor	
A. Requirement:	If the potential change in pre-project tree biomass is less than 5% of the expected increase in tree biomass expected to result from the project intervention, estimated using an appropriate tree or stand growth models, the carbon stock aboveground and belowground biomass of pre-project trees can be set at zero in the baseline scenario. Otherwise, measurements from sample plots must be used to define an appropriate adjustment factor with Equation 1 to Equation 3 and Table 3.

$$EETB_{y,s} = \frac{\sum_{i=1}^{n} \left(\frac{(ETB_{y,s} - ETB_{y,s=0})}{(TB_{y,s} - ETB_{y,s=0})} \cdot 100 \right)_i}{n}$$

<div align="right">Equation 1</div>

Where:

$EETB_{y,s}$ = Estimated percentage change in tree biomass in year *y* that is attributed to pre-project trees, for plots in stratum *s*

$ETB_{y,s}$ = Existing tree biomass in sample plot in stratum *s, y* years after the start of the project intervention (t CO_2eq)

$ETB_{y,s=0}$ = Existing tree biomass in sample plot in stratum *s* at the start of the project intervention (t CO_2eq)

$TB_{y,s}$ = Tree biomass in sample plot in stratum *s, y* years after the start of the project intervention in the sample plot (t CO_2eq).

n = Number of sample plots in stratum *s*

$$U_{EETB_{y,s}} = \frac{1.645 \cdot \sigma}{\sqrt{n}} \cdot \frac{1}{EETB_{y,s}}$$

<div align="right">Equation 2</div>

Where:

$U_{EETB_{y,s}}$ = Percentage uncertainty of $EETB_{y,s}$ at a 90% confidence level

σ = Standard deviation of $\left(\frac{(ETB_{y,s} - ETB_{y=0,s})}{(TB_{y,s} - ETB_{y=0,s})} \cdot 100 \right)_i$ for all sample plots within stratum *s*

n = Number of sample plots in stratum *s*

$$AdjU_{EETB_{y,s}} = 0.25 \cdot (U_{EETB_{y,s}} - 0.5)$$

<div align="right">Equation 3</div>

Where:

$AdjU_{EETB_{y,s}}$ = Adjustment for the uncertainty of $EETB_{y,s}$

Estimated change in existing tree biomass in stratum *s* after adjustment for uncertainty ($EETB_{y,s}$ + $AdjU_{EETBy,s}$)	Adjustment factor for baseli for plots in stratum *s (AdjB$_s$)*
$(EETB_{y,s} + AdjU_{EETB_{y,s}}) \leq 10\%$	0%
$10\% < (EETB_{y,s} + AdjU_{EETB_{y,s}}) \leq 25\%$	10%
$25\% < (EETB_{y,s} + AdjU_{EETB_{y,s}}) \leq 50\%$	25%
$50\% < (EETB_{y,s} + AdjU_{EETB_{y,s}}) \leq 75\%$	50%
$75\% < (EETB_{y,s} + AdjU_{EETB_{y,s}}) \leq 90\%$	70%
$(EETB_{y,s} + AdjU_{EETB_{y,s}}) > 90\%$	100%

B.	**Guidance Notes for Validators**	Check the pre-project tree adjustment factor via the adjustment factor information provided prior by Acorn. Can this be justified/confirmed on a project level with what the validator sees during the fields visits?
C.	**Findings (describe)**	In this project case, as remote sensing is used for the monitoring of tree biomass, carbon baseline cannot be set as zero. Therefore, Acorn has estimated carbon baseline adjustment factor based on the Methodology (25%, as indicated in Part M.2 of the ADD).
		The adjustment factor for baseline removal (AdjB) has been calculated using growth models and not using measured data. This adjustment factor has been estimated by comparing project year 0 and year 30. The Estimated percentage change in tree biomass in year "y" that is attributed to pre-project trees (EETBy,s) plus the Adjustment for the uncertainty of EETBy,s (AdjU$_{EETBy,s}$) was calculated between 25% and 50%. However, the use of an average adjustment factor for 30 years is not considered by the verification team a conservative approach for the first years of the project, when, because of the sigmoid growth of the biomass, the growth is slower. Therefore, the verification team has asked Acorn to recalculate the adjustment factor per year. With the new calculations per year, the adjustment factor remains at 25%.
		It is clear in the methodology that year "y" is the year where parameters are calculated (see section 10.2. and also, as an example, equation 10). It is also clear in the methodology, in section 6 (equations 1, 2 and 3), and in section 10.2. that all parameters in equations 1, 2, and 3 shall be measured and not based on growth models. However, Acorn has described the methodology deviation and has justified the use of growth models in this project case, where in the mid-long term it will not be possible to differentiate planted and pre-existing trees. The use of projections and models is a common practice in

the estimation of the baseline GHG removals in Land Use carbon projects. Acorn has also updated the calculation of the adjustment factor for project year "y", year 4 in this case, leading to the same Adjustment factor of 25%. For the next verification period the Adjustment factor will need to be recalculated, considering the new project year "y", and the actual number of planted trees, based on project implementation information. Evidence of these calculations are included in the provided document "Remote sensing process description FarmAfrica".

Although the methodology used to calculate the adjustment factor (AdjB$_s$) is not considered correct by the verification team, as it has been demonstrated that using the correct approach the result is the same (25%), following a conservative approach, and considering that this is not affecting the final GHG calculations, the verification team has considered that there is compliance with the requirement. However, in future verifications, it will be necessary to recalculate the adjustment factor and confirm that this assumption is still accepted. The adjustment factor calculated for the 30-year period, must be equal to, or higher than, the calculated for the monitoring year. If not, the adjustment factor calculated for the monitoring year should be used.

D.	Conformance	Yes	X	No		N/A	

E.	Corrective Actions (describe)	*None*
F.	Acorn's Response (if applicable)	*N/A*
G.	Status (if applicable)	*N/A*
H.	Forward Actions (describe, if applicable)	*None*
I.	Others	In future verifications, it will be necessary to recalculate the adjustment factor and confirm that this assumption is still accepted. The adjustment factor calculated for the 30-year period, must be equal to, or higher than, the calculated for the monitoring year. If not, the adjustment factor calculated for the monitoring year should be used.

Section 7.1 Sample plots for ground truth data collection

A.	Requirement:	*Data from sample plots are used to calibrate models for estimating tree biomass from satellite imagery. Sample plots used for model calibration must meet the following requirements:*
		1. *Aboveground and belowground biomass of trees >2m in height or with a DBH of more than 2.5 cm must be measured.*

		2. *Sample plots must be within the same ecoregion and with land use similar to that of the plots to which the model will be applied.* 3. *The location of sample plots must be selected at random from sites that meet the applicability conditions* 4. *Tree biomass within sample plots can be measured using:* • *The fixed area plot methodology described in Annex 1 of the Methodological tool: Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities (AR-TOOL14, v.4.2)* • *The Acorn Standard Operating Procedures for Tree Inventory Plot Establishment and Measurement (Annex 3).* • *Airborne or terrestrial LiDAR survey that meets the minimum requirements set out in Annex 4.*
B.	Guidance Notes for Validators	During field visit(s) collect ground truth data Do the plots meet the above requirements and does it appear that the trees have been appropriately measured?

C.	Findings (describe)	During the site visit of the neighbour project of Trees for Kenya, the audit team visited and measured some of the GTD plots and interviewed some of the field teams responsible for doing the GTD plots measurements in Farm Africa and Trees for Kenya projects. In this field visit the following findings were identified regarding ground truth data collection:
		
		Field measurements: during the GTD collection, the verification team visited, together with Acorn staff (Acorn team), several field teams (project team) doing the GTD collection. During the visit, it was possible to interview some of the field workers of the project team, to measure some plots with them and to re-measure some plots with the Acorn team. The following findings were identified:
		
		• Plot delineation: in the visit during the GTD collection no errors in the delineation of the plot were identified.
		• Field data collection: in the interview with the project team staff collecting the data, three main findings were identified:
		    o Discrepancies/unclarity in the grouping of trees. Not all trees are measured. When trees of the same species have similar height they are grouped and then the number of trees in the group is recorded with the average height and DBH. The way the groups are done (e.g. every 1 m height difference) is not standardized and not included in the SOP. This affects the GTD final results.
		    o Errors in tree height measurement: it was identified that tree height was not measured correctly. Although it was confirmed that field teams are trained and that there is a document (Acorn – AKVO ground truth data collection) containing the methodology for GTD collection, it was identified that in some cases height is not measured following the appropriate method included in the SOP.
		    o Errors in the identification/reporting of existing trees. During the visit some plots were re-measured together with Acorn team and it was confirmed that some tree/groups were not measured. In some cases, one species was not measured/reported, and in others

some individuals of a certain species were not measured/reported. In the next section (Data comparison) there is more information regarding this finding.

Verification team remeasurement: during the on-site visit, the verification team measured 4 GTD subplots. Measurements have been compared with the result of the GTD collection that was done by the project team during the visit. The following findings were identified:

- Species identification: in 2 of the 3 plots that were compared (the 4th one was not compared as it was not measured by the project) the verification team identified tree species that were not measured by the project team (Macadamia in one case and Tomato tree in the other).
- Number of trees: in 2 of the 3 plots there were discrepancies in the total number of measured trees per subplot. The difference (not considering Coffee) was 60% and 18% (more trees were measured by the verification team compared to the data collected by the project).
- Total biomass: in the only remeasured plots with the same number of trees and species the total AGB using the Chave equation was calculated. The discrepancy between verifier calculations and project calculations is significant. Verifier results are 2.6 times lower than project results.

After the identification of these findings, Acorn has created an updated SOP document including quality assurance and quality control procedures that will be implemented in future field monitoring of GTD to prevent and/or minimize the above-described findings.

The SOP document has been provided to the audit team. Section 3. "Quality assurance and control", has been adapted based on IPCC Good Practice Guidance for LULUC and Forestry. Acorn has implemented an additional step incorporating high resolution imagery and Lidar data.

Acorn is continuously improving the ground truth data collection and the remote sensing model to increase the accuracy of calculations. The implementation of this new protocol will be confirmed in the next verification.

D.	Conformance							
		Yes	X	No		N/A		
E.	Corrective Actions (describe)	*None*						
F.	Acorn's Response (if applicable)	*N/A*						
G.	Status (if applicable)	*N/A*						
H.	Forward Actions (describe, if applicable)	*None*						
I.	Others	Acorn is continuously improving the ground truth data collection and the remote sensing model to increase the accuracy of calculations. The						

	implementation of the updated SOP, and specifically its Section 3 "Quality assurance and control", will need to be confirmed in the next verification

Section 7.2 Estimating change in tree biomass

A.	**Requirement:**	If tree biomass is estimated using satellite imagery, change in tree biomass must be calculated using Equation 5. This approach estimates the change in carbon stock in trees as the difference between two successive and independent carbon stock estimates. $$\Delta TB_{y,s} = \left(AGB_y - AGB_{y-1}\right) \cdot (1 + R) \cdot CF \cdot \frac{44}{12} \cdot (1 - AdjU)$$ Equation 5 Where: $\Delta TB_{y,s}$ = Change in carbon stock in aboveground and belowground tree biomass in stratum *s,* in year *y* (t CO_2eq) after uncertainty discount AGB_y = Aboveground tree biomass per plot in year y (metric tons of dry matter) AGB_{y-1} = Aboveground tree biomass per plot in year y-1 (metric tons of dry matter) R = Root-shoot ratio to calculate the belowground biomass factor CF = Carbon fraction of tree biomass $\frac{44}{12}$ = Conversion from carbon to carbon dioxide $AdjU$ = Adjustment factor for uncertainty
B.	**Guidance Notes for Validators**	At desk review check whether above equation has properly been executed and result in real and measurable results.
C.	**Findings (describe)**	Based on the review of the provided Excel files with project GHG calculations (Verification Data Package_Farm Africa) it can be confirmed that the calculation of the Change in carbon stock in aboveground and belowground tree biomass was performed following The Acorn Methodology V1.1. and its Equation 5. Regarding the use of the Adjustment factor for uncertainty see findings in the next requirement "Section 7.3 Uncertainty adjustment factor".
D.	**Conformance**	Yes [X] No [ ] N/A [ ]
E.	**Corrective Actions (describe)**	*None*
F.	**Acorn's Response (if applicable)**	*N/A*
G.	**Status (if applicable)**	*N/A*

H.	Forward Actions (describe, if applicable)	*None*
I.	Others	*None*

Section 7.3 Uncertainty adjustment factor		
A.	Requirement:	The uncertainty value per project is calculated by Equation 7, $$U = \frac{CI_\sigma}{AGB_{\Delta x}}$$ Equation 7 Where: U = Project uncertainty for positive change of AGB within a measuring period CI_σ = Half-width of a 90% confidence interval $AGB_{\Delta x}$ = The mean positive change in aboveground biomass for n number of plots $$CI_\sigma = 1.645 \frac{\sigma}{\sqrt{n}}$$ Equation 8 Where: σ = Standard deviation of positive change in AGB within a measuring period. CI_σ = Half-width of a 90% confidence interval n = refers to number of plots And if applicable equation 9, for U values greater than 50%. $$U_{adjF} = 0.25* (U-0.5)$$ Equation 9 Where: U_{adjF} = Adjustment factor for uncertainty (percentage) U = Project uncertainty for positive change of AGB within a measuring period
B.	Guidance Notes for Validators	Check the uncertainty adjustment factor via the adjustment factor information provided prior by Acorn. Can this be justified/confirmed on a project level?
C.	Findings (describe)	During the verification process of the projects Trees for Kenya, Solidaridad Uganda and Farm Africa, a long methodological discussion took place. The

verification team considered that the original uncertainty calculation approach followed by Acorn was not accurately representing the uncertainty of the remote sensing model and the uncertainty propagation in the calculation of stock changes.

After this discussion process, the final agreed approach, by Plan Vivo, Acorn and the verification team, includes the following steps:

Calculate project plot (farm) uncertainty (Uy) following equation 7 of Acorn Methodology V1.0., where:

- AGB_y and AGB_{y-1}: are the biomass in two points in time in each farm, estimated using the remote sensing model.
- u_y and u_{y-1}: are the uncertainty values of the model (the same if the remote sensing model is the same at the two points in time). For the calculation of these model uncertainties equation 8 of Acorn methodology V1.0, and equation 8 of V1.1 – 2023 (errata) were used.
    - CI is calculated on validation AGB plot derived from GT data.
    - GT data is collected at the time of model calibration. As prescribed by Acorn Methodology v1.0 section 7.1.4.2, a minimum of 20 plots is kept aside for model validation.
    - CI is calculated using this validation set, and the modelled and measured values.
    - The residual, which is the difference between predicted and measured AGB of the validation dataset, is used within the half-width of the confidence interval.

Calculate uncertainty adjustment factor per plot (AdjU): based on the calculated Uy per plot and using Table 5 of Acorn Methodology V1.0.

Calculate project uncertainty adjustment factor (AdjU): although AdjU is calculated per plot (farm) a final project value is calculated at a project level and then applied per plot. This final adjustment factor is calculated by dividing the difference of the sum of GHG removals per plot with adjustment and without adjustment by the sum GHG removals per plot without adjustment. In this project the final project uncertainty adjustment factor is 20%, as confirmed after reviewing the last version of the Excel file "Verification Data Package_Farm Africa" and of the document "Remote sensing process description FarmAfrica".

D. Conformance	Yes	X	No		N/A	

E.	Corrective Actions (describe)	*None*
F.	Acorn's Response (if applicable)	*N/A*
G.	Status (if applicable)	*N/A*

H.	Forward Actions (describe, if applicable)	*None*
I.	Others	*None*

Section 8 Leakage adjustment factor	
A. Requirement:	The leakage value per project is calculated by Equation 10,

$$AdjL = P \cdot A \cdot LF \cdot 100$$

Equation 10

Where:

$AdjL$ = Adjustment factor for leakage (percentage)

P = The estimated reduction in productivity that will result from the project intervention, as a percentage of the productivity expected in the baseline scenario. If no change or an increase in productivity is expected, the score should be 0%

A = The proportion of the project area used to produce the most important product, or carry out the activity, that contributes to productivity in the baseline scenario, e.g. if half the plot is used to grow a specific crop the score should be 0.5

LF = Leakage factor for the type of land that production will be likely to shift to as a result of the project intervention: cropland or degraded land is '0' and forest land or wetland or organic soils[1] is '1' |
| **B. Guidance Notes for Validators** | Check the leakage adjustment factor via the adjustment factor information provided prior by Acorn. Can this be justified/confirmed on a project level with what the validator sees during the field visits? |
| **C. Findings (describe)** | As stated in the Validation report, in the findings of Requirements 4.6.1 & 4.6.2:

"The ADD in Part M. 2. gives an adjustment factor for Leakage of 0%. Leakage is not expected, the project activity is not expected to lead to GHG emissions outside the project boundary. Farm Africa and Acorn do not expect potential displacement of pre-project activities due to the project implementation.

During the site visit enough evidence was gathered to confirm that, if existing, potential leakage will be negligible. The only potential identified source of significant leakage is the displacement of agricultural or grazing activities. These activities will be displaced only if incompatible with project activities. |

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[1] *[IPCC GPG LULUCF (iges.or.jp)](https://iges.or.jp)*

		Agroforestry is expected to increase the productivity of the current crops, or at least not decrease it, therefore, no displacement of agricultural activities is expected. In the case of livestock, most farmers have few animals and are compatible with their current agroforestry activity and are expected to be compatible with the project improved agroforestry."
D.	Conformance	Yes [X] No [ ] N/A [ ]
E.	Corrective Actions (describe)	*None*
F.	Acorn's Response (if applicable)	*N/A*
G.	Status (if applicable)	*N/A*
H.	Forward Actions (describe, if applicable)	*None*
I.	Others	*None*

Section 9 Quantification of carbon benefits	

A.	Requirement:	Carbon Removal Units (CRUs) are calculated using equation 11. $$CB_y = PR_y \cdot \frac{1}{1 + BP} \cdot (1 - AdjB_s) \cdot (1 - AdjL)$$ Equation 11 Where: CB_y = Carbon benefit for a plot in year *y* (t CO_2eq) PR_y = Carbon removal for a plot in year *y* (t CO_2eq) BP = Buffer pool percentage $AdjB_s$ = Adjustment factor for baseline removal for plots in stratum *s* $AdjL$ = Adjustment factor for leakage
B.	Guidance Notes for Validators	Check number of CRUs calculated be justified/confirmed on a project level with what the validator sees during the field visits?
C.	Findings (describe)	Based on the review of the provided Excel files with project GHG calculations (Verification Data Package_Farm Africa) it can be confirmed that the calculation of CRUs was performed following The Acorn Methodology V1.1. and its Equation 11. Regarding the use of the Adjustment factor for baseline removal see findings of requirement "Section 6 Carbon Baseline pre-project tree adjustment factor".

D.	Conformance	Yes	X	No		N/A	
E.	Corrective Actions (describe)	*None*					
F.	Acorn's Response (if applicable)	*N/A*					
G.	Status (if applicable)	*N/A*					
H.	Forward Actions (describe, if applicable)	*None*					
I.	Others	*None*					