

Gold Standard for the Global Goals
Key Project Information & Project Design Document (PDD)



Version 1.1 – August 2017

Only the requirements for design certification have been successfully validated. The requirements for performance certification have not been reviewed and verified as the PD decided to limit the certification process to the validation of project design.

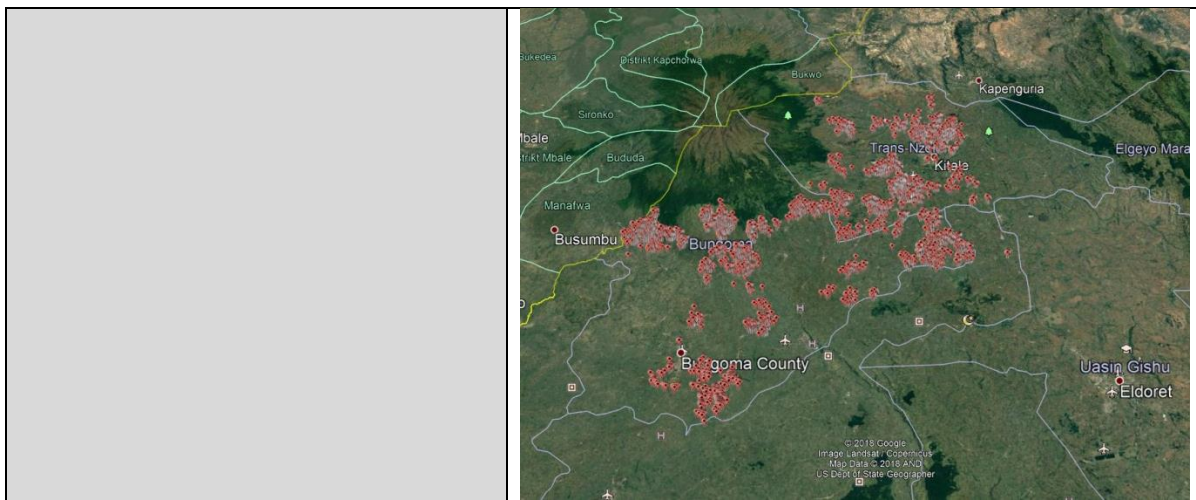
KEY PROJECT INFORMATION

Title of Project:	Livelihoods Mount Elgon Project
Brief description of Project:	The Livelihoods Mount Elgon Project is a livelihood improvement project implemented by the NGO Vi Agroforestry in partnership with the Livelihoods Fund and Brookside Dairy Limited in the Mount Elgon region of Kenya. The project is tackling poverty, environmental degradation and climatic change challenges. 30,000 farmers are involved in the project. The project promotes improved livestock feeding and husbandry and climate-smart sustainable agricultural land management practices. It aims to achieve several social, economic and environmental goals – such as improved health and nutrition, increased crop and milk yield and quality, and widespread adoption of better land management. Vi Agroforestry is working with East Africa Marketing Development Associates (EAMDA) supporting 15 dairy cooperatives in the project to develop dairy business hubs.
Expected Implementation Date:	The project start date is 02/03/2016
Expected duration of Project:	7 years 0 months from start date
Project Developer:	Livelihoods Fund SICAF SIV
Project Representative:	Livelihoods Fund SICAF SIV
Project Participants and any communities involved:	Livelihoods Fund (Project Proponent), Vi Agroforestry (Project Implementer), Brookside Dairy Limited, East Africa Marketing Development Associates (EAMDA), 30,000 farmers organized in farmer groups, 15 dairy cooperatives (target membership of 30,000 farmers, of which at least 15,000 are already dairy farmers).
Version of PDD:	04
Date of Version:	16/05/2021
Host Country / Location:	Kenya / Bungoma and Trans-Nzoia counties
Certification Pathway (Project Certification/Impact Statements & Products)	Project Certification
Activity Requirements applied: (mark GS4GG if none relevant)	Gold Standard Land Use & Forests Activity Requirements
Methodologies applied:	Gold Standard Agriculture Smallholder Dairy Methodology: Methodology for GHG Emission Reductions from Smallholder Dairy Production Systems
Product Requirements applied:	None
Regular/Retroactive:	Retroactive
SDG Impacts:	Vi Agroforestry has adopted a strategy 2017-2021 with a vision towards a sustainable environment that enables women and men living in poverty to improve their lives. Under this strategy, Vi Agroforestry will contribute to the following sustainable development goals as adopted by all UN countries (1. No poverty; 2 Zero hunger; 5 Gender equality; 13 Climate action). To realize this, the organization has structured 6 working areas: <ul style="list-style-type: none"> Sustainable agriculture based on agroforestry for climate change mitigation and adaptation; Economic security through agricultural value chains and financial services;

	<ul style="list-style-type: none"> Gender equality and empowerment of women, children and youth; Systems and governance for strong farmer organizations; Communication, fundraising and resource mobilization to secure funds for the thematic working areas. Lobby and advocacy with regards to the working areas; <p>The SDGs are addressed through Vi Agroforestry's working areas, Vi Agroforestry's overall objective for 2017-2021, and the strategic targets supporting it. The strategic targets will be described in detail in annual work plans for all parts of the organization. Specifically for this project the following SDGs have been integrated into the KPIs of the project defined in the contract with Livelihoods and subject to performance monitoring and impact assessment:</p> <p>SDG 1: No Poverty & SDG 2: Zero Hunger → Improve knowledge, skills and income of 30,000 participating farmers to reach better life quality; increase family health and nutritional status of 30,000 participating farmers;</p> <p>SDG 5: Gender Equality → Increase women participation to the farmer's organization</p> <p>SDG 13: Climate Action → Generate mitigation benefits from reduced dairy emissions</p>
Estimated amount of SDG Impact Certified	<p>The following KPIs have been defined as impacts for the project::</p> <p>SDG 1: No Poverty & SDG 2: Zero Hunger:</p> <ul style="list-style-type: none"> Increasing of 40% people having >2 USD/ day Increasing of 30% households having 2 meals per day Improve quality and increase capacity of average milk production from 5,000 liters/day to 135,000 liters/day within four years 15,000 farmers have secured 'milk purchasing contracts' <p>SDG 5: Gender Equality</p> <ul style="list-style-type: none"> Empowers and create capacities for family farmers, with at least 50% women in the farm organizations <p>SDG 13: Climate Action</p> <ul style="list-style-type: none"> Dairy emission reductions: 354,327 tCO₂-e in 7 years
For Land-use & Forest Projects only – delete if irrelevant	
Size of the Project Area and Planting Area:	At least 35,100 hectares implemented within a total project area of 292,390 ha; The project typically follows the logic of grouped smallholder project under the LUF GSF guidance - since smallholder farmers are recruited in either existing or newly formed farmer groups within a larger project region (292,390 ha) defined by the Kenyan administrative boundaries of sub-county, ward and location. The total of 35,100 ha is extrapolated based on the KPI of a total 30,000 farmers implementing the project and the average farm area.
Risk of change to the Project Area during Project Certification Period:	The Project Area (the smallholder farms on which project activities are implemented) are mapped exclusively within the Project Boundary. If a participating farm, a member of a particular farmer group, decides to leave the project, a new member can join or new farm of existing group members included. Thus, there is no risk of change to Project Area during Project Certification Period.

Risk of change to the Project activities during Project Certification Period:	There is no risk of change to the project activities during Project Certification Period since project activities are farmer-selected and mutually agreed upon, then specified in the contractual agreement signed between the Project Implementer and participating farmers.
Land-use history and current status of Project Area:	Farmers historically practiced subsistence agriculture – characterized by low inputs – resulting in low yields and rapid loss of soil fertility. Livestock husbandry is characterized by uncontrolled grazing, lack of quality feeds, and general lack of quality veterinary services.
Socio-Economic history:	The Mount Elgon region is historically densely populated due to favorable agro-ecology – fertile soils and high rainfall. The population is highly dependent on agriculture; hence, the lands have been stripped off its natural vegetation, and extensively cultivated and fragmented. Historically, livestock is very important, but livestock husbandry is poor - characterized by uncontrolled grazing, lack of quality feeds, and general lack of quality veterinary services
Forest management applied (past and future)	Not applicable since activities are implemented only on individual permanent farming land
Forest characteristics (including main tree species planted)	Not applicable since activities are implemented only on individual permanent farming land
Main social impacts (risks and benefits)	<p>The project is building farmers' capacities through training and technical support in improved livestock husbandry and sustainable agricultural land management. An improved dairy value chain is being developed with the establishment and strengthening of dairy cooperatives and dairy hubs. The milk is sourced by Brookside dairy also investing in the dairy infrastructure development. These activities will result in increased capacities of the farmers to manage their farms sustainably, and generate increased benefits – food, income from dairy, and nutrition. The social and economic KPIs defined in the contract between Livelihoods and Vi Agroforestry for the project include:</p> <p>Social goals</p> <ul style="list-style-type: none"> (i) Improve knowledge, skills and income of 30,000 participating farmers to reach better life quality; (ii) Increase family health and nutritional status of 30,000 participating farmers; (iii) Establish a strong and professional institution for business and social empowerment; and (iv) Increase women participation to the farmer's organization. <p>Economic goals</p> <ul style="list-style-type: none"> (i) Improve quality and increase capacity of average milk production; and (ii) Deliver value across carbon credits involving 30,000 farmers, of which 15,000 farmers are involved in dairy production.
Main environmental impacts (risks and benefits)	<p>Relevant environmental impact KPIs defined in the contract between Livelihoods and Vi Agroforestry include:</p> <ul style="list-style-type: none"> (i) Widespread adoption of sustainable agriculture on 35,100 ha. Broadly the project will focus on the following aspects:

	<ul style="list-style-type: none"> a. Implementation of agronomic and dairy models in farm and farmers 'community lands, with an objective to increase the average milk production on a consistent basis and its quality; and b. Strengthening farmer organizations and implementation of dairy hubs. <ul style="list-style-type: none"> (ii) Establishing 4 million trees under woodlots, dispersed inter-planting, boundary planting, fruit orchards, in crop and livestock agroforestry systems. (iii) Emission reduction of 386,358 t CO₂eq over 7 years through improved dairy livestock management
Financial structure	The project is pre-financed by the Livelihoods Fund SICAF SIV and Brookside Dairy Limited. Vi Agroforestry contributes technically to the project implementation. This financial structure is subject to the overall contract between Livelihoods, Vi Agroforestry and Brookside Dairy signed on 2 nd of March 2016 (available upon request)
Project Area:	Potential 292,390 ha outer boundary of the project region ;
Planting Area:	Not applicable
Eligible Planting Area:	Not applicable
Modelling Units:	The farm (ha). No modelling units required since this project is only seeking ex-post certification of SDG impacts, in particular ex-post CO ₂ -Certificates
Infrastructure (roads/houses etc):	Not applicable
Water bodies:	There are two major rivers found, not necessarily in the Project Area, but within the larger administrative units (counties) where the project is located – R. Nzoia and R. Suam.
Sites with special significance for indigenous people and local communities - resulting from the Stakeholder Consultation:	Not applicable
Where indigenous people and local communities are situated:	Not applicable
Where indigenous people and local communities have legal rights, customary rights or sites with special cultural, ecological, economic, religious or spiritual significance:	Not applicable
Evidence that Project Boundary is clearly distinguishable in the field:	Each participating smallholder farm is mapped using GPS (farm tracks). Map: Google Earth showing locations of farms recruited in year 2016



SECTION A. Description of project

A.1. Purpose and general description of project

The Mount Elgon Livelihood Project is a livelihood improvement project implemented by the NGO Vi Agroforestry in partnership with the Livelihoods Fund and Brookside Dairy Limited in the Mount Elgon region of Kenya. The project is tackling poverty, environmental degradation and climate change challenges. The Mount Elgon region is historically a densely populated area due to its favorable agro-ecology – fertile soils and high rainfall. The population is highly dependent on agriculture; hence, the lands have been stripped off its natural vegetation, and extensively cultivated and fragmented. Farmers traditionally practiced subsistence agriculture – characterized by low inputs – resulting in low yields and rapid loss of soil fertility. Livestock husbandry is characterized by uncontrolled grazing, lack of quality feeds, and shortage of quality veterinary services.

30,000 farmers are involved in the project; they are organized in farmer groups at the lower level and cooperatives at the upper levels for efficient delivery of extension services. The project promotes improved livestock feeding and husbandry practices, and climate-smart sustainable agricultural land management practices. It aims to achieve several social, economic and environmental goals – such as improved health and nutrition, increased crop and milk yield and quality, and widespread adoption of better land management.

Standardized training materials are used to deliver extension services on improved dairy livestock management.

The project activities cover the following main areas: implementation of agronomic and dairy management models for increased yield and quality of milk; and strengthening of farmer organizations including establishing dairy hubs. It promotes tree planting in woodlots, and through various agroforestry techniques such as fodder banks. The adoption of improved dairy management practices is expected to generate 354,327 tCO₂-e tCO₂e over a crediting period of 7 years. The project has a lifespan of 10 years, with intensive extension advisory services planned for four (4) years (2016 – 2019); from year 5 to 10, partner organizations are expected to take over most of the implementation roles from Vi Agroforestry, but Vi Agroforestry will retain the responsibility for carbon monitoring. The project will be implemented through the farmer groups and the 15 partner Farmer Cooperative Societies (FCS) involved in milk marketing. The farmer cooperatives sign memoranda of understanding (MOU) with Vi Agroforestry and are supported to improve their service delivery structures and systems so that they can efficiently reach their members. The FCS will have an obligation to support their members to adopt dairy production technologies, monitoring of carbon sequestration and transfer emission reduction units to Vi Agroforestry/Livelihood Fund. The FCS will benefit from improved dairy productivity. In addition, they will make profits from margins between prices they pay their members and what is paid by Brookside for their milk. The linking of dairy cooperatives to Brookside will provide an opportunity for dairy farmers to access secure and consistent market for their milk.

For efficient service delivery, affiliate farmer groups under different FCS will be structured into clusters/blocks of 5-10; with each farmer group having 15-30 farmers. Standardized training materials will be used to ensure effective delivery of extension services. Data collection will start at group level and will be designed in such way that the data for carbon monitoring will be integral part of the data collected by the FCS to assist in its day to day operation.

A.2. Eligibility of the project under Gold Standard

How the project meets the eligibility criteria in section 3.1.1 of the GS4GG Principles & Requirements document and the relevant activity requirements document is described below:

1. The project is among the Gold Standard eligible project type: Agriculture Projects – AGR.
2. The project is applying a GS-approved methodology:

- Gold Standard Agriculture Smallholder Dairy Methodology: Methodology for GHG Emission Reductions from Smallholder Dairy Production Systems.
3. The project is not associated with geo-engineering or energy generated from fossil fuel or nuclear, fossil fuel switch, or any other project activity that supports, enhances or prolongs such energy generation; these Project types are not supported by the Gold Standard.

Eligibility as per relevant activity requirement (Land-use & Forests Activity Requirements):

4. Project type: the project is eligible as it falls under the Gold Standard eligible project type: Agriculture Projects – AGR.
5. No deforestation: the project area shall not meet the definition of a forest at project start date and shall not have been forest for at least 10 years prior to the project start

The project area (all farms where improved dairy management practices are adopted over time) are either croplands or grasslands. The project activities - the adoption and implementation of improved dairy management (see section A.5), do not result in land use change. Therefore, the project areas will still remain in their original land uses in the project scenario.

The landscape in the project's two counties is characterized by a mixture of mainly cropland and grasslands as well as forests inside the Mt Elgon National Park (which is excluded from the project area). Project activities are implemented within the individual farms on croplands and grasslands, and no project activity is implemented on forest land¹. As part of the project area recruitment approach, the baseline and monitoring survey assess the trees standing on the farms and exclude those areas that already qualify as forests. Furthermore, the locations of the farmlands included in the project are cross-checked with land use/cover maps to ensure that they do not already qualify as forests, and have not been cleared on native forests 10 years prior to inclusion into the project. Farmlands not meeting this criterion are excluded. Most of the forests in the area was cleared before or during the 1970ties.

The first two maps below show the locations of registered and tracked farms in the greater Mt Elgon Landscape using Google Earth time series function, first for 2016 and second for 2006. It shows that all tracks are outside the main forest remnants of this region being the Mt Elgon National Park (around the caldera of the mountain) and the Kakamega Forest National Reserve.

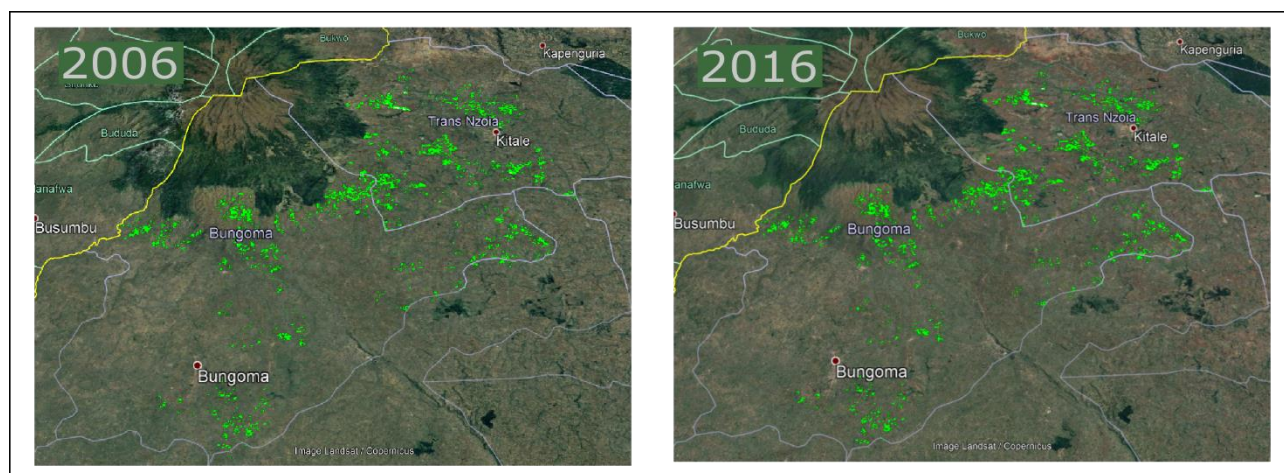


Figure 1: Google Earth images for 2006 and 2016.

¹ The UNFCCC Kenya forest definition is 30% crown cover, 0.1 ha minimum area, and 2 m minimum height.

The full spatial assessment is summarized below:

1. Exclude all farm tracks which are on forest areas in 2006
2. Exclude all farm tracks which are on forest areas in 2016
3. Exclude all farm tracks which are on wetland areas
4. Exclude all farm tracks which are on organic soils

The result provides all farm tracks/areas that do not overlap with forest or wetlands, and are thus compliant with the standard. A more detailed description of the applied methodology is presented next.

In line with the UNFCCC definition of forest in Kenya canopy cover above 30% and minimum 0.1 ha is used for forest areas assessment. GFW provides tree cover of year 2000 and tree cover loss from 2001-2017 data for the entire world in raster GIS format; each pixel shows tree cover in percentage and loss year respectively. Using ArcGIS software this forest cover raster map was classified into 2 categories using "Reclassify tool" i.e. 0-30% and 30-100% tree cover. The next task was to eliminate areas having less than 0.1 ha of tree cover to get final forest cover map. "Region Group" tool was performed on the classified map, hence clustered all connected pixel and assigned unique ID. The forest cover map was re-projected to WGS4 UTM zone 36N from WGS84 geographic coordinate system. Area of each cluster in hectare was calculated using formula (pixel size * pixel size * pixel count)/10000. Using "field calculator tool" all cluster (tree cover) having area less than 0.1 ha was set to non-forest areas. This results in the forest cover map of year 2000; and to prepare maps of 2007, forest loss map was classified into 2001-2005, 2006-2017 classes. Using combine tool on forest cover 2000 and reclassified forest loss map, pixels in loss category between year 2001-2005 were set to non-forest, and the rest to forest 2006, which resulted in forest cover map 2006. Areas having less than 0.1 ha were set to non-forest by using the same process explained above to eliminate them from being counted. These steps ensured the project area shall not meet the definition of a forest at project start date and shall not have been forest for at least 10 years prior to the project start. Also, every farm track is represented in this new assessment for a polygon, having this, we increase the accuracy of the spatial assessment. To eliminate the areas that overlap with forest on 2006, the result of the process mentioned above is converted to a polygon file. With the two files in vector format, we can apply the difference set operation, the remaining polygons are the areas that do not overlap forest areas.

The computation of the forest land cover for 2016 is a similar procedure as the one mentioned above. However, we used the percentage tree cover data from 2010² and the forest loss from 2010 to 2016. As for the wetland areas, we downloaded a wetland layer from the World Resources Institute for Kenya³. At last, the organic soils layer was extracted from the Harmonized World Soil Database⁴ from the FAO. Figure 2 and 3 show the locations of the project farms on a forest cover map derived from Global Forest Watch (GFW) dataset⁵ for 2006 and 2016, as well as, the other layers used in the analysis.

² <https://glad.umd.edu/dataset/global-2010-tree-cover-30-m>

³ <https://datasets.wri.org/dataset/wetlands-in-kenya>

⁴ <http://www.fao.org/soils-portal/data-hub/soil-maps-and-databases/harmonized-world-soil-database-v12/en/>

⁵ <https://www.globalforestwatch.org/>

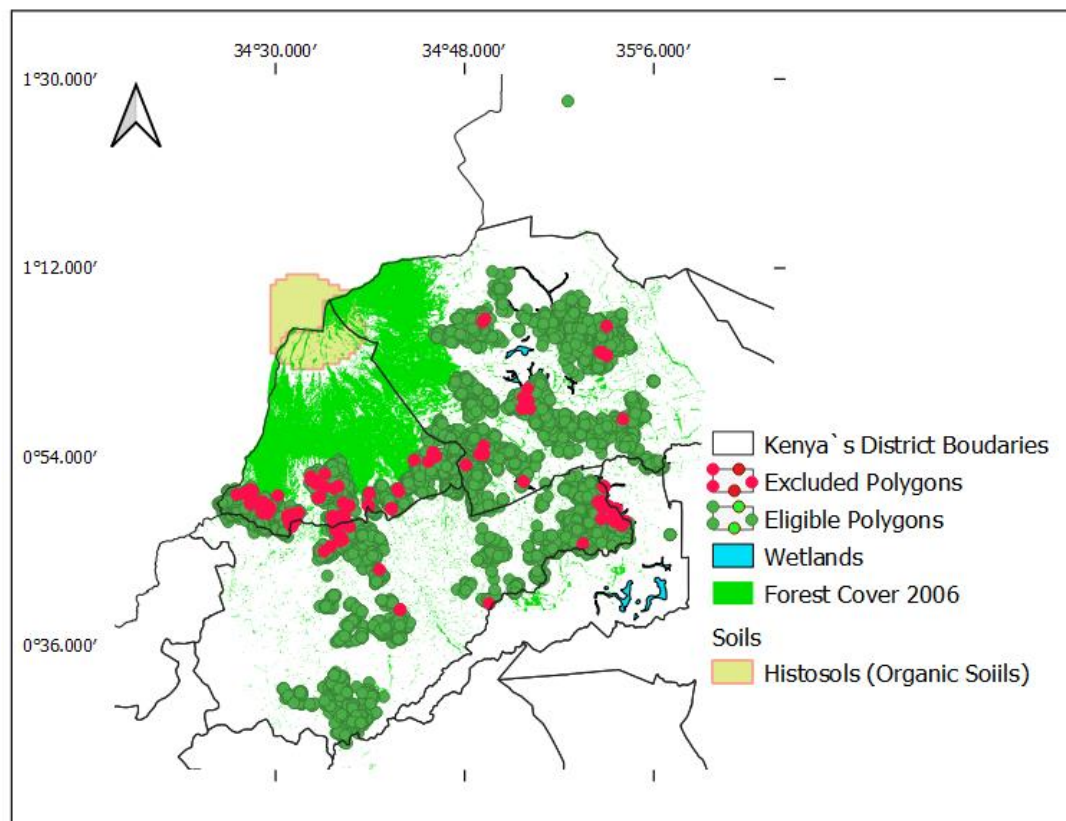


Figure 2: Location of farms on Forest cover map of 2006

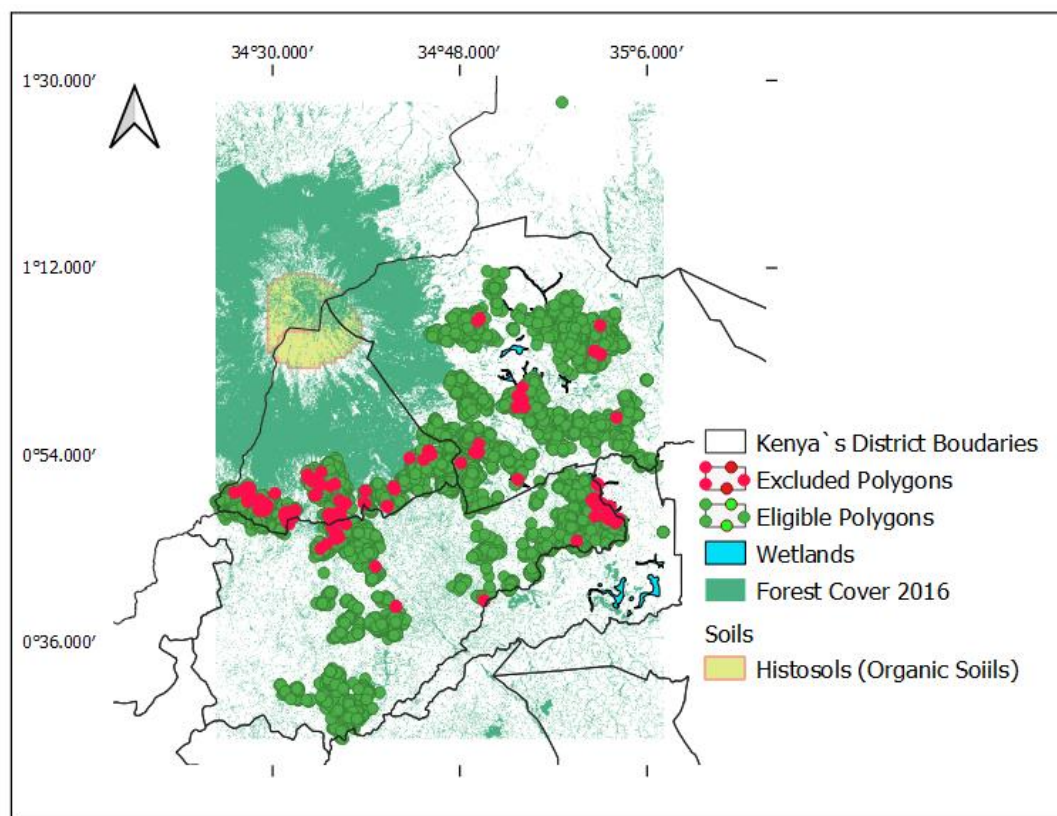


Figure 3: Location of farms on Forest cover map of 2016

6. Methodology: The project activities are covered by approved Gold Standard methodologies, which are listed above.
7. Secured Titles: The Project Implementer (Vi Agroforestry in partnership with Livelihoods and Brookside Dairy) acts on behalf of project participants:

The Project Developer acts on behalf of the project participants (farmers, farmer groups and farmer organizations). The two parties have signed a contractual agreement (farmer commitment from, farmer group contract, MoUs with cooperatives) after a due process of consultation and consent seeking (see section A.3 below for further details). The project participants have full and uncontested legal rights on the land, hold the right to implement the project activities, and the carbon user rights. In Mt. Elgon and the surrounding districts, land is owned legally by the individual farmers/family members. The land was adjudicated and legally assigned after consolidation and demarcation in 1971. This legal possession of land bestows upon registered members of the society, the powers to make the necessary decisions with respect to this project. The legal title of the land is evidenced through legally registered land certificates issued by the Government Registrar of Land Titles. However, the majority of the farmers have not obtained their title documents from the lands offices of the Government. Currently about 30-40% of the farmers have title deeds to their lands. Those who do not have their title deed individually have an allotment letter proving their individual or family's ownership of the land. During interaction with the farmers in early phases of the project, they will be encouraged and advised to acquire their title documents since the government has provided favorable conditions for the same. Obtaining a title deed involves sub-division of the land, physical planning, land consent, land registration (for new numbers) and stamp duty. This can cost between Ksh. 25,000 –30,000 (3 – 5 acres sub-division). The cost of obtaining title deed depends on the size under sub-division.

Vi Agroforestry will mitigate land related risks to drivers of ecosystem degradation such as land conversion, infrastructure investments and land speculation through;

- a) Land conversion: The project will work with farmers who have formal land ownership and who will be expected to sign a formal agreement lasting the duration of the credit issuance. The project will both work with farmers who have acquired their title deeds, and those who have not but can prove legal ownership within the family. All farmers in the project will have either title deed or an allotment letter proving their individual/family ownership of land. More emphasis will be put in selecting locations where possibilities of land use changes are not expected to be much during the project carbon crediting period.
 - b) Infrastructure investments: Land for infrastructure development are clearly identifiable and the project will work with small-scale farmers who have secure land ownership.
 - c) Land speculation: The project will work with small-holder farmers in rural areas who own and depend on their land for their livelihoods and therefore no immediate competing enterprises that would lead to speculation.
8. The project location: The project is located in Kenya, hence, it meets the activity requirement, which states that "projects can be implemented in all countries".
 9. Scale: the project is a grouped smallholder project, which is eligible under the Gold Standard.

A.3. Legal ownership of products generated by the project and legal rights to alter use of resources required to service the project

Following an extensive process of consultations and consent seeking, each participating farmer is willingly entering into a contractual agreement with the Project Implementer (Vi Agroforestry). This agreement confirms that:

- 1) the participating farmer holds all necessary rights to implement the project activities: improved dairy livestock management on their farms;
- 2) the participating farmer holds the user rights of the carbon benefits generated as a result; and

- 3) the carbon rights have been passed on to the Project Implementer.

Furthermore, Vi Agroforestry has signed a contractual agreement with the Livelihood Fund to deliver the carbon benefits to the latter for an agreed amount of financial investment by the former. Hence, the Project owner, Livelihoods Fund, has full and uncontested legal ownership of the carbon benefits generated by the project. These agreements are available in supporting documentation.

Samples of farmer commitment forms, farmer group contracts, MoUs with farmer cooperatives and the contract with Livelihoods are available as supporting documentation.

A.4. Location of project

A.4.1. Host Country

Kenya

A.4.2. Region/State/Province etc.

Bungoma and Trans-Nzoia counties

A.4.3. City/Town/Community etc.

Sub-counties in Bungoma County: Cheptais, Elgon, Central Bungoma, Bungoma West, and Bungoma North

Sub-counties in Trans-Nzoia County: Trans-Nzoia West, Kwanza, Saboti

A.4.4. Physical/Geographical location

The project is located in two counties⁶: Bungoma and Trans-Nzoia – in the western part of Kenya, bordering Uganda (Figure 4). All farms implementing the project fall within the boundaries of these two counties. The coordinates of the geographical boundaries are as follows (values are in decimal degrees):

Easting	Northing
34.3632	0.427248
35.3604	1.288020

The GIS files of the physical/geographical location are provided as separate documents including the tracks of the individual farm plots. Figure 2 above shows the location of the individual farm plots so far registered and under implementation within the larger Mt Elgon landscape.

⁶ In Kenya, counties are the next level administrative sub-division of the country, which is followed by sub-county, then location.

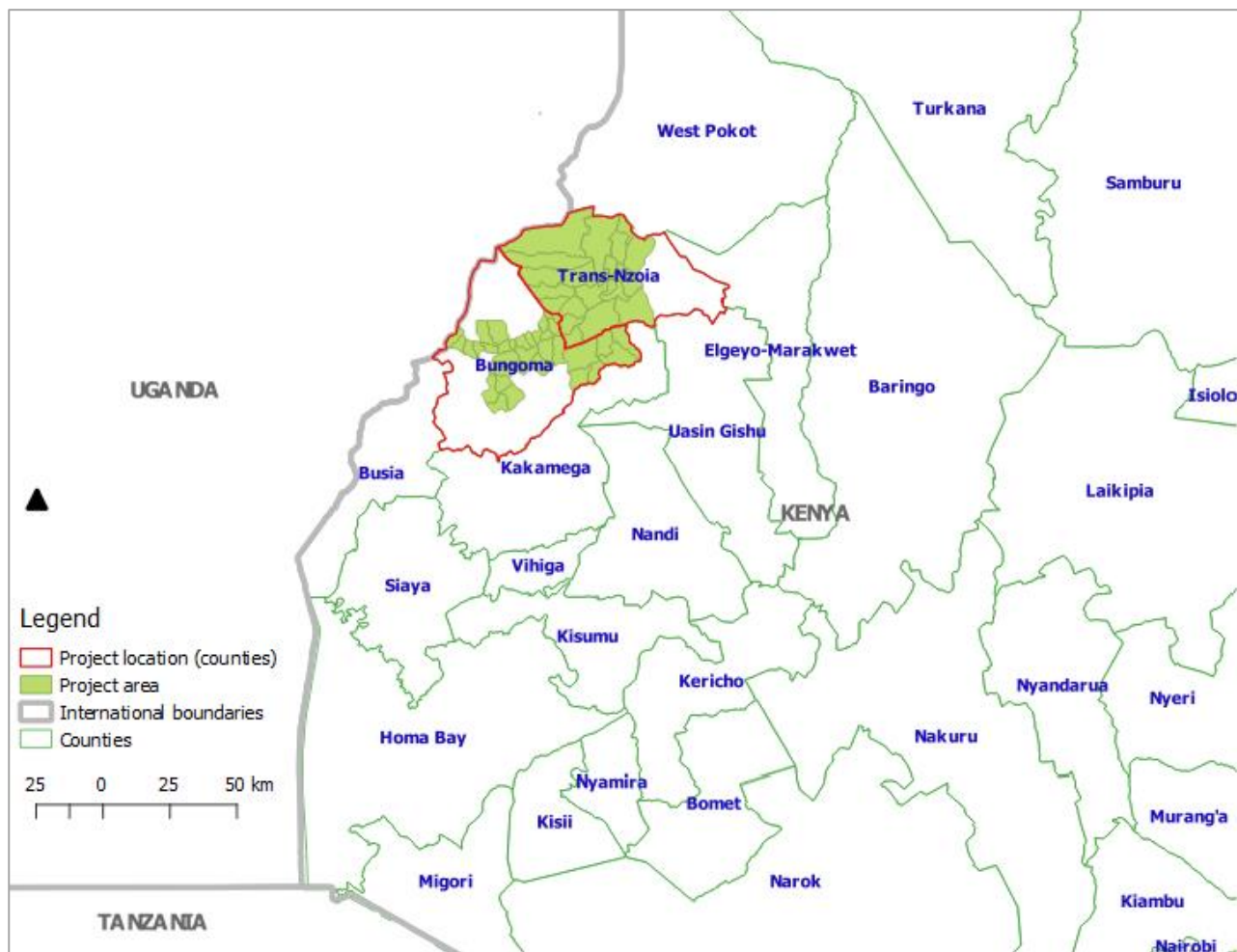


Figure 4: Project location

A summary of the different project locations of the project area is given in the following table:

Table 1: Demographic summary of the project locations

County	Sub-county	Location	Male Population	Female Population	Total Population	No. of Households	Area (km ²)
Bungoma	Cheptais	Chepkube	5962	6162	12124	2354	21.7
		Cheptais	8287	8377	16664	3418	19.8
		Sasuri	4821	4916	9737	1807	18.5
		Chesikak	7061	7264	14325	2722	21
		Chongeywo	5401	5319	10720	1958	19.4
		Emia	5166	4931	10097	1880	40.5
		Chepyuk	7889	7456	15345	2578	53.5
		Kapkateny	6085	6145	12230	2387	19.2
	Elgon	Kamuneru	2883	2835	5718	1095	9.4

		Nomorio	5452	5501	10953	1932	21
		Elgon	3706	3788	7494	1437	14
		Kapsokwon y	5043	5211	10254	2103	14
		Kongit	4795	4792	9587	1784	15.8
		Chemoge	3032	3098	6130	1104	13
		Kaptama	4868	4905	9773	1841	21.4
		Kaboywo	4407	4355	8762	1561	16.1
	Central Bungoma	Luuya	12284	12674	24958	4565	47.3
		Sirare	9845	10060	19905	3770	32.4
		Kabuchai	11467	12243	23710	4524	41.6
		North Bukusu	7729	8118	15847	3044	29.1
	Bungoma West	Chwele	15822	17161	32983	6956	41.5
		Mukuyuni	11584	12126	23710	4618	40.4
	Bungoma North	Kibingei	16834	17624	34458	6698	51.9
		Kimilili	17382	18885	36267	4352	33.1
		Maeni	11798	12411	24209	4599	41
		Kamukuywa	18604	19284	37888	7211	46.2
		Naitiri	25193	26687	51880	9811	106
		Mbakalo	15614	16615	32229	5919	50.2
		Kabuyefwe	9403	10092	19495	3604	36
		Tongaren	20697	21977	42674	7974	77.9
		Kiminini (Bungoma)	8119	8336	16455	3108	48.7
		Ndalu	12127	12861	24988	4860	59.6
Trans Nzoia	Trans-Nzoia West	Waitaluk	31349	32705	64054	13018	139
		Kibomet	25517	26215	51732	12421	61
		Municipality	27316	24841	52157	14110	34.2
		Matisi	14315	13852	28167	7050	17.4
	Kwanza	Namanjalala	9537	9371	18908	4116	13.7
		Kapsitwet	5092	5130	10222	2058	28.9
		Kaisagat	14971	14537	29508	5824	105.4
		Kwanza	18893	19640	38533	7220	97.2
		Kapomboi	23670	24184	47854	9566	195.1
		Chepchoina	18500	17985	36485	7438	325.7
		Kaibei	15644	15725	31369	5855	89.4
		Endebess	11731	11607	23338	4644	202
	Saboti	Kinyoro	14379	14530	28909	5627	74.3
		Kisawai	5350	5386	10736	2136	75.2
		Kiboroa	5287	5059	10346	1947	50.1

		Saboti	12356	12286	24642	4769	56.1
		Machewa	9844	10155	19999	3713	44
		Sikhendu	11696	12433	24129	4804	41
		Kimini	35129	37366	72495	14682	153
Totals			!Ungültige Zeicheneinstellung	!Ungültige Zeicheneinstellung	!Ungültige Zeicheneinstellung	!Ungültige Zeicheneinstellung	!Ungültige Zeicheneinstellung

The project area covers 2,923.9 km² and has a population of 1,255,152 persons. The annual population growth is estimated at above 2.6 %.

A.5. Technologies and/or measures

The project is implemented by the NGO, Vi Agroforestry. It engages smallholder farmers to implement better land management and livelihood improvement activities. 30,000 farmers will be involved in the project, with 15,000 of them also being concurrently engaged in dairy production. Gender equality is seriously taken into account – to ensure the project improve gender relations and benefits to both women and men. They are organized in farmer groups at the lower level and cooperatives at the upper level for efficient delivery of extension services. The project promotes improved livestock feeding and husbandry practices. Standardized training materials are used to deliver extension services. Selected posters developed to train farmers in the adoption of all the project activities including dairy are presented below and the full training manuals can be found on the website of Vi Agroforestry (<http://www.viagroforestry.org/>). The dairy modules in the project are structured in the following way:

Table 2: Dairy Modules

Modules	Topics
Module 1	Introduction to improved dairy management
Module 2	Fodder establishment and management
Module 3	Dairy feeds and feeding
Module 4	Dairy cow breeding management
Module 5	Common dairy cow parasites and disease management
Module 6	Dairy cow housing
Module 7	Milk Hygiene and handling

Figure 5: Training posters developed by VI Agroforestry to train farmers in locally adapted agroforestry and dairy systems.

FODDER TREES

WHAT IS A FODDER TREE?

A fodder tree is an agroforestry tree or shrub that produce enough leaves to be used as feed for livestock. The feed prepared from fodder trees can be an additional supply of proteins, vitamins and minerals. Fodder trees are prepared and mixed with other feed.

PREPARING THE FEED

Cut a 1m branch (important to cut 2kg dry matter portion). Cut into 1m long pieces. Cut down to 10cm.

FEEDING THE GRAZING COW

Feed grazing cow direct

FEEDING THE ZERO GRAZING COW

Mix with other feeds
Green grass
Hay
Put feed on the clean feeding trough.

KEY FODDER TREES

Most fodder trees are leguminous, grow fast, have deep roots, are permanent, regrow after cut and are tolerant to drought. Examples: *Calliandra calothyrsus*, *Sesbania sesban*, *Morus alba*, *Glicinia sepium*, *Moringa oleifera*, *Leucaena leucocephala* and *Cajanus cajan*.

Calliandra hedge

Crop field

Different types of grasses, e.g. napier grass

STEPS TO ESTABLISH AND MANAGE CALLIANDRA CALOTHYRSUS FOR FEEDING 1 DAIRY COW

1. Select a place for your fodder trees. Choose a place with good soil and water access. It should be permanent.
2. Prepare a mixed seedling nursery. Mix 1:1 Calliandra and Napier grass seeds. Sow in a nursery bed. Water regularly.
3. Plant seedlings in the field. Space 2m x 2m. Water regularly.
4. When seedlings have grown, cut them. Cut 1m long pieces. Dry for 2-3 days. Store in a clean bag.
5. Mix with other feeds. Mix with green grass, hay, etc. Put in a clean feeding trough.
6. Feed the cow. Feed 2kg dry matter per day.
7. Monitor the cow. Check for health and milk production.
8. Harvest the trees. Cut trees every 2-3 months. Use for fodder or other purposes.

NOTE: Use Calliandra as a supplement or intercropping with 2 kg of dairy meal per day to a dairy cow. Do not feed Calliandra to non-ruminants such as chicken, pigs or rabbits – it contains tannin which is not suitable for them.

DAIRY COW BREEDING

WHEN IS A COW ON HEAT?

Reddish vulva
Mucus strings
Stickiness

RESTLESSNESS

Mooring

Less milk

COW SHOULD BE PREGNANT AGAIN BETWEEN 90 – 120 DAYS AFTER CALVING. LOOK FOR SIGNS OF HEAT 3 WEEKS AFTER INSEMINATION

MONTH 1	MONTH 2	MONTH 3	MONTH 4
1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12

Call the vet if:

- No signs of heat 70 days after calving
- No signs of heat 90 days after insemination for PD
- No signs of pregnancy after 3 inseminations

CALF AND HEIFER REARING

Female calf

6 MONTHS

After 6 months, use 2:1 ratio

YEARLING

Good health and feeding throughout life

156 cm girth = 300 kgs and ready for AI

BULLING HEIFER

PREGNANT HEIFER (In calf heifer)

SELL OR EAT THE MALE, KEEP THE FEMALE CALF

TREAT TOMORROW'S COW WELL

Breeding too small reduces lifetime milk production.

PRODUCE CLEAN MILK

BEFORE MILKING: WASH AND CLEAN

Wash hands

Clean

AFTER MILKING: CLEAN AND DELIVER

Clean with soap and brush

Deliver in 2 hours

CLEAN COMBED BODY

Thigh

Belly

Feet

Clean floor

Tail

Dry with clean cloth

Clean teats and the udder

Clean cows give clean milk

CLEAN MILK SELLS

Milk in the morning and then 10 hours later. Don't mix!

FEEDING YOUR DAIRY COW ON FORAGE

CUT GRASS BEFORE FLOWERING

Napier Grass: Cut when grass is between 1 m and 1.2 m. Cut down to 20 cm.

CUT FEED ON A CLEAN SURFACE

Cut 5 cm bites

USE 2:1 RATIO

2 sacks grass

1 sack legumes

Minerals: 100 – 120 grams per cow per day

Provide clean water throughout

A healthy cow dung is 2 cm thick and plate size

GET OVER 10 LITRES EVERY DAY WITH GOOD GRASS AND LEGUMES

Cows giving over 10 litres of milk supplement – 1 kg dairy meal for every extra 1.5 litre of milk.

The project main areas of focus/components are: implementation of agronomic and dairy management models for increased yield and quality of milk; and strengthening of farmer organizations including establishing dairy hubs. The project aims to plant about 4 million trees long-term trees in in small woodlots

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within the farm land, and in various agroforestry systems such as dispersed inter-planting, boundary planting, fruit orchards, and trees in crop and livestock agroforestry systems to provide fodder and other benefits. In addition, activities being undertaken for improving dairy production include: improved feeding, housing, watering, breeding and disease control. There is also improved manure management – through better collection, storage and use practices. A full description of the practices can be found in the project training manuals developed by Vi which are available as supporting documentation:

1. Training curriculum for dairy
2. Vi Agroforestry Gender manual for farmer groups

The adoption of improved dairy management practices is expected to generate 354,327 tCO₂-e in 7 years, in addition to improving the climate resilience of the farming system. Adoption of the above practices will also improve crop and milk yield and quality, thus, increasing food and income for the farming families. Therefore, the project will contribute to several SDGs – including the SDGs 1, 2, 3, 5, and 15 which are part of the overall strategy for all Vi Agroforestry programs in the region. Specifically, the project has set indicators and will monitor the impacts and performance for SDG 1, 2, 5 and 13.

SDG 1: No Poverty & SDG 2: Zero Hunger:

- Increasing of 40% people having >2 USD/ day
- Increasing of 30% households having 2 meals per day
- Improve quality and increase capacity of average milk production from 5,000 liters/day to 135,000 liters/day within four years
- 15,000 farmers have secured 'milk purchasing contracts'

SDG 5: Gender Equality

- Empowers and create capacities for family farmers, with at least 50% women in the farm organizations

SDG 13: Climate Action

- Dairy emission reductions: 354,327 tCO₂-e in 7 years

Project institutional and implementation set-up

Vi follows a highly consultative and inclusive recruitment process where farmers and farmer groups are sensitized about the project. The project is using a participatory planning, monitoring and evaluation of farmer led implementation system.

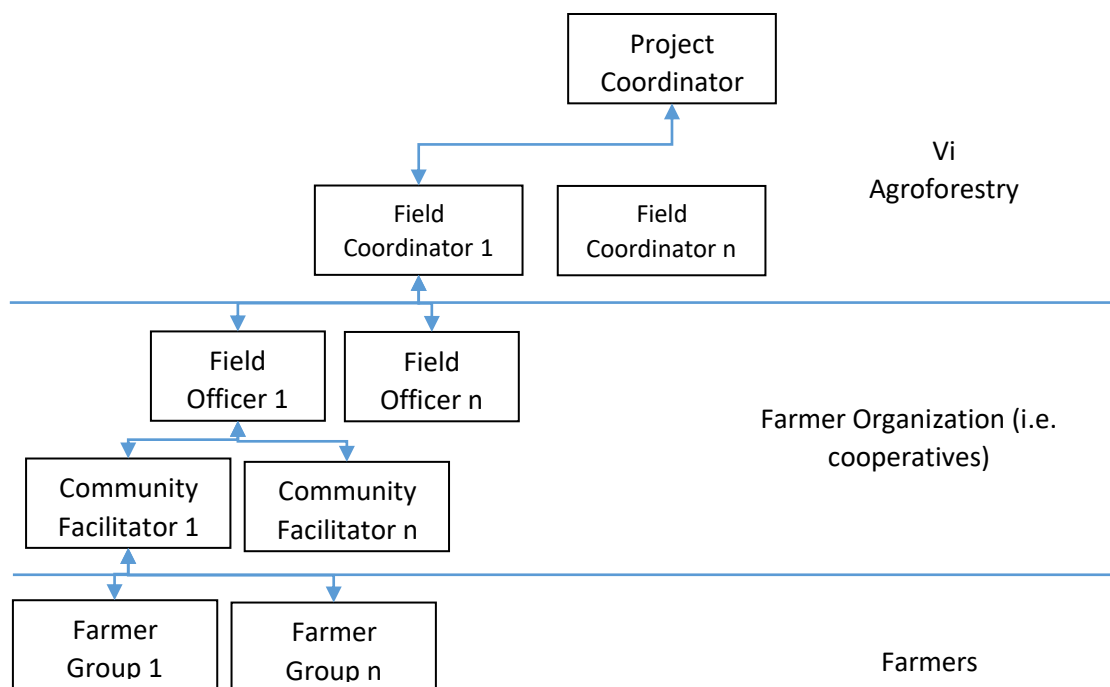


Figure 6: Institutional project set-up

The field advisers sensitize as many farmers as possible through existing traditional institutional structures such as Barazas and other organized meetings or groups (e.g. schools and local NGOs). The field adviser will contract farmer groups and the contract is signed between the farmer groups and Vi Agroforestry. Generally the field extension approach consists of the following five steps:

Step 1) Stakeholder awareness raising as an entry point in the village, region and to explore existing and complementary extension services to engage in partnerships (farmer, NGOs and Government agencies are invited);

Step 2) Sensitization and trust building of farmer groups farmer organizations;

Step 3) Recruitment of registered farmer groups including contracting;

Step 4) Strategic planning, training and advisory services for farmers on farm-specific practices on a group level including support for village loan and saving associations.

Step 5) Supporting milk/crop processing, marketing and bulk input purchasing activities to strengthen groups and add value to the milk/crops produced.

Each project participant is contracted to the project. Contracts are available as supporting documentation. As shown in the contracts farmer groups commit themselves to implement improved dairy and/or practices for which they receive continues training from Vi through the field advisors. The key persons in terms of knowledge dissemination, training and monitoring in the project are the Field Advisors, Field Officers and Community Facilitators acting as ToTs (training of trainers) and multipliers of the standard knowledge compiled in the Vi training modules. Their roles can be summarized as:

Field Advisor:

- Capacity build field officers on dairy best practices and monitoring
- Capacity build corporate management on organization development
- Together with EAMDA support cooperatives on hub development
- Monitor group formation and contracting
- Monitor and quality assure trainings to farmer groups

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- Support monitoring data collection

Field Officers:

- Analysis of the current status of farms, practices, and outputs
- Coordinating sensitization of farmers to form or join existing groups
- Capacity building of community facilitators best practices and monitoring
- Group formation
- Group contracting
- Carryout major trainings on dairy and monitoring to farmer groups
- Monitor and quality assure follow-up trainings and monitoring done by community facilitator
- Support monitoring data collection from farmer groups
- Quality Control/Quality Assurance of data collected in cooperative
- Follow-up on implementation at farmer level
- Monthly reporting

Community Facilitators (CF):

- Carry out follow-up trainings on best practices
- Collect details of farmer group members
- Support farmer groups in monitoring data collection
- Farm tracking
- Coordinating sensitization of farmers to form or join existing groups
- Quality Control/Quality Assurance of data collected
- Follow-up on implementation at farmer level

Whenever a farmer group is recruited with a contract, the project monitoring system comes in place. During the recruitment process, the status of the farms, their current activities and practices as well as their inputs and outputs in terms of crops and milk is monitored and entered into the project's MIS system (web-based). The monitoring is annually repeated (very cost-efficiently done by the farmer themselves after extensive trainings) and through this, annual ex-post monitoring of farm activities and the performance of the project in terms of dairy implementation is monitored.

Dairy Cooperatives & Business Hubs development

Within the project region farmer cooperatives exist such as Kaptama Farmers' Cooperative Society Ltd with capacity to support farmers to produce and market milk. Vi Agroforestry will reach out to available and potential new organizations and partner with them in the implementation of the project which will also include activities aimed at improving land and conserving the catchment. This project will initially partner with 15 cooperatives

- Kitinda Farmers' Cooperative Society,
- Kaimugul CDDC Cooperative Society,
- Kaptama Cooperative Society,
- Machewa Multipurpose Dairy Cooperative Society,
- Naitiri Dairy Farmers Cooperative Society,
- Tongaren Dairy Cooperative Society,
- Ndalul Dairy Farmers Commercialization Area,
- Kiminini Dairy Cooperative Society,
- Baraton Farmers Self Help Group,
- Mt Sinai CBO,
- Moobeet Dairy Cooperative Society,
- Koitogos Dynamic Dairy Cooperative Society,
- KapsitwetOkilgei Cooperative Society,
- Endebess Dairy Cooperative Society and
- Cheptais Dairy Farmers.

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Vi in Partnership with the East Africa Marketing Development Associates (EAMDA) is supporting cooperatives to establish dairy business hubs. This includes an assessment on all the cooperatives to establish their baseline status and the existing capacity gaps. The assessment to date in 2017 established gaps in leadership and governance particularly failure by most of cooperative boards to adhere to stipulated democratic requirements like holding Annual General Meetings (AGMs); renewal of leadership as required by law; gaps were also noted in lack of appropriate policies; lack of plans (Business plans, strategic plans) or failure to follow the plans where they exist. The cooperatives had membership by supply and not by registration and shareholding. Most cooperatives generally had weak financial base attributed to low volumes of milk they were handling daily. It was also established that the Dairy Cooperatives had weak links with relevant value chain actor. As a result of this, business and strategic plans will be developed for each of the 15 cooperatives.

In 2018, the team that is involved in provision of advisory services and capacity development of farmers through their organizations include 7 Field coordinators (employees of Vi Agroforestry), 75 community facilitators (recruited by cooperatives and are members of the primary producer groups) and 2 technical officers from East Africa Marketing Development Associates (EAMDA); supporting development of dairy business hubs. The 75 Community Facilitators were selected by the dairy cooperative societies using approved criteria.

Involvement of the communities:

Farmers in Mt. Elgon ecosystem tend to grow and keep similar crops and livestock. They have similar culture and societal norms. Trans Nzoia and Bungoma are cosmopolitan although Luhya and Kalenjin communities are more dominant. The population commonly uses Kiswahili – a Kenyan national language. The people have evolved from hunters, gatherers, forest dwellers and pastoralists into small-scale farmers. Farmers are changing from large livestock herders to a crop and livestock integrated system. The project is going to involve farmer in various ways including;

- Organizational development: Farmer groups, cooperatives and local organizations will be strengthened through participatory processes and capacity building to offer technical and governance services to their members.
- Participatory Agroforestry Extension: Farmers will be sensitized through small groups to carry out participatory planning, implementation and monitoring of activities suiting their local needs. Within farmer groups, farmer trainers will be empowered and enabled to support groups. These groups will be affiliated to the 15 farmer cooperatives. Where such groups are not members of a cooperative society, they will still be engaged in the project activities. But effort will be put to encourage them to join or become affiliated to the existing farmers' cooperatives to enable them optimally benefit from the project activities, including best practices adoption.
- Group nurseries: Farmer groups will be encouraged to establish their own tree nurseries to supply seedlings to their members. Individual farmers will also be taught how to make tree nurseries in their own farms.
- Farmer networks: Farmers will form networks for technological and experience sharing platforms. The 15 farmer cooperatives will play an important role in this.
- Farmer Enterprise Development: Farmers will also be sensitized on dairy enterprises, agroforestry enterprises (e.g. bee keeping, fruit/vegetable production) and other farm enterprises supporting alternative livelihoods, savings and loaning, microfinance, insurance as well as marketing.
- Stakeholder linkages: County government and local institutions will be engaged to support dairy trainings, resource mobilization and policies.
- Catchment integrated and landscape approach: Mt. Elgon has protected areas, rivers, streams and springs with riparian rights. With institutional and cluster/landscape approaches, farmers can carry out conservation efforts in participatory process.
- Partnership: The 15 Local farmer cooperatives will be technically empowered in partnership approach to support farmers to scale up and maintain the project activities. The project will also support farmer cooperatives to partner with valuable business partners in milk processing and

marketing. The project will also partner with Governments institutions (county and national), CBOs, NGOs and other institutions working in Mt. Elgon.

Vi produces internal quarterly and annual reporting system in terms of project status of implementation and performance of the project KPIs. This documentation is available upon request.

A.6. Scale of the project

The project is a grouped smallholder project as defined in the Gold Standard for the Global Goals GHG Emissions Reduction & Sequestration Product Requirements, Version 1.1 and the Gold Standard for the Global Goals Land-Use & Forests Activity Requirements, Version 1.1.

Total project area size planned to be achieved – when recruitment of all farms and farmers groups is complete is 35,100 ha.

A.7. Funding sources of project

The project is pre-financed to the largest extend by the Livelihoods Fund with significant contribution also from Brookside Dairy Limited. In addition, it is expected that the Lake Victoria Basin Commission will also financially contribute to the project for the river protection activities and the water impacts the project has on wider Lake Victoria Basin (reduced siltation, erosion into Lake Victoria). Vi Agroforestry also contributes technically to the project implementation. Vi Agroforestry has signed a contractual agreement with the Livelihood Fund and Brookside Dairy Limited to deliver the carbon benefits of the project to the latter for an agreed amount of financial investment provided to the former. The contractual agreements including cash-flow analysis are available upon request. External financial audits are commissioned by Livelihoods to monitor the financial performance of the project over time. The first financial statement report is available upon request.

A.8. Assessment that project complies with 'gender sensitive' requirements

To assess the project's compliance with gender sensitive requirements, we provide responses and evidence to four mandatory questions found in Step 1 to 3 of the Gold Standard Gender Equality Guidelines and Requirements.

Question 1: Does the project reflect the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy? Explain how.

The project reflects the key issues and requirements of the foundational gender-sensitive requirement of the Gold Standard Gender Policy, which is meant to strengthen the Gold Standard's 'do no harm' approach and addresses safeguards to prevent or mitigate adverse impacts on women or men and girls and boys. This is evidenced by the following:

- The project has undertaken gender consultations and training to identify gender gaps/risks. Refer to the *gender training curriculum* and the Women Organizing for Change in Agriculture and Natural Resource (WOCAN) gender assessment (separate documents) in supporting documentation.
- The project has prepared a gender training manual, which it uses to encourage women and men to participate equitably in project design and implementation and to mitigate risks of the project intervention so as to ensure it does not increase gender inequity, but rather increase the project benefits for both women and men. Refer the manual: *A gender guide to families working together for sustainable livelihoods: A Training Material* (separate document) in supporting documentation.

Question 2: Does the project align with existing country policies, strategies and best practices? Explain how.

Kenya has a national policy on gender: Kenya National Policy on Gender and Development, 2000. In addition, the Ministry of Gender, Children and Social Development has prepared a ministerial Gender Policy (Gender Policy, 2011), for use internally and by development partners. The goal of these policy documents is address gender issues through policy formulation and implementation.

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As a Kenya development partner, the project developer, has institutioned gender equality in the design and operation of this project through the preparation and application of a gender training manual. This manual (*A gender guide to families working together for sustainable livelihoods: A Training Material*) is used by project staff, farmer organizations, and other project partners to facilitate gender-sensitive learning. It seeks to challenge typical gender relations and foster positive and collaborative relations that enhance equal decision making for improved and sustainable livelihoods. In addition, gender consultations has been undertaken by WOCAN, which several recommendations, that have been incorporated in the project design and implementation.

Question 3: Does the project address the questions raised in the Gold Standard Safeguarding Principles & Requirements document? Explain how.

The project addresses the questions in Principle 2 – Gender Equality and Women’s Rights of the Gold Standard Safeguarding Principles & Requirements. This is summarized in the responses to the questions below:

- *Is there a possibility that the Project might reduce or put at risk women’s access to or control of resources, entitlements and benefits?*
No, the project enhances discussions and engagement of women and men in joint decision-making regarding use of animal and land resources, obligations, and benefit sharing. In effect, it is empowering women to actively take more active role in decision-making regarding those resources.
- *Is there a possibility that the Project can adversely affect men and women in marginalized or vulnerable communities (e.g., potential increased burden on women or social isolation of men)?*
No; the project is in fact challenging any social norms that would marginalize women or men, but instead promoting and nurturing positive and collaborative relations for joint and equal decision making particularly at the household level for improved and sustainable livelihoods. This is the goal of the gender training manual.
- *Is there a possibility that the Project might not take into account gender roles and the abilities of women or men to participate in the decisions/designs of the project’s activities (such as lack of time, child care duties, low literacy or educational levels, or societal discrimination)?*
No; by making use of gender consultations/assessments, training and application of the project gender manual, the project is taking fully into account gender roles and the abilities of women or men to participate in the decisions/designs.
- *Does the Project take into account gender roles and the abilities of women or men to benefit from the Project’s activities (e.g., Does the project criteria ensure that it includes minority groups or landless peoples)?*
Yes, the project explicitly takes into account gender roles. Each farmer/farm family select from a range of project activities/practices, which suits them.
- *Does the Project design contribute to an increase in women’s workload that adds to their care responsibilities or that prevents them from engaging in other activities?*
No; by design, the project is intended to lighten the burden that women face, e.g., collecting firewood. This is achieved in the project by encouraging tree planting, which can produce on-farm wood fuels.
- *Would the Project potentially reproduce or further deepen discrimination against women based on gender, for instance, regarding their full participation in design and implementation or access to opportunities and benefits?*

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No; the project enhances positive and collaborative relations and joint decision-making among women and men. In fact, through various avenues, mentioned above, it challenges any gender biases that can deepen discrimination against women.

- *Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and priorities of women and men in accessing and managing environmental goods and services?*

No; through various avenues for engagement on gender equality with project participants, the project in fact enhances women's ability to access, use and manage natural resources in a spirit of mutual collaboration and equitable decision making with men.

- *Is there a likelihood that the proposed Project would expose women and girls to further risks or hazards?*

No; there is no such likelihood since the project, through a number of gender engagement avenues, is trying to achieve greater understanding, appreciation of gender roles, and more collaboration among women and men.

In summary, the project takes gender issues very seriously, and the main actions can be summarized as follows:

- The project promotes gender equality and the empowerment of women through equitable sharing of all information regarding the project with both women and men
- The project assesses and addresses gender gaps/risks through continuous stakeholders consultations – applying equitable gender representation.
- Household road map: each household participating in the project is encouraged to develop a household roadmap. The roadmap is the vision of the household for the next 4-5 years starting from the baseline year. This is done jointly by the household head(s) to ensure better cooperation, and definition of goals and roles.
- The project has dedicated resources to institutionalizing gender such as in the preparation and use of the gender training manual, gender assessments, and subsequent monitoring.
- The project has set gender sensitive indicator targets such as to increase the proportion of women in farmer organizations to 50%

Question 4: Does the project apply the Gold Standard Stakeholder Consultation & Engagement Procedure, Requirements & Guidelines? Explain how.

Since this project is retrospectively applying for Gold Standard Certification, the GSF Consultation Procedure and Guidelines could not have been meticulously followed. However, Vi Agroforestry with its 20-year experience of sensitizing, aggregating and implementing farmer-led livelihoods programs in Kenya and other countries in East Africa, has a very strong internal structure of standardized stakeholder consultation procedure. This is documented in the stakeholder consultation report.

It starts by preparing and creating a clear plan for the consultation (consultation plan) including list of stakeholders and resources (budget) required. Then actual stakeholders consultation (physical meeting) is conducted. Where physical meeting is not possible, avenues such as e-mail and address of the project office are used to get more feedbacks. The consultation process and feedbacks are documented. Assessments are made of the feedbacks received and they are incorporated in the project design as appropriate. Then feedback from the project is provided to the stakeholders regarding how their (stakeholders') comments/feedbacks were addressed. This procedure is consistent with the Gold Standard Stakeholder Consultation & Engagement Procedure, Requirements & Guidelines, and is enshrined in the partnership approach of the *Vi Agroforestry Strategy 2017 – 2021* document

SECTION B. Application of selected approved Gold Standard methodology

B.1. Reference of approved methodology

Gold Standard Agriculture Smallholder Dairy Methodology: Methodology for GHG Emission Reductions from Smallholder Dairy Production Systems;

B.2. Applicability of methodology

Applicability of Gold Standard Agriculture Smallholder Dairy Methodology: Methodology for GHG Emission Reductions from Smallholder Dairy Production Systems:

This methodology uses a standardized baseline approach, which is applicable under the following conditions:

- a) In regions where dairy production already occurs on a scale sufficient that a sample survey can quantify baseline management practices to a precision level of $90\% \pm 10\%$

Of the 30,000 participating farmers, most of them are also involved in dairy production. In addition, several literature sources report the predominance of smallholder dairy production in the region, e.g., Muruiki (2003)⁷ and Odero-Waitituh (2017)⁸. The main source for justifying the application of this methodology and the standardized baseline approach is the ongoing national policy and research initiatives in Kenya including the development of a National Appropriate Mitigation Action (NAMA) in Kenya's dairy sector which includes the development standardized baselines for all dairy regions in Kenya. This project will make use of these standardized baselines developed. The following analytical report should be seen as one of the main supporting documents in terms of the methodological application of this methodology (which also includes some of the same authors responsible for the GSF dairy methodology):

- FAO & New Zealand Agricultural Greenhouse Gas Research Centre. 2017. Options for low emission development in the Kenya dairy sector - reducing enteric methane for food security and livelihoods. Rome. 43 pp. (available here: <http://www.fao.org/3/a-i7669e.pdf>)

The supporting material as well as the emission factors to be used for this project region in Kenya in the standardized baseline was made available by the authors of this study.

The following charts from the above publication demonstrate the dairy conditions in Western Kenya where the project area is located:

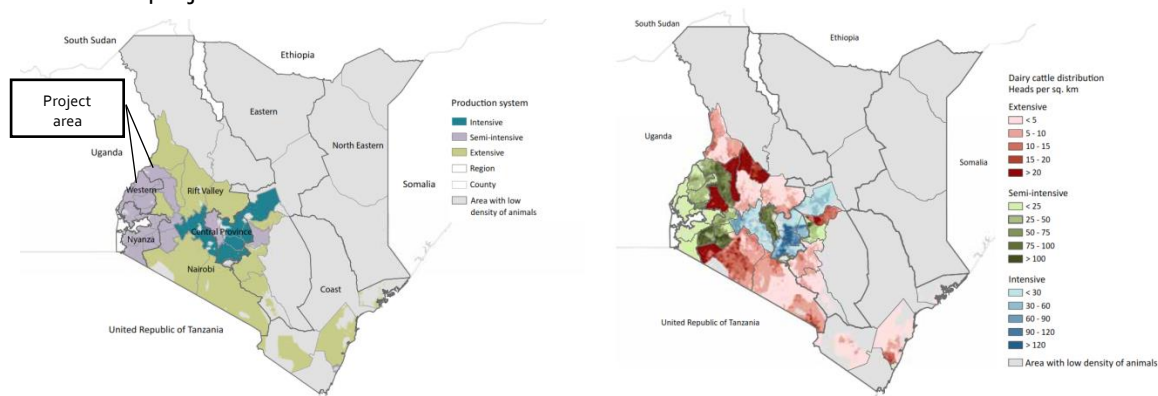


Figure 7: Geographical distribution of dairy cattle production systems (left) and dairy cattle production system distribution in Kenya (source FAO & New Zealand Agricultural Greenhouse Gas Research Centre. 2017)

⁷The document is available [here](#)

⁸ The document is available [here](#)

These sources demonstrate that dairy production in the region already occurs on a scale sufficient to provide a sample survey can quantify baseline management practices to a precision level of 90%±10%.

- b) The survey to determine the standardized baseline covers the different types of dairy farm operations that raise at least 80% of dairy animals in the project region (excluding dairy operations that are not small-scale as defined in footnote 1 above)

As mentioned above, this project uses the ongoing research developed in the frame of the development of the dairy NAMA in Kenya. In addition, the project, Vi Agroforestry conducted a baseline in 2015 during the project development design phase. This survey covered a sample of 98 farmer groups with 1763 participating farmers (Male 679 and Female 1084, and the different types of farm operations on dairy farms. They are all smallholder farmers. According to Odero-Waitituh (2017), smallholder dairy farmers own over 80% of the dairy cattle in Kenya. Based on the 2016 data of the project monitoring MIS, nearly all of the farmers groups registered in 2016 (371 farmer groups, 6,621 farmers) had dairy cows:

Table 3: Project MIS information for the year 2016

Livestock type	No. Groups	Total Number
1. Herd Size	370	12,409
2. Dairy Cows Total	370	7,317
3. Juvenile	344	2,374
4. Adult Productive	366	3,738
5. Adult Non-Productive	294	1,239

- c) There is sufficient and verifiable documentation of management activity data to support the quantification of the standardized baseline as outlined in Section 4 below.

The project has developed a management information system (MIS), where all management activity data to support the quantification of the standardized baseline are documented. Field data are captured using digital innovations (Mobile apps, SMS, etc.). A screenshot of the MIS is shown below and the monitoring system including the MIS is described in the supporting documentation and the monitoring plan

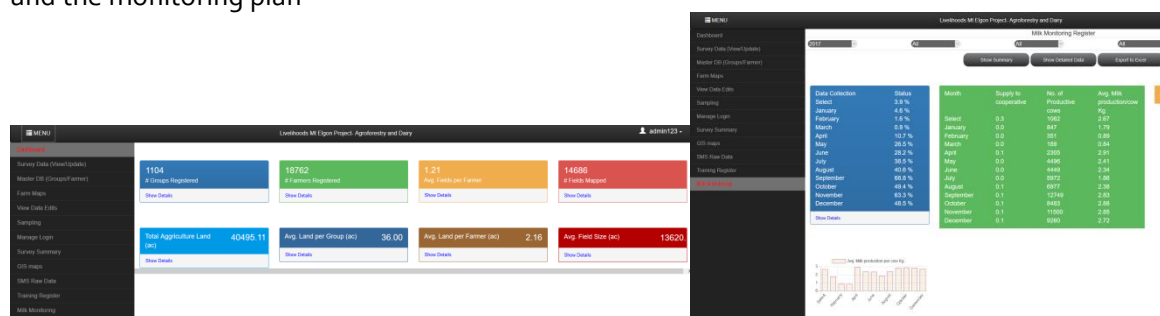


Figure 8: Mt Elgon Management Information System; Dashboard summary (left) and milk monitoring summary for 2017 data (right)

- d) Data used to quantify management activities to determine the standardized baseline should be current at the start of project activities, and in no case older than 5 years

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The publication and analytical work in the frame of the dairy NAMA has started in 2015 and is still ongoing. In addition, the project's baseline data have been gathered in the year 2015. Therefore, they are current, and not older than 5 years from the start of project activities.

- e) Where existing databases are used in the quantification of the standardized baseline, the Project proponents shall ensure that they are from a recognized authority and publicly accessible (i.e. not only available, but also cost is not a barrier to access)

The publication and analytical work including the emission factors developed for the standardized baseline in the frame of the dairy NAMA in Kenya will be used in this project. All this information existing data and information are from a recognized authority and publicly accessible, e.g., from the International Livestock Research Institute (ILRI), FAO, etc. This is complemented with the extensive monitoring of dairy information in the project from its start.

- f) Where data is collected specifically for development of a standardized baseline for the project region, sampling should follow the guidance in Sections III and IV of the CDM "Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities"

The analytical work done in the frame of the NAMA follows scientific standard (e.g. most of the work on Kenya is done by ILRI). The baseline data collected specifically by Vi to support the standardized baseline come from a sample of farms in the project region. It is collected from a sample of 98 farmer groups with 1763 participating farmers (Male 679 and Female 1084). It is representative of as the baseline for all farms that have already joined the project and those joining the project in the future. The sample farms provide a representative and unbiased estimate as stipulated in Sections III and IV of the CDM "Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities".

- g) The project activity is not mandated by any law or regulation

In Kenya, although there is a National Livestock Policy, 2008, which is meant to "guide the development of the sub-sector to increase household incomes, assure food security and create employment through improved livestock farming, value addition of products and support of livestock-based industries, among others", it is not legally mandatory to improve dairy livestock management and reduce GHG emissions. Therefore, the project activity is not mandated by law.

- h) The project results in certified emission reductions less than 60,000 t CO₂e annually

This project is different in the way it represents a landscape accounting project using three different carbon accounting methodologies. It was designed as social business project between the investors Livelihoods Fund, Brookside Dairy Limited, the implementing NGO Vi Agroforestry and the project beneficiaries – the 30,000 smallholder farmers, at least 15,000 dairy farmers and the farmer organizations (15 dairy cooperatives). Related to total emission reductions in this landscape project, the contract between all stakeholders stipulates a Key Performance Indicator of at least 904,593 tCO₂-e over 10 years or 90,459 tCO₂e (after conservative default buffer of 25%). The dairy specific emission reductions set in the project are 354,327 tCO₂e over 7 years or 50,618 tCO₂e annually.

- i) The project is located in countries with a Human Development Indicator below or equal to 0.7 in the previous 5 years for which data are publicly available before the start of the project activities

The Human Development Indicator was obtained from the UNDP Human Development Index (HDI) database⁹. For the period 2012-2015, Kenya's HDI ranges from 0.54 to 0.55; hence, is below 0.7.

In addition, the project activities shall satisfy the following conditions:

1. The project activities involve management changes that decrease the GHG emissions intensity of milk production. Typically, the project activities will be associated with improved feeding practices, but other practices that decrease the GHG intensity of milk production are also eligible, such as adoption of improved breeds or improved animal health practices

As outlined in section A.5, project activities include improved feeding, housing, watering, breeding and disease control. In addition, there is improved manure management – through better collection, storage and use practices. These activities reduce GHG emissions, hence, will decrease the GHG intensity of milk production.

2. The methodology is not applicable to off-farm management practices, including milk transportation, processing and distribution

Off-farm management practices such as milk transportation, processing and distribution are not included in the project. All activities are implemented on-farm including the production of feed.

3. Eligible dairy operations (farms) shall be smallholder farms, where members of the owner's family, neighbors or cooperative members perform more than 50% of the work on the farm. Dairy farms with more than 100 dairy animals are not eligible

The farms participating in the project are small in size (average 1.03 ha per farm), with dairy animals ranging from an average of 0.7 to 1.1 animals per farm based on 2016/ 2017 monitoring data of the project. All farming systems are typical integrated crop-livestock systems where the largest share of the work on the farm is done using only family labor.

4. Where project areas involve dairy farms that were producing milk prior to the start of project activities, reliable and verifiable data on the amount of milk produced per animal per year shall be available for a minimum of one year

All farms have been producing milk prior to the start of project activities. As part of the baseline study, data on the amount of milk produced per animal per year for the previous year have been collected from those farms. In addition, data and information in the frame of the dairy NAMA development is available (from ILRI). Milk yield is monitored in the project from its beginning (started in 2015/ 2016) on a monthly as well as bi-annual (2 cropping seasons) basis.

5. Where project areas involve dairy farms that begin to engage in dairy production only after the start of project activities, the project proponent shall provide evidence to substantiate the dairy farm stratum to which each new project area is allocated (see paragraph 17 on the identification of dairy farm strata)

All dairy farms being included in the project began engaging in dairy production before the start of the project activities.

6. Project areas (i.e. a dairy farm) become ineligible for GHG crediting if land management change as a result of project activities decreases aboveground woody biomass or soil carbon stocks on the dairy farm

⁹ The HDI database was accessed [here](#).

The project activities, outlined in section A.5, do not lead to change of land management that causes decrease in aboveground woody biomass or soil carbon stocks on the dairy farm. In addition, they do not lead to land use change. Activities implemented by Vi Agroforestry through training and extension solely focus on the intensification of the individual farm lands and does not lead to any negative land use change. Moreover, it leads to a reduction of degradation on a landscape level with spillover effects also to other lands which increase the potential to recover. This has been proven in the Kenya Agricultural Carbon Project, a VCS registered project adjacent to this project which is also implemented since 2009 under the same conditions and with the same training and extension approach by Vi (except the dairy component).

7. The Project proponents shall provide a clear and convincing demonstration that no double counting and/or claiming would arise from the issuance of Gold Standard carbon credits

According to the GS GOLD STANDARD FOR THE GLOBAL GOALS GHG EMISSIONS REDUCTION & SEQUESTRATION PRODUCT REQUIREMENTS, "Typically the potential for Double Counting arises where there is a government regulated system/programme for the constraint and monetisation of GHG emissions (such as international emissions trading, cap and trade or carbon tax mechanisms). Examples may include national/international schemes such as the Kyoto Protocol, the EU ETS or sub-national, various regional schemes such as the Chinese, Canadian and American provincial/state-based schemes. Under these systems/programmes, the potential exists for the Gold Standard VERs/CO₂-certificates to be inadvertently or intentionally captured and monetized outside of the Gold Standard issuance-transfer-retirement practice"

By location, the project is in a host country that does not engage in emissions trading – so the risk that carbon credit is claimed by the host country (or second buyer) in addition to the claim on the credit by the first buyer (Program owner) is eliminated. And by design, the project has GHG quantification is done in transparent procedures – with verifiable data and data sources (see section B.6.4 and B.6.4). Therefore, no double counting and/or claiming would arise from the issuance of Gold Standard carbon credits.

8. Animal welfare and livestock management requirements set out in the Gold Standard Agriculture Requirements shall be met in all project areas. The welfare of animals shall be ensured by:
 - a) Provision of sufficient drinking water, and
 - b) Access to daylight, and
 - c) The prohibition of cattle trainers, and
 - d) No hindrance in their sensory perception and performing their basic needs, and
 - e) No mistreatment.
 - f) Injured or sick animals shall be treated and isolated, if necessary, for recovery.
 - g) Excessive or inadequate use of veterinary medicines shall be avoided. Thus, all medications shall be administered strictly according to label and package instructions, or according to instructions from a trained veterinarian.
 - h) Synthetic growth promoters including hormones shall not be used.
 - i) Animals shall be exposed to the least stress possible during transportation and slaughtering.
 - j) Appropriate space per animal and stocking rates per land unit should be set according to their developmental and physical needs

Furthermore, in order to ensure the welfare of animals raised in each project area, each project must:

- a) develop a set of guidelines on animal welfare that is suited to the project context. When developing animal welfare guidelines, the project proponent shall aim to meet or exceed national guidelines where these exist, and where national guidelines do not exist the project proponent shall develop project-specific guidelines based on international guidelines on animal welfare in dairy production.¹² At a minimum, the project-specific guidelines should be consistent with the animal welfare requirements of the Gold Standard

Gold Standard¹⁰

- b) develop and implement a plan for capacity building and other support to farmers to improve animal welfare in all participating project areas. The aim of the plan is to support project participants to continually improve the welfare of the animals they care for in ways consistent with the animal welfare guidelines.
- c) monitor implementation of the plan for capacity building and other support to project participants to improve animal welfare; and
- d) document evidence of efforts undertaken to improve or maintain animal welfare in each project area

In Kenya, there is still low awareness, recognition and compliance of animal welfare. In recent years, the government has come up with improved regulatory framework – such as the Animal Welfare Bill (draft). Other relevant laws relating to animal welfare include the Meat Control Act, Animal Disease Control Act, Rabies Control Act, Hides and Skins Trade Act, Livestock Branding Act, and Prevention of Cruelty to Animals Act CAP 360 (Amended in 2012). Nonetheless, there are still no animal welfare standards, guidelines or codes of practice to guide programs and priorities (IGAD, 2017)¹⁰.

In this project, however, several actions have been taken and are being taken to meet at minimum the welfare requirements of the Gold Standard.

- The project has developed project-specific guidelines – borrowing from international standards. This guidelines covers all aspects of animal welfare listed in 8 a) to j) above, and is consistent with the Gold Standard animal welfare and livestock management requirements. The training posters related to dairy management above under A5 give an overview, the full guidelines are available online under <http://www.viagroforestry.org/>, under publications SALM Training manuals.
- The project provides capacity building through extension services (training and technical support) to all participating dairy farmers in best practices in livestock husbandry and animal welfare. This is intended to support the farmers continually improve the livestock welfare and husbandry
- Veterinary services are provided through the project and government extension staff.
- The project undertakes monitoring of those capacity building activities and improvements as part of the continuous process of the project activity monitoring.

¹⁰ Kenya National Animal Welfare Strategy and Action Plan (2017-2022).

B.3. Project boundary

The project boundary is the sum of all farms where improved dairy management practices are adopted over time. Those farms are under the control of the participating farmers who willingly join the project and sign contractual agreements with the Project Implementer (Vi Agroforestry) to implement the project activities on their farms. Hence, the Project Implementer establishes full control of the Project area through the farmer group contracting process. Since this is a grouped smallholder project, not all the participating farms will join the project at once. Hence, New Areas will be added during the project implementation, after the Project achieving Design Certification. Those New Areas will undergo the Gold Standard New Areas processes, as described in the Validation and Project Design Certification in the Gold Standard for the Gold Standard Principles and Requirements, Land Use & Forests Activity Requirements, and Gold Standard GHG Emissions Reductions & Sequestration Product Requirements. Those farmers who have already joined the farms are hereby referred to as “first activity instances”. The farms of these farmers have been mapped using GIS for unique identification, and are under the annual monitoring using the Web-based MIS system approach of the project. Also see maps above for the geographical location.

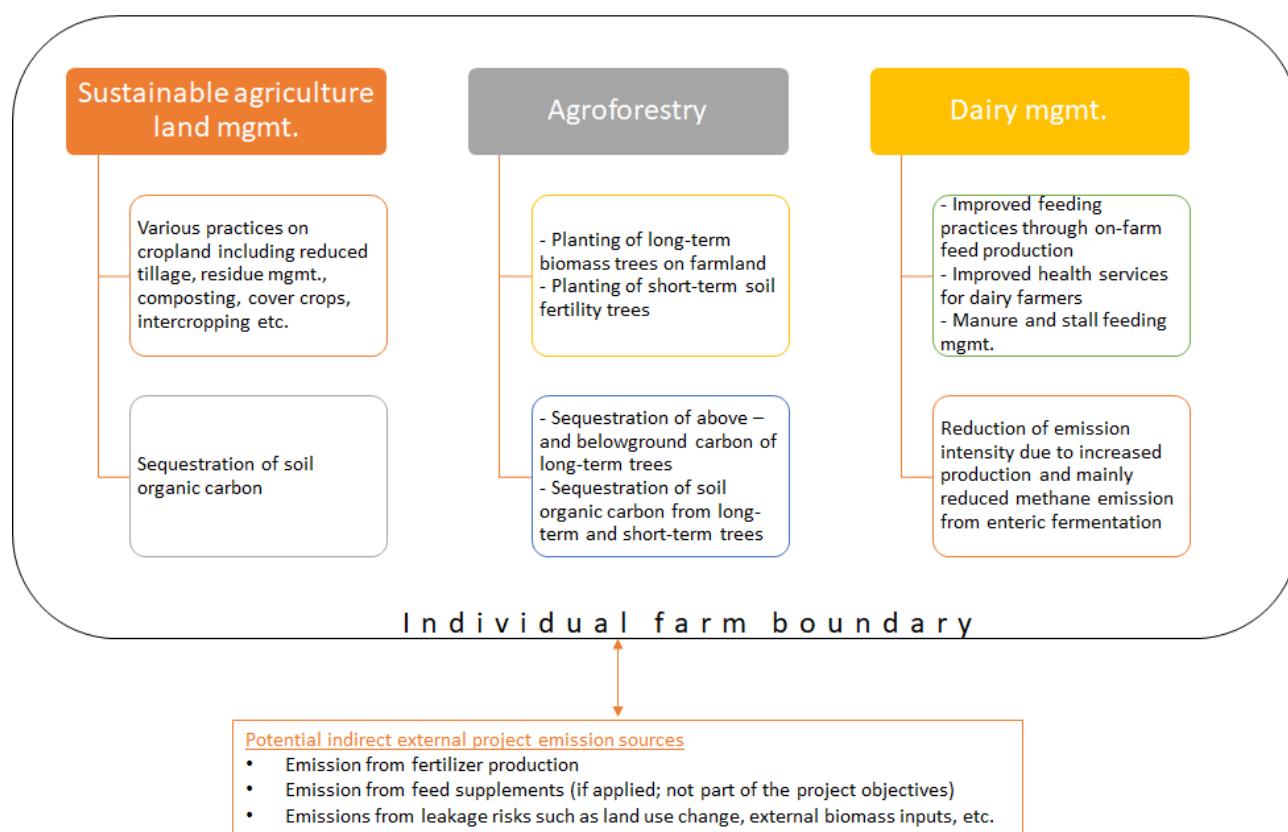


Figure 9: Project activity boundaries and corresponding impacts on emission reductions and removals

Table 4: Registered farms and farmer groups participating in the project up to April 2018

Total number of groups registered	Total number of farmers registered	Total farm area (ha)	Total agriculture land (ha)
921	15,352	15,863.49	11,375.11

GHG emission sources/sinks for the improved dairy management is shown in Table 5 below. They are the same for both baseline and project scenarios.

Table 5: Sources/sinks included				
Source		GHGs	Included?	Justification/Explanation
Baseline/Project Scenarios	Farm materials, construction and equipment manufacturing	CO ₂	No	Excluded as per the methodology – since the main physical assets are mostly in place already and emissions from minor activities (e.g. upgrading dairy equipment) are expected to be insignificant sources of emissions in comparison to the total emissions over a crediting period.
		CH ₄	No	
		N ₂ O	No	
	Farm facilities and operations	CO ₂	No	Excluded, as per the project methodology, since any new equipment for the dairy operation represents an immaterial one-time change
		CH ₄	No	
		N ₂ O	No	
	Fertilizer manufacture and distribution	CO ₂	No	The project does not increase synthetic fertilizer use for the purpose of feed production. In addition, according to the CDM ammonia-urea manufacture methodology, CH ₄ is not a significant emission source. CH ₄ and N ₂ O are not significant emission sources for transportation.
		CH ₄	No	
		N ₂ O	No	
	Feed processing and distribution	CO ₂	No	There is no processing/distribution activities that generate these emissions as smallholders do on farm feed production without using processing or distribution including use of machinery
		CH ₄	No	
		N ₂ O	No	
	Land use change	CO ₂	No	The project activities does not promote/increase land use change. See applicability conditions (section B.2)
		CH ₄	No	
		N ₂ O	No	
	Supplement manufacture and distribution	CO ₂	No	There is no supplement manufacture and distribution activities that generate these emissions as smallholders do on farm feed production
		CH ₄	No	There is no supplement manufacture and distribution activities that generate these emissions as smallholders do on farm feed production. Emissions from fertilizers within the farms will be covered as part of the SALM activity accounting using the GS improved tillage methodology
		N ₂ O	No	Excluded because it is already included in the biogenic carbon cycle of the supplement
	Animals producing milk and the productive dairy herd enteric fermentation	CO ₂	No	Excluded because it is already included in the biogenic carbon cycle of the feed
		CH ₄	Yes	CH ₄ is the main GHG produced as a result of digestion of feed by cattle, released through exhalation
		N ₂ O	No	Excluded – assumed negligible as per the methodology
	Manure Management	CO ₂	No	CH ₄ and N ₂ O are both major gases produced in manure management
		CH ₄	Yes	
		N ₂ O	Yes	
	Milk transportation	CO ₂	No	Excluded because change between baseline and project is assumed to be immaterial. For example, GHG emissions from transportation of milk (i.e. the primary commodity and material flow) is estimated to be less than 1% of the
		CH ₄	No	
		N ₂ O	No	
		CO ₂	No	

	Milk distribution and processing	CH ₄	No	total GHG emissions. According to the FAO LCA report ¹¹ , average GHG emissions to transport milk from the farm to the milk processing facility are 16 g CO ₂ per kg milk. By comparison, the FAO LCA report estimates global average emission intensity of milk production as 2.8 kg CO ₂ per kg milk.
		N ₂ O	No	
	Cull cattle transportation	CO ₂	No	Project activities do not increase culled cattle
		CH ₄	No	
		N ₂ O	No	
	Beef Processing and Distribution	CO ₂	No	Project activities do not increase culled cattle, hence, the beef processing or distribution associated with it.
		CH ₄	No	
		N ₂ O	No	

B.4. Establishment and description of baseline scenario

The baseline scenario is defined as per the GS4GG Principles & Requirements as “the reasonable, conservative scenario that would exist in the absence of the project”.

The overall situation in the project region is smallholder subsistence farming, which is characterized by low inputs – resulting in low yields and rapid loss of soil fertility. Livestock husbandry is characterized by uncontrolled grazing, lack of quality feeds, and general lack of quality veterinary services. This has caused long-term, degradation and loss of land productivity, and reduced food and income benefits – aggravated by the high population densities and the overuse of the land for food production over the years. The project baseline data was used to establish the baseline conditions within the total project area. A standardized baseline is applied based on data collected by the project as well as publicly accessible ILRI data from current development of the Kenya dairy NAMA. Furthermore, justification is provided by comparing the survey results with studies and literature representative for this region.

A rich body of scientific research on smallholder farm agrarian change and soil fertility management can be found for the Western Kenya region which is broadly representative of the situation found in other tropical highlands of East Africa due to its demographic and agro-ecological characteristics. The following study was used to corroborate the baseline conditions as found in the project baseline survey:

- Muriuki, 2003. Milk and Dairy Products, Post-harvest Losses and Food Safety in Sub-Saharan Africa and the Near East: A Review Of The Small Scale Dairy Sector – Kenya¹².
- Odero-Waititu: Smallholder dairy production in Kenya; a review (2017)¹³

The general observation found in all studies is that population growth has resulted in extensive land fragmentation and degradation in the past decades. The areas surveyed experienced some of the highest rural population densities in the world ranging from 400 to 1,300 inhabitants per km². This is in line with the situation in the project areas with around 430 km² inhabitants. Due to the high population pressure in the subsistence smallholder sector, average farm sizes reduced over the past decades now ranging from 0.6 ha to 2.8 ha according to literature. The monitoring data of the Mt Elgon MIS results in 1.03 ha per farm. Food security reportedly is in a decline in the project region. Crowley et al. (2000) reports that grain harvests, which were often sufficient to feed the family with some surplus to sell from the 1950 onwards, did not meet self-sufficiency needs in 1995. Only 3-15% of the farmers interviewed in 1995 reported that subsistence requirements from own maize are met. Tittonell et al. (2005) report self-sufficiency of maize in 2005 of around 7 months per year.

¹¹ www.fao.org/docrep/018/i3461e/i3461e.pdf, page 21

¹² <http://www.fao.org/fileadmin/templates/ags/docs/dairy/P1assessmentkenya.pdf>

¹³ Accessed [here](#)

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With regard to livestock, Crowley et al. (2000) identifies cattle ownership as one key criterion for distinguishing poorer from wealthier households. In 1995, the average number of cattle per farm ranged from 1 – 1.6 units. Based on the 2015 project monitoring data, the average cattle per farm was 1.7 units.

With regard to the baseline of trees and forests, the historical analysis of the past 10 years using the Global Forest Watch application revealed a loss between 2006-2015 (with >30% canopy density) of 2.529 ha mainly along the borders of the Mt Elgon National Park (<http://bit.ly/2KPjoex>).

The following table illustrates the baseline conditions in numerical terms of a typical subsistence farm in the project based on 2015 survey data on the project area (98 farmer groups, 1,800 farmers surveyed)

Table 6: Baseline conditions based on 2015 survey data

Area Statistics							
Land	Average ha / farm	Total ha	% of total land				
Total Land	0.96	1,733.76					
Agricultural land	0.65	1,163.67	67.12				
Grazing ground	0.15	271.64	15.67				
Settlement	0.15	261.81	15.1				
Others	0.02	36.77	2.12				
Baseline conditions dominant crops							
Crop	Season	Total area ha	Total production kg	Area weighted mean kg/ha	Mean kg/ha	SD kg/ha	No groups
Maize	Season 1	599.03	1,187,596.80	1,982.54	1,719.61	1,630.94	94.00
Maize	Season 2	155.29	312,750.00	2,013.97	2,393.59	2,576.77	27.00
Beans	Season 1	332.20	57,293.25	6,208.73	220.73	256.71	89.00
Beans	Season 2	121.25	32,634.45	9,689.57	418.42	504.56	42.00
Irish_potato	Season 1	34.52	2,091.50	2,726.49	107.10	109.63	15.00
Irish_potato	Season 2	12.44	907.00	3,279.87	100.50	107.41	13.00
Banana	Season 1	33.78	923,628.00	32,376.16	76,520.43	157,710.15	26.00

Banana	Season 2	19.65	756,656.00	45,596.40	68,224.50	145,506.73	16.00
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Baseline dairy information		
Livestock type	No. Groups	Total Number
Herd Size	97.00	3109
Dairy Cows Total	98.00	1754
Juvenile	96.00	1110
Adult Productive	95.00	1061
Adult Non-Productive	82.00	588
Avg. daily milk production per cow in kg (FPCM)	2.65	-
Avg. productive cow per farm	0.62	0
Avg. productive cow per ha (total area)	0.80	0
Avg. productive cow per ha (agriculture)	1.18	0
Baseline agriculture practices		
Practices	1st season % of total agricultural land	2nd season % of total agricultural land
Area under Fodder crop	2.2	2.1
Area under SALM	12.1	18.0
Burning of residue	37.6	7.1
Compost raw manure and residue	6.6	2.4
Mulching + cover crops	4.0	3.9
No Till	0.0	0.0
Reduced tillage	12.6	13.8
Residue feed to Livestock	19.7	7.8
Residue used for composting	3.6	2.0
Residue used for cooking	26.8	5.3
Residue used for mulching	3.2	3.0
Use of improved varieties	34.0	6.3
Use of inorganic fertilizers	44.5	8.4
Water harvesting	4.6	2.1
Fertilizer use	44.5	8.4

The baseline conditions of the project area can thus be summarized as follows:

- The dominant land use and livelihood activity at the household level is agriculture. Expansion of agricultural land use is continuing due to increasing population, and limited alternative livelihoods options, resulting into fragmentation and declining farm sizes. Agricultural land increased by 2.4% in 2000-2010 and 1.1% in 2010-2015 according to FAO statistics.
- The farming system is typically low-input smallholder subsistence, resulting in continuous loss of land productivity through soil erosion and nutrient mining.
- Dairy production is an important historical and growing agricultural activity. It has been and continue to be dominated by smallholders in both production and marketing, and not likely to go large-scale in the near future. Smallholder dairy production systems in the Kenya highlands has been marked by declining farm size. The main challenges it faces are related to feeding, disease management, and genetics (Muruiki, 2003).
- Cereal production, particularly maize is the dominant cropping system. Other important crops are beans and root crops such as potatoes. Average maize yields are low, as demonstrated in Table 6

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above with 3.7 t/ha and year (this includes two cropping seasons). Yields could be substantially increased with application of improved agricultural land management practices, such as those being implemented in this project.

- There is low level of application of good agricultural practices as shown in the Table above. A combination of factors is responsible for this situation – including limited information and access to new technologies, weak agricultural extension system, and low financial capacities of the smallholders

The low input smallholder agriculture – in terms of both dairy and crop production – and its related features outlined in the preceding section is the most dominant land use system in the project area, and has been so over several decades. It is expected to continue and, therefore, is the baseline scenario.

B.5. Demonstration of additionality

The additionality templates for AGR has been separated, completed, and provided to demonstrate additionality of this project.

B.6. Sustainable Development Goals (SDG) outcomes

B.6.1. Relevant target for each of the three SDGs

SDG 1: No Poverty and SDG 2: Zero Hunger:

- The project will contribute to increased income through improved productivity and better market access. The target is increase of 40% people having >2 USD/ day compared to the baseline
- Increasing of 30% households having 2 meals per day
- Improve quality and increase capacity of average milk production from 5,000 liters/day to 135,000 liters/day within four years
- 15,000 farmers have secured 'milk purchasing contracts' after the project

SDG 5: Gender Equality

- Empowers and create capacities for family farmers, with at least 50% women empowered in the farm organizations. The baseline study (see results below) shows already high participation of woman (62%) in the dairy farm organizations. However, the analysis showed in general dairy cooperatives have more women membership, however, that gender relation is still a threat to the project. Communities in the area believe milk belongs to the woman but the cows and land belong to the man. Therefore this high baseline number of women participation does not relate to empowered woman in the project activities. To ensure common planning for the families Household Roadmap are introduced by Vi.

SDG 13: Climate Action

- Dairy emission reductions: 354,327 tCO₂-e after 7 years

B.6.2. Explanation of methodological choices/approaches for estimating the SDG outcome

Socio-economic SDGs 1,2 and 5

The project has set-up a baseline survey for assessing the baseline status of the indicators defined in the project for each of the SDGs. The sample size for this survey was 180 farmers, however, the field officers managed to get data from 165 respondents as shown in the table below. Data analysis was done using R statistical software.






Table 7: Baseline survey for assessing the baseline status of the socio-economic indicators

Focal Area	No of farmers sampled	No of Respondents
Tongaren	27	25
Kwanza	25	21
Cheptais	22	21
Bungoma Central	34	33
Kimini	32	32
Transnzoia Central	19	16
Elgon	21	18
Total	180	165

The survey was done by the field officers with the help of community facilitators to locate the sampled farmers. The data was collected and sent through a smart phone application to the DevIndicator platform (server) which Vi Agroforestry has acquired as a real time on-line platform. The Devindicator system allows planning, review and reporting at different levels of the project/organizational structures (see monitoring plan for more information)

The field officers uploaded the filled monitoring tools to the server and hard copies were left to be kept by farmers for future references and impact monitoring. Vi Agroforestry will concentrate on monitoring, evaluating and learning from the higher level results especially the performance of the indicators. The project will have quarterly (only at farmer partners level), bi-annual and annual reviews for tracking progress. In addition, gender information is also collected using the project monitoring system (ABMS).

The results of the baseline survey are compiled in a report (available upon request), some findings are presented below:

 <p>Methodology</p> <ul style="list-style-type: none"> Group Record: Sample of 98 farmer groups with 1763 participating farmers (Male 679 and Female 1084). Social Economic survey: Random Sample of 181 farmers Use of mobile phone app for data collection 	<p>Findings At A Glance</p> <table border="1"> <thead> <tr> <th>KPI</th> <th>TARGET</th> <th>BASELINE</th> </tr> </thead> <tbody> <tr> <td>Liters of milk per day from dairy farms</td> <td>135,000 (9 litres per farmer)</td> <td>5.5 Litres per farmer</td> </tr> <tr> <td>Increasing proportion of farmers earning more than USD 2 per day</td> <td>70%</td> <td>1%</td> </tr> <tr> <td>Increasing proportion of farmers having 2 balanced meals every day</td> <td>80%</td> <td>3%</td> </tr> <tr> <td>Increasing proportion of women in farmer organisations</td> <td>50%</td> <td>62%</td> </tr> </tbody> </table> 	KPI	TARGET	BASELINE	Liters of milk per day from dairy farms	135,000 (9 litres per farmer)	5.5 Litres per farmer	Increasing proportion of farmers earning more than USD 2 per day	70%	1%	Increasing proportion of farmers having 2 balanced meals every day	80%	3%	Increasing proportion of women in farmer organisations	50%	62%
KPI	TARGET	BASELINE														
Liters of milk per day from dairy farms	135,000 (9 litres per farmer)	5.5 Litres per farmer														
Increasing proportion of farmers earning more than USD 2 per day	70%	1%														
Increasing proportion of farmers having 2 balanced meals every day	80%	3%														
Increasing proportion of women in farmer organisations	50%	62%														
<p>Liters of milk per day from dairy farms</p> <ul style="list-style-type: none"> The findings shows it is possible to reach the target Most farmers are currently not getting reliable, accurate and timely information on dairy. The project is designed to deliver this information Only 11% have milk production as their main source of income. The project will make dairy farming more attractive for over 50% of the project farmers 	<p>Increasing proportion of farmers earning more than USD 2 per day</p> <ul style="list-style-type: none"> The baseline scenario is much worse than anticipated 56% of the farmers are unable to know their average monthly income Most farmers are subsistence farmers and don't keep record The project team will look at other methods of measuring this indicator 															

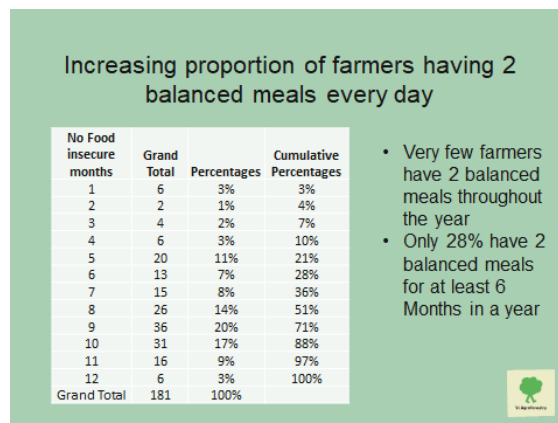


Figure 10: Baseline survey findings related to socio-economic indicators

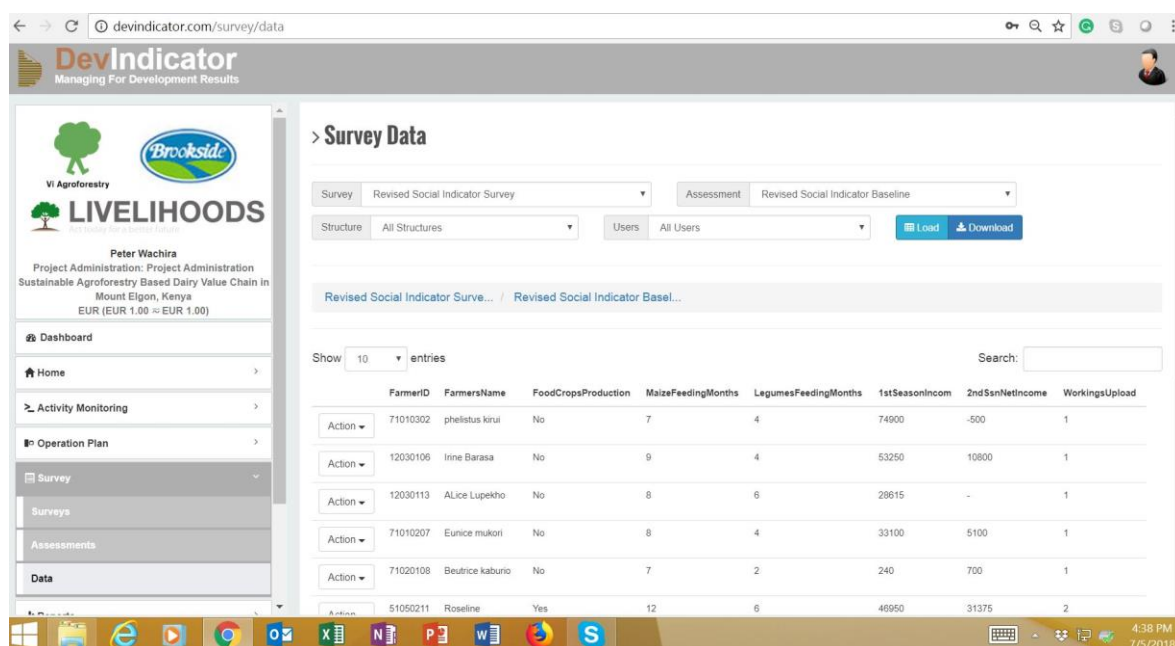


Figure 11: Screenshot of the DevIndicator System with specific social indicator entries.

The project produces annual progress reports which details the performance of the indicators subject to assessment. The documentation is available upon request.

SDG 13 Climate Action

1. Gold Standard Agriculture Smallholder Dairy Methodology: Methodology for GHG Emission Reductions from Smallholder Dairy Production Systems;

Standardized baseline

The standardized baseline for this project has been established based on the data and findings from the national dairy NAMA development, FAO & New Zealand Agricultural Greenhouse Gas Research Centre. 2017. Options for low emission development in the Kenya dairy sector - reducing enteric methane for food security and livelihoods. Rome. 43 pp. (available here: <http://www.fao.org/3/a-i7669e.pdf>). As shown under section B2 the dairy systems in the project counties are classified as semi-intensive, however the baseline survey data of the project for 2015 revealed the following distribution of these classes:

- 55% of the farmers with dairy cows extensive system
- 39% of the farmers with dairy cows semi-intensive system; and
- 6% of the farmers with dairy cows intensive system

Table 3.1: Summary description of dairy cattle production systems in Kenya

Production system	Characterization	
Stall feeding	Diet	The main source of feed is fodder especially napier grass (<i>Pennisetum purpureum</i>) and crop residues from maize and bananas due to limited grazing land. Sometimes supplementation from sweet potato vines is also used. The feedstuffs are either purchased or grown in the farms.
	Genotype	The exotic dairy breeds; Friesian and Ayrshire are dominant in these regions.
	Health	Mortality is approximately 12% for mature cows, and 13% for mature bulls 15% and 14% for female and male calves, respectively
	Reproductive practice	The age at first calving can be assumed to be at 29 months with a calving rate of 52% and a calving interval of about 20 months ³ . Natural mating is the most widespread option of reproduction whereby few farmers own bulls and hire them for servicing cows. The bull to cow ratio is 1:76. Artificial insemination (AI) is sometimes used especially by financially able farmers. The cow replacement rate is assumed to be 50%.
	Diet	Major source of feed is from grazing natural pastures of unimproved annual and perennial grasses mainly kikuyu grass (<i>Pennisetum clandestinum</i>) and rhodes grass (<i>Chloris gayana</i>). These grasses are of low quality during the dry season. However, supplementation with fodder such as Napier grass, sweet potato vines and crop residues e.g. maize stover, legume residues (from pigeon pea, cowpea, green gram and beans) are also used especially during periods of harvesting.
	Genotype	The indigenous zebu cow is the most popular breed. However exotic breeds (Friesian Ayrshire, Jersey and Guernsey) and crossbreds of exotic and zebu are also found in this system.
	Health	Approximately 14% for mature cows and 10% for mature bulls, 13% and 19% for female and male calves, respectively.
	Reproductive practice	The age at first calving can be assumed at 31 months with a calving rate of 51%. Natural mating is the most widespread method with a bull to cow ratio of 1:22. AI is sometimes used by financially able farmers and the cow replacement rate is 89%.
Extensive	Diet	Animals in the system are primarily fed on natural unimproved grass
	Genotype	The small East African Shorthorn Zebu, crosses between Zebu and the dual-purpose Sahiwal breed and zebu X Boran are the dominant cattle breeds in these system.
	Genotype	The mortality rate of both mature bulls and cows is assumed to be 13% 15% and 21% for female and male calves, respectively
	Reproductive practice	Age at first calving is about 4 years with a calving rate of 64.3%. Natural mating is the sole method of reproduction with the ratio of bull to cow at 1:20 and the cow replacement rate is 78%. There is no controlled breeding and reproduction is primarily influenced by the bimodal rainfall regime and the resultant seasonality in feed supply.

The table above summarizes the characteristics associated with each dairy management type, which have been considered in the “golden curves” as calculated by FAO.

The first map below shows the total baseline emissions from the study for the different regions, the second chart displays the emission intensity for the different systems sub-divided into the different emission sources considered.

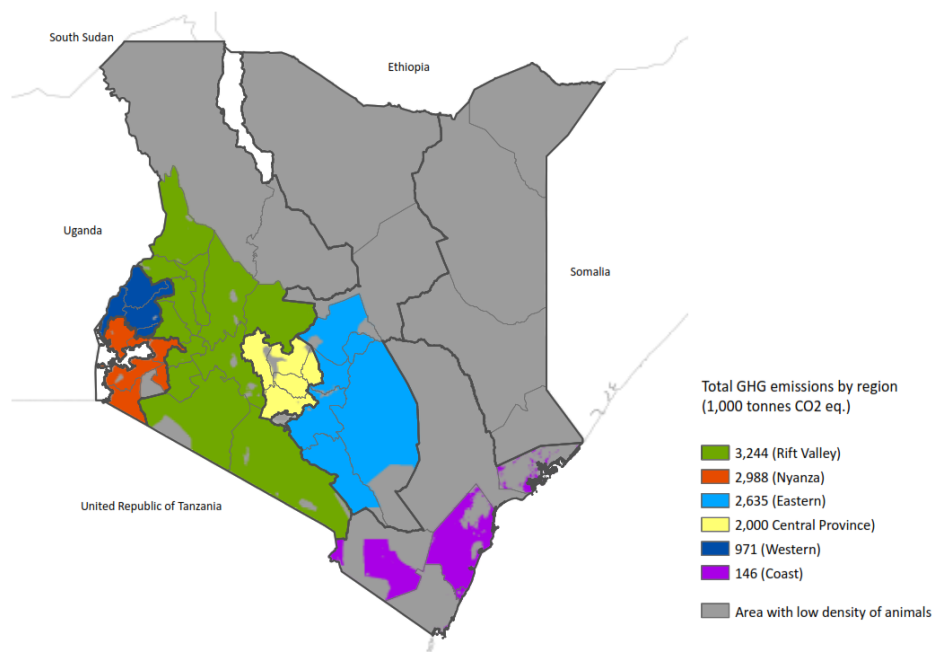


Figure 12: Regional distribution of total GHG emissions from milk production (source: FAO & New Zealand Agricultural Greenhouse Gas Research Centre. 2017)

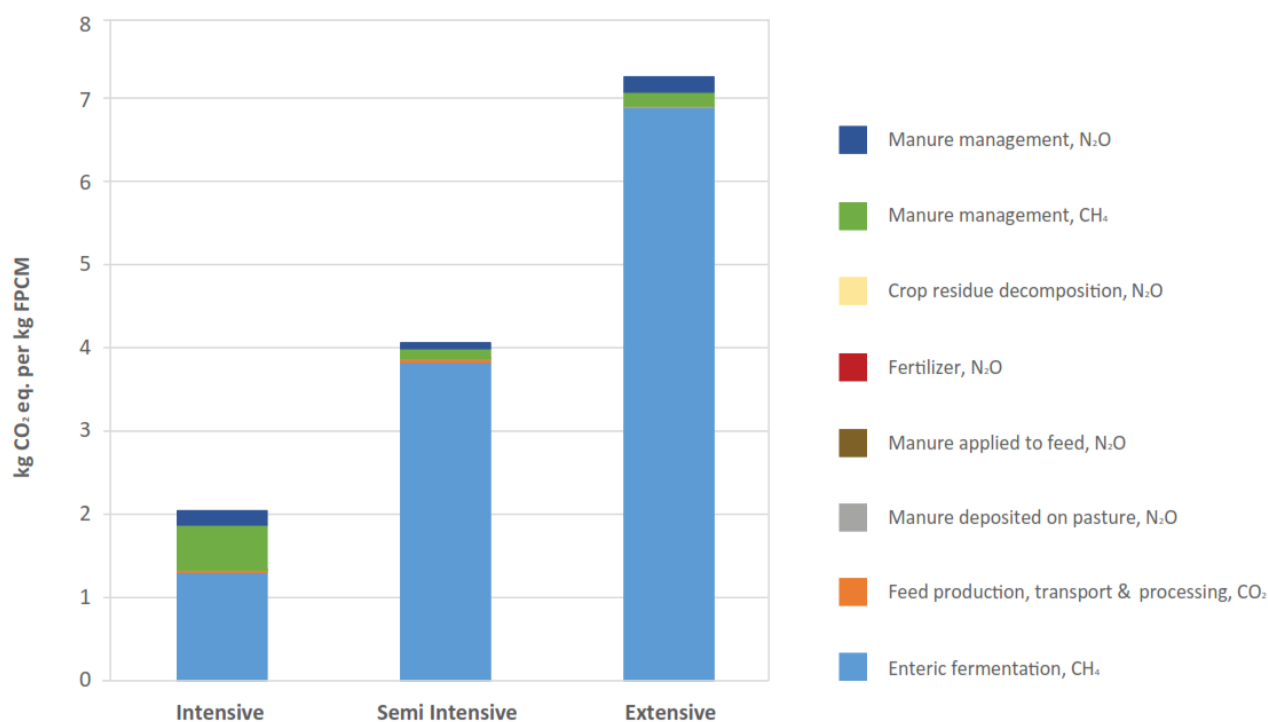


Figure 13: Emission intensity per kg FPCM, by production system (source: FAO & New Zealand Agricultural Greenhouse Gas Research Centre. 2017)

The study above resulted in the development of the so-called 'golden curves' for the three different systems in Kenya which have been used to estimate baseline emission intensity $BEI_{BS,j,t}$ (equation 23 of the Gold Standard dairy Methodology) as well as project emission intensity $PEI_{P,j,t}$ (equation 26 of the Gold Standard dairy Methodology).

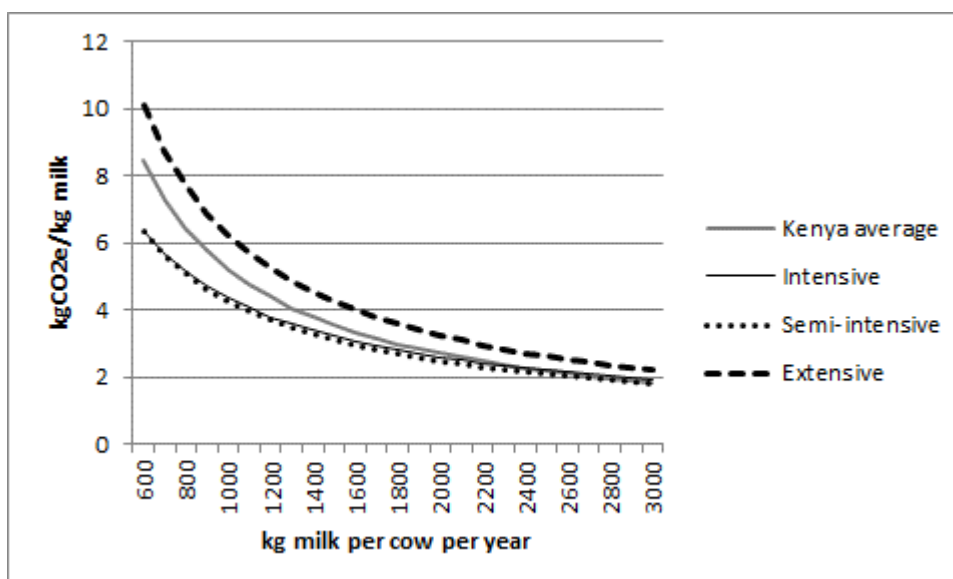


Figure 14: Golden curve of relationship between emission intensity per kg FPCM and milk yield, by production system (source: FAO & New Zealand Agricultural Greenhouse Gas Research Centre. 2017)

The relationship between kg FPCM (milk per cow and year) and baseline emissions (kg CO₂e) per farm from this curve for the different systems from this study are:

$$\begin{aligned} \text{Extensive: } Y &= 4358.2 \times \text{kg FPCM}^{-0.948} \\ \text{Semi-intensive: } Y &= 937.51 \times \text{kg FPCM}^{-0.781} \\ \text{Intensive: } Y &= 741.2 \times \text{kg FPCM}^{-0.744} \end{aligned}$$

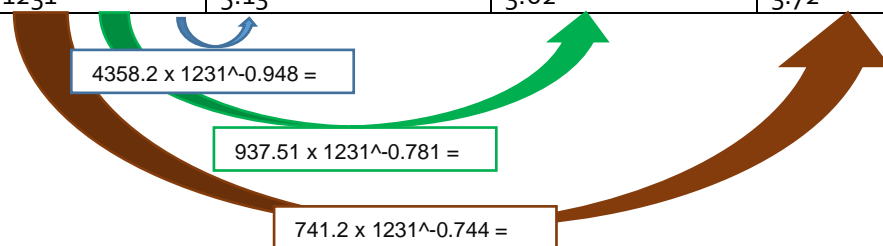
FPCM is calculated as follows:

$$\text{FPCM (kg): } Y = \text{Milk yield (kg)} \times (0,337 + 0,116 * 4 + 0,06 * 3,3)$$

The emission intensity of each dairy management system is applied to each of the 98 farmer groups of the 2015 survey.

Table 8 Example 1 farmer group in 2015 survey: calculation of emission intensities

Group ID	FPCM annual milk yield per cow (kg)	Emission intensity in Free range (extensive) (kg CO ₂ e/kg FPCM)	Emission intensity in Semi-intensive (kg CO ₂ e/kg FPCM)	Emission intensity in Zero grazing (intensive) (kg CO ₂ e/kg FPCM)
160501	1231	5.13	3.62	3.72



Then, a group-specific average emission intensity weighted by the share of the herd in each dairy management system is calculated. The calculation goes as follows:

Average baseline emission intensity of farmer group:

$$BEI_{BS,j} = EI_{FR} \times \%_{FR} + EI_{SI} \times \%_{SI} + EI_{ZE} \times \%_{ZE}$$

Where

$BEI_{BS,j}$ is the Baseline emission intensity of the jth farmer group (kg CO₂e/kg FPCM)

EI_{FR} = the Emission intensity in Free range (kg CO₂e/kg FPCM)

$\%_{FR}$ = the Percentage of herd in Free range (extensive)

EI_{SI} = the Emission intensity in Semi-intensive (kg CO₂e/kg FPCM)

$\%_{SI}$ = the Percentage of herd in Semi-intensive

EI_{ZE} = the Emission intensity in Zero grazing (kg CO₂e/kg FPCM)

$\%_{ZE}$ = the Percentage of herd in Zero grazing (intensive)

Table 9 Example 1 farmer group in 2015 survey: calculation of farmer group's weighted average emission intensity

Group ID	Emission intensity in Free range (extensive) (kg CO ₂ e/kg FPCM)	Emission intensity in Semi-intensive (kg CO ₂ e/kg FPCM)	Emission intensity in Zero grazing (intensive) (kg CO ₂ e/kg FPCM)	Percentage of herd in Free range (extensive)	Percentage of herd in Semi-intensive	Percentage of herd in Zero grazing (intensive)	Average emission intensity (kg CO ₂ e/kg FPCM)
160501	5.13	3.62	3.72	41%	59%	0%	4.24

These calculations were done for all 98 farmer groups in the 2015 survey. Then, an average baseline emission intensity was calculated over all these 98 farmer groups to come up with the standard baseline emission intensity.

$$SEI_{BS} = (EI_{BS,1} + EI_{BS,2} + \dots + EI_{BS,98}) / \text{No. of farmer groups}$$

Where

SEI_{BS} = the standard baseline emission intensity (kg CO₂e/kg FPCM)

$EI_{BS,1}$ = the average emission intensity of the first farmer group in the sample (kg CO₂e/kg FPCM)

No. of farmer groups = the number of all farmer groups in the survey, which is 98 in this case.

The standard baseline emission intensity SEI_{BS} was initially calculated to be 7.58 kg CO₂ eq./kg FPCM.

Note: Under the national dairy NAMA a series of farm based baseline surveys have just been rolled-out stratified for the different dairy regions in Kenya. Once the results are available (also from the surveys in other regions of Kenya) the emission intensity defined for this project will be reviewed against these updated results and, if deemed necessary, revised and updated.

Based on the decision of the LUC TAC for approval of deviation "for the retroactive years the PD should: i) take a conservative distribution of management systems in the project area according to the publication used to develop Kenya's dairy NAMA (FAO publication), and; ii) adopt the most conservative value between the FAO publication and the data collected by the project.

The FAO publication gives a value of 4.1 kg CO₂ eq./kg FPCM for semi-intensive systems.

The decision of the LUC TAC has been revised on our end together with one of the authors of the smallholder dairy methodology Dr. Andreas Wilkes.

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The underlying assumption of the LUF TAC decision is that all farmers in the baseline are in a semi-intensive dairy management system. The FAO report concluded this on a county level for Kenya. This is a rather coarse resolution for a smallholder project, and it does not reflect the reality of the project.

The project proponent and project implementer specifically focus on engaging with farmers with low milk yield and low productivity. The extension service explicitly approaches such farmers that have a high improvement potential and are thus in high need for extension services. This approach follows a prevalent logic in development cooperation: Focusing on “Hotspots”.

In other words, the project farmers do not come from an entirely “semi-intensive” dairy management system but rather are something in between a “semi-intensive” and “extensive” dairy management system.

Our baseline dataset reflects this skew towards the extensive dairy management system:
The average baseline distribution of dairy management based on the 2015 baseline study is
51% free range (extensive),
43% semi-intensive,
6% zero grazing (intensive).

This average has been calculated based on the data in the Excel file “Mt Elgon project and ER calculation” under tab “Database with ER-calculation” in lines 3-92.

The FAO study calculated baseline emission intensities (BEIs) for all three dairy management systems:
Extensive: 7.1 kg CO₂ eq./kg FPCM
Semi-intensive: 4.1kg CO₂ eq./kg FPCM
Intensive: 2.1kg CO₂ eq./kg FPCM

Instead of assuming the semi-intensive emission intensity as a baseline (as per the LUF TAC decision), we calculated an average from these emission intensities weighted by the baseline distribution of dairy management system:

$$\begin{aligned} & 7.1 \text{ kg CO}_2 \text{ eq./kg FPCM} * 51\% \\ & + 4.1 \text{ kg CO}_2 \text{ eq./kg FPCM} * 43\% \\ & + 2.1 \text{ kg CO}_2 \text{ eq./kg FPCM} * 6\% \\ \hline & \approx 5.51 \text{ kg CO}_2 \text{ eq./kg FPCM} \end{aligned}$$

This is a more conservative BEI than as calculated above and at the same time follows the logic of the LUF TAC decision. It also reflects better the real baseline distribution of management systems in the project region as compared to simply assuming all farmers conducting a semi-intensive dairy management system.

The BEI of 5.51kg CO₂ eq./kg FPCM was crosschecked with a recently published article in Nature about dairy emissions in neighboring Tanzania, which reported a similar level of emission intensity:
Hawkins, J., Yesuf, G., Zijlstra, M., Schoneveld, G. C., & Rufino, M. C. (2021). Feeding efficiency gains can increase the greenhouse gas mitigation potential of the Tanzanian dairy sector. Scientific reports, 11(1), 1 this value is more conservative than the one calculated by the project, it is considered for standardized baseline emission calculations.

The standard baseline emission intensity SEI_{BS} was therefore set to **ca. 5.51kg CO₂ eq./kg FPCM**
(or to be very precise: **5,50691546842083 kg CO₂ eq./kg FPCM**)

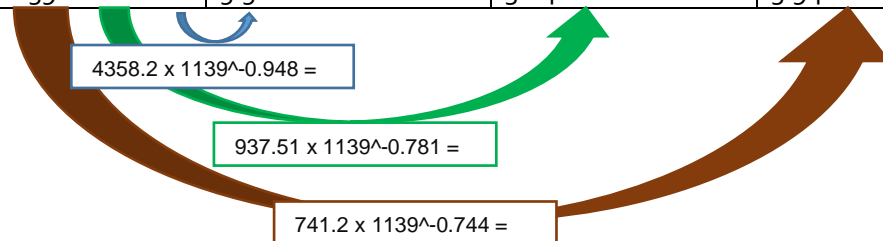
Project impact

The emission intensity in the project is calculated by applying the allometric relationships of all three dairy management practices (Intensive, Semi-intensive, Extensive) to the project milk yield per cow (kg FPCM). This is the same calculation as the one for the baseline emission intensities above.

$$\begin{aligned}\text{Extensive: } Y &= 4358.2 \times \text{kg FPCM}^{-0.948} \\ \text{Semi-intensive: } Y &= 937.51 \times \text{kg FPCM}^{-0.781} \\ \text{Intensive: } Y &= 741.2 \times \text{kg FPCM}^{-0.744}\end{aligned}$$

Table 10 Hypothetical example of 1 farmer group in project year: calculation of emission intensities

Group ID	FPCM annual milk yield per cow (kg)	Emission intensity in Free range (extensive) (kg CO ₂ e/kg FPCM)	Emission intensity in Semi-intensive (kg CO ₂ e/kg FPCM)	Emission intensity in Zero grazing (intensive) (kg CO ₂ e/kg FPCM)
411302	1139	5.52	3.84	3.94



From these three project emission intensities a weighted average project emission intensity is calculated reflecting the farmer groups' dairy herd share in each dairy management system in that particular year.

Average project emission intensity of farmer group:

$$PEI_{P,j,t} = EI_{FR,j,t} \times \%_{FR,j,t} + EI_{SI,j,t} \times \%_{SI,j,t} + EI_{ZE,j,t} \times \%_{ZE,j,t}$$

Where

$PEI_{P,j,t}$ = the Average project emission intensity of the jth farmer group in year t (kg CO₂e/kg FPCM)

$EI_{FR,j,t}$ = the Emission intensity in Free range of the jth farmer group in year t (kg CO₂e/kg FPCM)

$\%_{FR,j,t}$ = the Percentage of herd in Free range (extensive) of the jth farmer group in year t

$EI_{SI,j,t}$ = the Emission intensity in Semi-intensive of the jth farmer group in year t (kg CO₂e/kg FPCM)

$\%_{SI,j,t}$ = the Percentage of herd in Semi-intensive of the jth farmer group in year t

$EI_{ZE,j,t}$ = the Emission intensity in Zero grazing of the jth farmer group in year t (kg CO₂e/kg FPCM)

$\%_{ZE,j,t}$ = the Percentage of herd in Zero grazing (intensive) of the jth farmer group in year t

Table 11 Hypothetical example 1 farmer group in project year: calculation of farmer group's weighted average project emission intensity

Group ID	Emission intensity in Free range (extensive) (kg CO ₂ e/kg FPCM)	Emission intensity in Semi-intensive (kg CO ₂ e/kg FPCM)	Emission intensity in Zero grazing (intensive) (kg CO ₂ e/kg FPCM)	Percentage of herd in Free range (extensive)	Percentage of herd in Semi-intensive	Percentage of herd in Zero grazing (intensive)	Average Project emission intensity (kg CO ₂ e/kg FPCM)
411302	5.52	3.84	3.94	18%	82%	0%	4.15

For the quantification of Net Emission Reductions, the baseline emission intensity (which is the same for each group) is multiplied with the total FPCM yield of the farmer group in a given year to estimate the baseline emissions:

$$BE_{j,t} = SEI_{BS} \times \text{total FPCM yield}_{j,t}$$

Where

$BE_{j,t}$ = the Baseline emissions of the jth farmer group in year t (kg CO₂e)

SEI_{BS} = the standard baseline emission intensity (kg CO₂e/kg FPCM) $\approx 5.51 \text{ kg CO}_2 \text{ eq./kg FPCM}$

total FPCM yield_{j,t} = the total FPCM yield of the jth farmer groups in year t (kg)

Also, the project emission intensity per farmer group is multiplied with the total FPCM yield of the farmer group in a given year to estimate the project emissions:

$$PE_{j,t} = PEI_{P,j,t} \times \text{total FPCM yield}_{j,t}$$

Where

$PE_{j,t}$ = the project emissions of the jth farmer group in year t (kg CO₂e)

$PEI_{P,j,t}$ = the project emission intensity (kg CO₂e/kg FPCM) of the jth farmer group in year t

total FPCM yield_{j,t} = the total FPCM yield of the jth farmer groups in year t (kg)

Then, the project emissions are deducted from the baseline emissions to get the total emissions reductions of the farmer group in the particular year:

$$ER_{j,t} = BE_{j,t} - PE_{j,t}$$

Where

$ER_{j,t}$ = the emission reductions of the jth farmer group in year t (kg CO₂e)

$BE_{j,t}$ = the Baseline emissions of the jth farmer group in year t (kg CO₂e)

$PE_{j,t}$ = the project emissions of the jth farmer group in year t (kg CO₂e)

At the end, all emission reductions of each farmer group are summed up to give the project's total emission reductions.

$$ER(t) = \sum_{j=1}^{j \text{ farms}} ER(P, j, t)$$

Where

$ER(t)$ = total emission reductions of the project in year t in tCO₂e (kg CO₂e)

j = index of farms

t = index of project years

P = index indicating project scenario

The net emission reductions due to project implementation in year t are calculated as follows:

$$NER_t = ER_t - LK_{LUC,t}$$

Where

NER_t = net emission reductions due to project implementation in year t (tCO₂e)

ER_t = total emission reductions of the project in year t (tCO₂e)

$LK_{LUC,t}$ = Leakage due to land use change due to change in demand for feedstuffs due to project implementation in project year t (tCO₂e)

t = index year

The milk yield in the project is monitored monthly as an average daily milk yield from all farmers participating in the project. The average daily milk yield is an estimate by the farmer which accounts also for dry days.

B.6.3. Data and parameters fixed ex ante for monitoring contribution to each of the three SDGs

These are data and parameters fixed for application in estimating baseline GHG emission reductions (SGD 13). Also included are parameters for SGD 1, SGD 2, and SGD 5.

Parameters for SGD 13 – Climate Action

Relevant SDG Indicator	SDG 13 – Climate Action
Data/parameter	Dairy farm strata in the baseline
Unit	%
Description	Percent of dairy farms under extensive, semi-intensive and intensive dairy management
Source of data	Project monitoring (milk monitoring) records 2015 (baseline survey), accessible in the Excel file "Mt Elgon project and ER calculation" under tab "Database with ER-calculation" in lines 3-92
Value(s) applied	See Excel spreadsheet provided: "Percentage free range", "Percentage semi extensive", and "Percentage zero grazing" in the spreadsheet "Mt Elgon project data and ER calculation" (Tab "Database with ER-Calculations"). The average baseline distribution is 51% free range (extensive), 43% semi-intensive, 6% zero grazing (intensive)
Choice of data or Measurement methods and procedures	A 2015 baseline survey undertaken by the project – involved sampling of 98 farmer groups with 1763 participating farmers (Male 679 and Female 1084)
Purpose of data	Quantifying baseline GHG emissions
Additional comment	None

Relevant SDG Indicator	SDG 13 – Climate Action
Data/parameter	Milk _{fat}
Unit	%/kg milk
Description	Fat content of milk
Source of data	IPCC 2006 (Volume 4 Chapter 10)
Value(s) applied	4%
Choice of data or Measurement methods and procedures	IPCC default is applied as no local/national study available
Purpose of data	Quantifying baseline GHG emissions
Additional comment	None

Relevant SDG Indicator	SDG 13 – Climate Action
Data/parameter	Milk _{protein}
Unit	%/kg milk
Description	Protein content of milk
Source of data	IPCC 2006 (Volume 4 Chapter 10)
Value(s) applied	3.3%
Choice of data or Measurement methods and procedures	IPCC default is applied as no local/national study available
Purpose of data	Quantifying baseline GHG emissions
Additional comment	None

Relevant SDG Indicator	SDG 13 – Climate Action																						
Data/parameter	DE%																						
Unit	proportion																						
Description	Digestible energy expressed as a proportion of gross energy																						
Source of data	Published scientific literature (Onyango et al., 2016) ¹⁴																						
Value(s) applied	<table><tr><td>Pasture herbage</td><td>55%</td></tr><tr><td>Sugar cane tops</td><td>43%</td></tr><tr><td>Napier grass</td><td>59%</td></tr><tr><td>Sweet potato vines</td><td>65%</td></tr><tr><td>Mixed browsed leaves</td><td>53%</td></tr><tr><td>Banana stalks</td><td>54%</td></tr><tr><td>Banana leaves</td><td>42%</td></tr><tr><td><i>Balanitesaegyptiaca</i> leaves</td><td>43%</td></tr><tr><td>Rice stover, husks</td><td>48%</td></tr><tr><td><i>Mangiferaindica</i> leaves</td><td>44%</td></tr></table>	Pasture herbage	55%	Sugar cane tops	43%	Napier grass	59%	Sweet potato vines	65%	Mixed browsed leaves	53%	Banana stalks	54%	Banana leaves	42%	<i>Balanitesaegyptiaca</i> leaves	43%	Rice stover, husks	48%	<i>Mangiferaindica</i> leaves	44%		
Pasture herbage	55%																						
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Sweet potato vines	65%																						
Mixed browsed leaves	53%																						
Banana stalks	54%																						
Banana leaves	42%																						
<i>Balanitesaegyptiaca</i> leaves	43%																						
Rice stover, husks	48%																						
<i>Mangiferaindica</i> leaves	44%																						
Choice of data or Measurement methods and procedures	Values from available scientific study have been used as suggested by methodology																						
Purpose of data	Quantifying baseline GHG emissions																						
Additional comment	None																						

Relevant SDG Indicator	SDG 13 – Climate Action		
Data/parameter	Y _M		
Unit	%		
Description	Methane Conversion Factor		
Source of data	IPCC 2006 (Volume 4 Chapter 10)		
Value(s) applied	6.5% ±1.0%		
Choice of data or Measurement methods and procedures	IPCC default is applied as no local/national study available		
Purpose of data	Quantifying baseline GHG emissions		
Additional comment	None		

¹⁴ Study accessed [here](#).

Relevant SDG Indicator	SDG 13 – Climate Action
Data/parameter	REDD+ Programme
Unit	Unitless
Description	Existence and extent of a REDD+ programme in the geographic region related to feed for the project
Source of data	UN REDD+ Program
Value(s) applied	Yes
Choice of data or Measurement methods and procedures	Kenya is part of the UN REDD+ program. This information was confirmed from the UNREDD+ website: https://www.unredd.net/index.php?option=com_country&view=countries&id=16&Itemid=573
Purpose of data	Quantifying baseline GHG emissions
Additional comment	None

Relevant SDG Indicator	SDG 13 – Climate Action
Data/parameter	$LK_{LUC,t}$
Unit	tCO _{2e} * year ⁻¹
Description	Leakage due to land use change due to changing demand for feedstuffs due to project implementation in project year t
Source of data	Project proponent
Value(s) applied	0
Choice of data or Measurement methods and procedures	Leakage is zero since there is no deforestation activity driven by feed demand from the project. Since the country is a partner in the UNREDD programme, leakage due to land use is automatically excluded as per the conditions stipulated in the GS Smallholder Dairy Methodology. Therefore, leakage is accounted for as zero in this project.
Purpose of data	Quantifying baseline GHG emissions
Additional comment	None

Relevant SDG Indicator	SDG 13 – Climate Action
Data/parameter	BEI _{BS}
Unit	kg CO ₂ e * kg FPCM ⁻¹
Description	Baseline emission intensity of milk production
Source of data	Calculated from the dairy management distribution in the baseline survey (accessible in the Excel file “Mt Elgon project and ER calculation” under tab “Database with ER-calculation” in lines 3-92) with equations from the FAO published scientific study ¹⁵ .
Value(s) applied	5.50691546842083
Choice of data or Measurement methods and procedures	<p>We calculated an average from the emission intensities as published by the FAO study¹⁵ weighted by the baseline distribution of dairy management system:</p> $ \begin{aligned} &7.1 \text{ kg CO}_2 \text{ eq./kg FPCM} * 51\% \\ &+ 4.1 \text{ kg CO}_2 \text{ eq./kg FPCM} * 43\% \\ &+ 2.1 \text{ kg CO}_2 \text{ eq./kg FPCM} * 6\% \\ &\hline &\approx 5.51 \text{ kg CO}_2 \text{ eq./kg FPCM} \end{aligned} $ <p>This is a more conservative BEI than as calculated above and at the same time follows the logic of the LUF TAC decision. It also reflects better the real baseline distribution of management systems in the project region as compared to simply assuming all farmers conducting a semi-intensive dairy management system.</p>
Purpose of data	Quantifying baseline GHG emissions
Additional comment	None

Parameters for SDG 1, SDG 2, and SDG 5

SGD 1 – No Poverty

Relevant SDG Indicator	SDG 1 – No Poverty
Data/parameter	Average milk production
Unit	Liters/day
Description	Average amount of milk produced per day in the project
Source of data	Project’s baseline livelihood survey, 2015
Value(s) applied	5,000
Choice of data or Measurement methods and procedures	A 2015 baseline survey carried by the project
Purpose of data	Establishing the baseline for determining that the project’s poverty reduction target is being achieved in the project case
Additional comment	None

¹⁵ FAO & New Zealand Agricultural Greenhouse Gas Research Centre. 2017. Accessed at <http://www.fao.org/3/a-i7669e.pdf>

Relevant SDG Indicator	SDG 1 – No Poverty
Data/parameter	Farmers with secure milk contracts
Unit	Number of farmers
Description	Number of farmers in the project with secure contracts
Source of data	Project's baseline livelihood survey, 2015
Value(s) applied	1,000
Choice of data or Measurement methods and procedures	Livelihoods Socio-economic survey carried by the project
Purpose of data	Establishing the baseline for determining that the project's poverty reduction target is being achieved in the project case
Additional comment	None

Relevant SDG Indicator	SDG 1 – No Poverty
Data/parameter	% of people earning > USD 2/day
Unit	%
Description	Percentage of households participating in the project that earn more than USD 2/day
Source of data	Project's baseline livelihood survey, 2015
Value(s) applied	1%
Choice of data or Measurement methods and procedures	A 2015 baseline survey carried by the project
Purpose of data	Establishing the baseline for determining that the project's poverty reduction target is being achieved in the project case
Additional comment	None

SDG 2 – Zero Hunger

Relevant SDG Indicator	SDG 2 – Zero Hunger
Data/parameter	% of people having 2 meals/day
Unit	%
Description	Percentage of households having at least two meals per day before project start
Source of data	Project's baseline livelihood survey, 2015
Value(s) applied	3%
Choice of data or Measurement methods and procedures	A 2015 baseline survey carried by the project
Purpose of data	Establishing the baseline for determining that the project's hunger reduction target is being achieved in the project case
Additional comment	None

SDG 5 – Gender Equality

Relevant SDG Indicator	SDG 5 – Gender Equality
Data/parameter	% of women participating in farmer organization in the project
Unit	%
Description	Percentage of women participating in farmer organizations (i.e., farmer groups) in the baseline
Source of data	Project's baseline livelihood survey, 2015
Value(s) applied	62%, only member of dairy organizations, however, not empowered
Choice of data or Measurement methods and procedures	A 2015 baseline survey carried by the project.
Purpose of data	Establishing the baseline for determining that the project's gender equality target is being achieved in the project case
Additional comment	None

B.6.4. Ex-ante estimation of outcomes linked to each of the three SDGs

Ex-ante estimation of outcome value of SGD 13 – Climate Action

The ex-ante baseline estimation GHG emissions for the smallholder dairy production systems was based on information obtained from exchanges with experts from ILRI. The ex-ante estimate was made for 7 years. It was assumed that there is a constant number of 2 cows per household. The baseline emissions per liter were initially assumed to be 2.75 kgCO₂/l.

Based on the decision of the LUC TAC for approval of deviation "for the retroactive years the PD should: i) take a conservative distribution of management systems in the project area according to the publication used to develop Kenya's dairy NAMA (FAO publication), and; ii) adopt the most conservative value between the FAO publication and the data collected by the project.

Based on the FAO Report, a value of 4.1 kg CO₂ eq./kg FPCM for semi-intensive systems and a milk yield of 3 kg per cow per day shall be considered for standardized baseline emission calculations.

As the assumed baseline emission intensity is more conservative than the FAO Report value, a baseline emission intensity of 2.75 kgCO₂/l (or 2.8325 kgCO₂/kg uncorrected) equaling **2,83 kgCO₂ eq. /kg FPCM** is assumed.

A milk yield of 3 kg per cow is assumed.

Milk production per cow is assumed to increase over the calculation period. The emissions per liter are expected to decrease over time in the project due to changes in management and a constant herd size while increasing milk yield. This results in reduced emissions when comparing total emissions of baseline scenario with project scenario.

Full details of the ex-ante estimate can be found in the following. The following table provides an overview of the assumptions made for the crediting period of 7 years.

Table 12 Assumptions made of ex-ante estimation

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
No. of households	4,875	9,750	14,625	19,500	19,500	19,500	19,500	19,500
No. cows per hh	2	2	2	2	2	2	2	2

Milk yield per hh (kg FPCM)	600	800	1.100	1.400	1.600	1.600	1.800	2.000
Baseline emission intensity (kgCO ₂ e/kg FPCM)	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83
Project emission intensity (kgCO ₂ e/FPCM)	2.75	2.25	1.8	1.6	1.5	1.5	1.5	1.5

The emission reductions (ER) per household (hh) per year were calculated as follows:

ER per household (kgCO₂e) = Milk yield per hh (l) x Baseline emission intensity (kgCO₂e/l) - Milk yield per hh (l) x Project emission intensity (kgCO₂e/l)

Then, the GHG emission reductions per year of the total project were calculated with a 25% risk buffer. This ex-ante risk buffer serves as an assumed “uncertainty” to the values used for the whole ex-ante calculation. As activity data will come from a full census, and since most values for the ex-ante estimate were based on expert consultations, a full uncertainty estimate of the ex-ante estimate was deemed impractical. Hence an assumed uncertainty (or risk buffer) of 25%:

GHG emission reduction (tCO₂e) = ER (kgCO₂e)/1000 x No. of households x 0.75

In **Table 13** the results of the calculations are shown for each year of the project.

Table 13 Ex-ante estimation of GHG Emission Reductions from Smallholder Dairy Production Systems

	2015 (Baseline)	2016	2017	2018	2019	2020	2021	2022
ER per household (kgCO ₂ e)	0	928	2.266	3.444	4.256	4.256	4.788	5.320
GHG emission reduction (tCO ₂ e)	0	6.786	24.855	50.369	62.244	62.244	70.025	77.805

After 7 years the total GHG Emission Reduction is estimated at **354,327 tCO₂e**

Error! Reference source not found. describes the cumulative ERs as estimated. Year 1 is in this case 2016 as this is the presumed first project year of the certification.

B.6.5. Summary of ex ante estimates of each SDG outcome

The crediting period as per the Gold Standard Agriculture Smallholder Dairy Methodology: Methodology for GHG Emission Reductions from Smallholder Dairy Production Systems is 7 years – renewable twice.

Year	Baseline estimate	Project estimate (tCO ₂)	Net benefit (tCO ₂)
2016	0	6,786	6,786
2017	0	31,614	31,614
2018	0	50,369	50,369

2019	0	62,244	62,244
2020	0	62,244	62,244
2021	0	70,025	70,025
2022	0	77,805	77,805
Total	0	354,327	354,327
Total number of crediting years	7		
Annual average over the crediting period	50,618		

Update and Issuance of Emission Reductions:

The PD commits to update the Emission Reduction Calculations based on the first verification audit, and commits for the whole duration of the project (crediting period) to not issue ex-ante units or PERs, but only ex-post units or VERs. See the confirmation in writing from the Gold Standard Secretariat provided.

B.7. Monitoring plan

Summary:

The project monitoring system is designed to monitor and evaluate three key components of the project, namely (1) Project Activities Implementation, (2) Activity Baseline and Monitoring Survey (ABMS) of farms; and (3) Changes in farmers families livelihoods. The project monitoring system is therefore designed for easy tracking of deliverables and their logical connection to project activities.

Project activities implementation

To monitor the implementation of project activities, the project uses the DevIndicator platform. The system manage log frame activities enabling development of annual work plans, monthly plans and monthly reports.

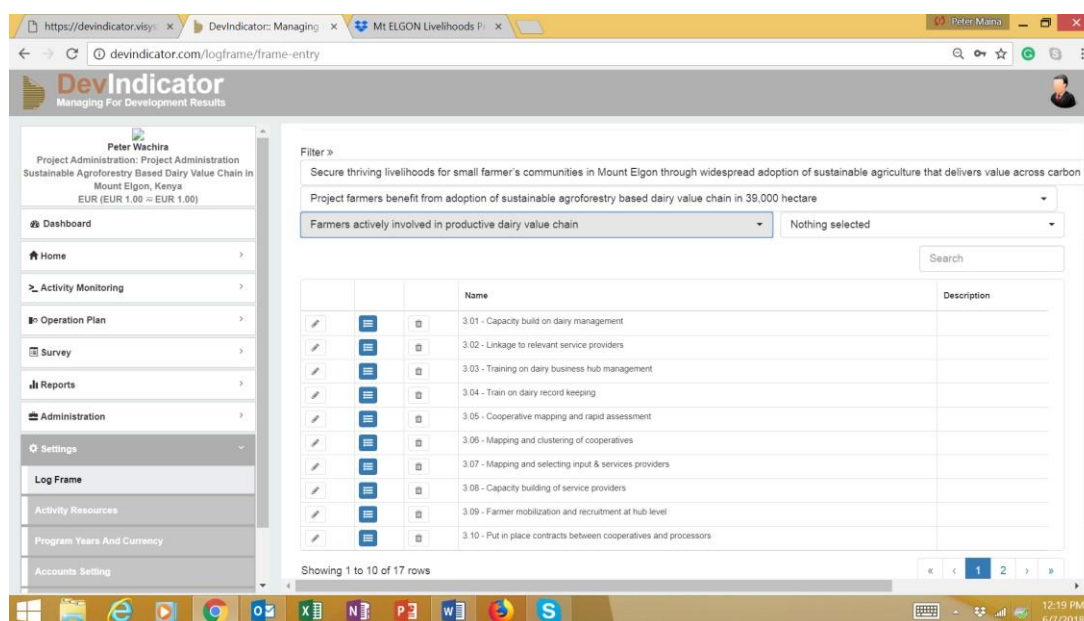


Figure 15: Logframe in Devindicator

Devindicator system allows planning, review and reporting at different levels of the project/organizational structures.

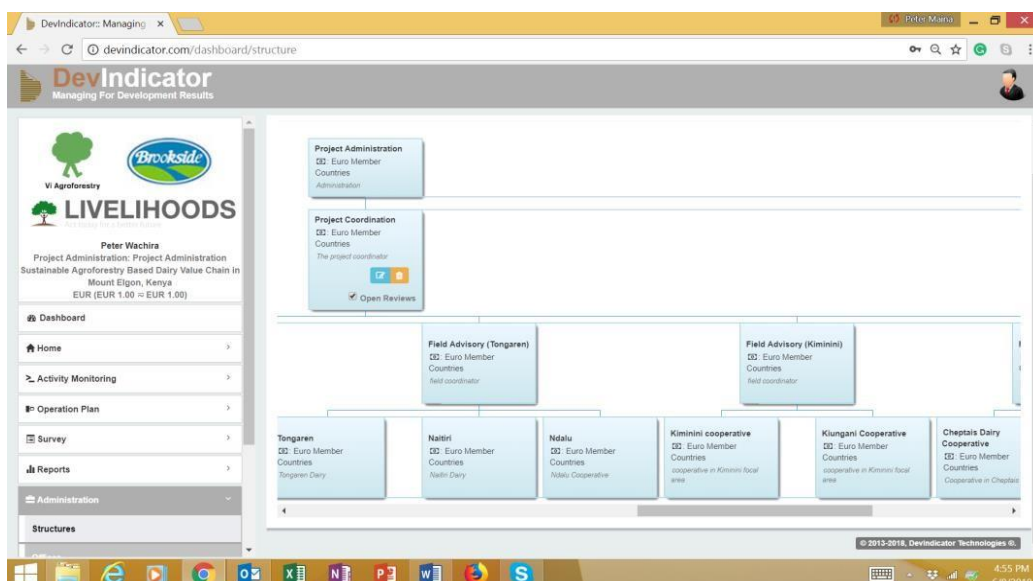


Figure 16: Different project implementation levels

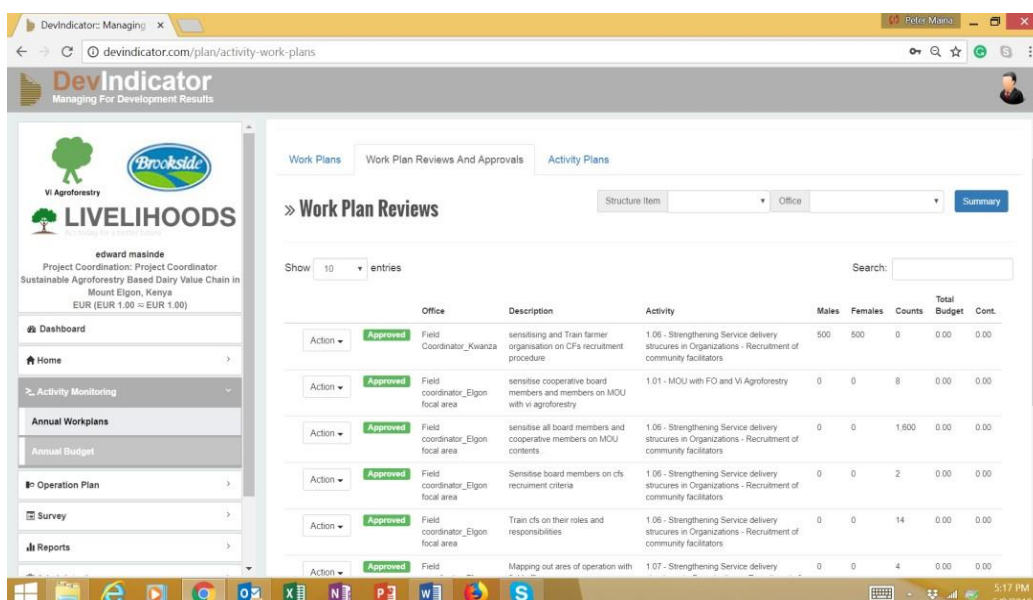


Figure 17: Project coordinator review and approve work plans and report from various levels

Activity Based Monitoring System (ABMS)

The project monitoring system puts the bulk of the effort in monitoring changes in farmers activities. Positive changes in activities will result in improved livelihoods of farmers and reduction or removals of GHG emissions. This component of the project system is a full census inventory of all farmers participating in the project. Based on the design and data requirements of the Activity Based Monitoring System (ABMS) each farmer when registered through the farmer group will be trained in conducting a farmers self-assessment on a seasonal basis. The basic design is that for every 5-10 registered groups (having signed the group contract with Vi Agroforestry) are assigned to a local farmer called (community facilitator -CF) for the purpose of capacity building of group members together with the field advisor and cooperative field officer staff.

The group leader is trained on how the specific farm data from the farmer commitment forms are aggregated into the group record considering the specific data requirements (e.g. units of crop yields, etc.) and on how to manage potential error sources. The group summary data is then submitted to the project web-based MIS system.

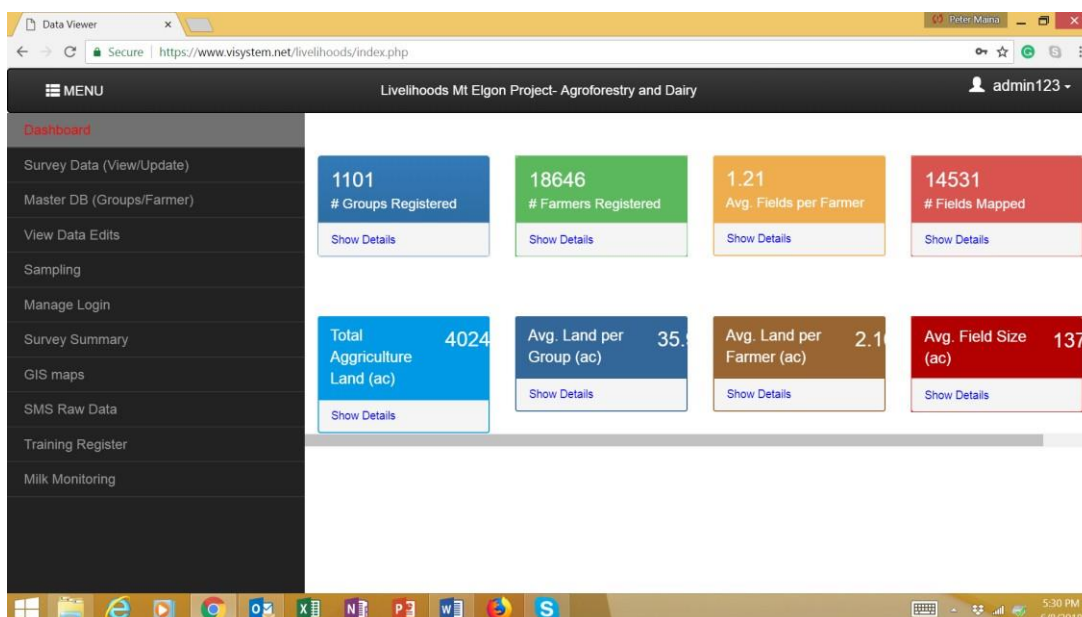


Figure 18: MIS Dashboard

The MIS includes a data entry module which can work offline and data can be synced to the project server when internet is available. The module has several mathematical and logical validations to avoid data entry mistakes as well as control mechanisms to ensure the quality of data. The data sent to the server is immediately available for further processing using different web-based interfaces (MIS). All the calculations to monitor the project performance as a whole and to provide the parameters needed for the RothC soil modelling and other calculations related to the methodologies are integrated into the MIS system.

Farmers joining the project are trained on SALM and dairy using an approved curriculum. Since training are critical to changes in farming practices, training are tracked using a mobile App. Farmers attending different trainings are marked either 1) present, 2) absent or 3) represented.

The figure shows two screenshots of a mobile application interface. The left screenshot displays the 'Training details' form, which includes fields for Date and time, GPS Location, Name of facilitator, Training Topic, Training Module, Description, Focal, Cooperative, Location, Training Level, and Select Group. The right screenshot displays the 'List of Groups/Farm...' screen, which includes a search bar and a table listing farmers and their attendance status.

group_name	ALL P	Reset	group_id
Agnes Sululu	<input type="radio"/> P <input type="radio"/> A <input type="radio"/> R		32011713
Alice Werunga	<input type="radio"/> P <input type="radio"/> A <input type="radio"/> R		32011709
Angela Kirui	<input type="radio"/> P <input type="radio"/> A <input type="radio"/> R		32011727
Dinah Mwasame	<input type="radio"/> P <input type="radio"/> A <input type="radio"/> R		32011710
Dorice Namalwa	<input type="radio"/> P <input type="radio"/> A <input type="radio"/> R		32011702
Edith Bugusta	<input type="radio"/> P <input type="radio"/> A <input type="radio"/> R		32011708

Figure 19: Training register in field officers and community facilitators phones

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After training, farmers implement dairy activities on their farms. Field follow-ups (Physical on-farm visits) on implementation are often made by field coordinators, field officers, community facilitators, the M&E and project coordinator. Information from group records are sent to a MIS using SMS. To ensure the correctness and quality of the sent data, data is sent both in normal and reverse order. The senders receives feedback from the server as SMS approving or rejecting data acceptance specifying a specific reason. Once data of a certain group is received by the server it is validated and stored in the database only if the two datasets match else both senders get a failure SMS and asked to send data again.

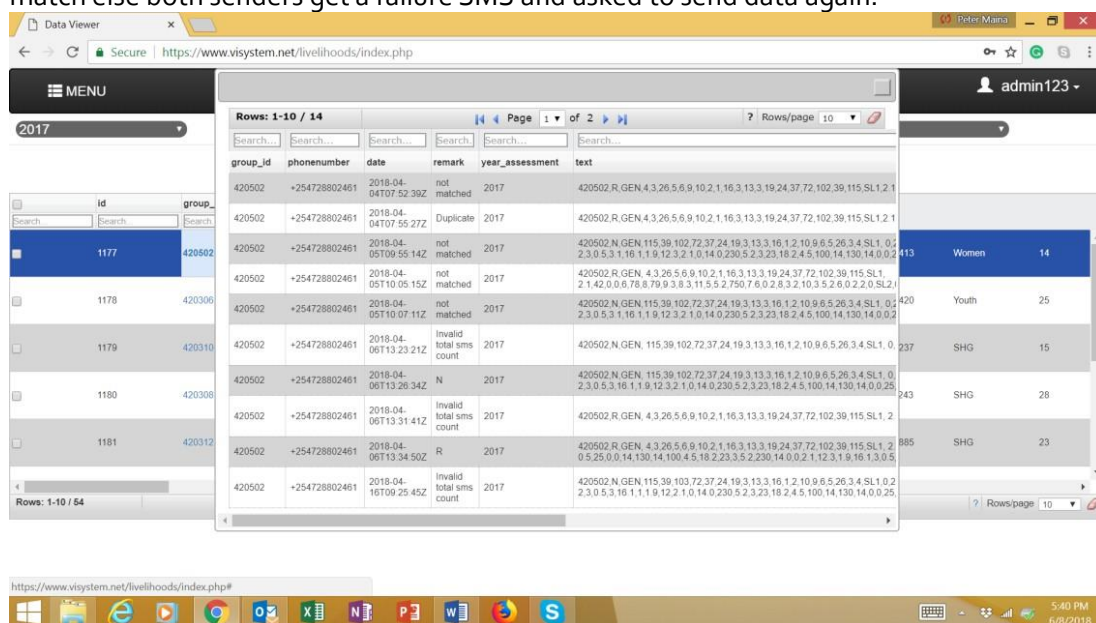


Figure 20: SMS data submission in the system

The MIS generates summaries of key performance indicators related to changes in farmers activities

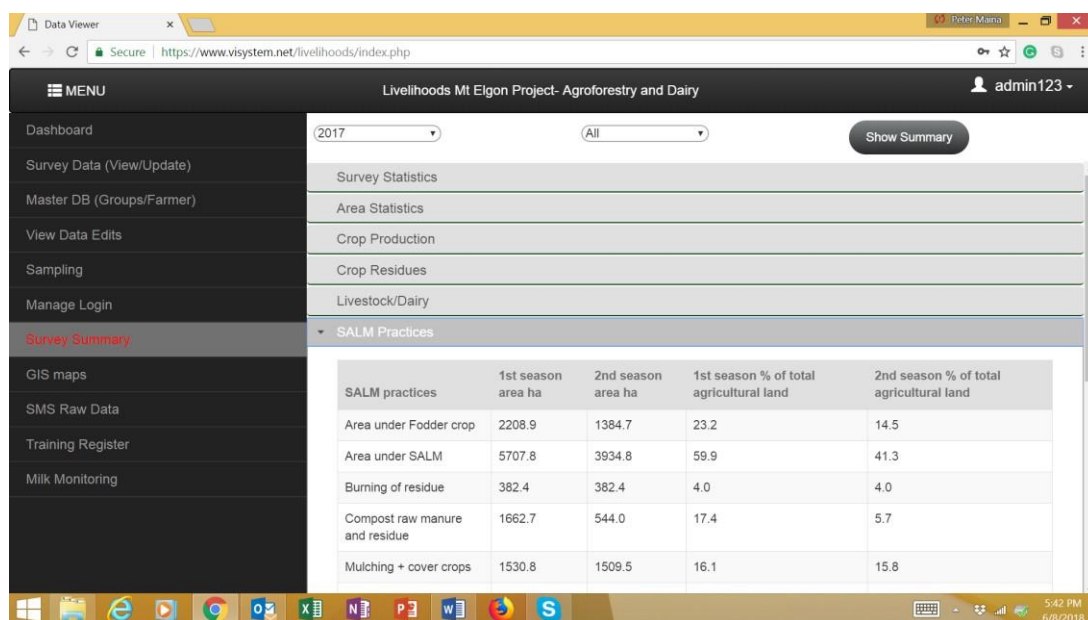


Figure 21: Statistics in MIS

With this system, project has flexible options to collect and enter data into one web- based MIS; either through data entry interface or directly through SMS based system. These 2 systems are used to collect the data from the field. A separate interface/ portal is developed for the VI staff to manage, analyze and process these data, edit when necessary and generate reporting for various purposes. In summary, some of the key features of the system are listed below:

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- Centralized online database
- Dashboard to monitor the progress
- Login options specific use rights for data view and editing
- Log of edited records - old value, new value, edited by, time and reason
- Restrict data editing by setting deadlines
- Summary analysis of data on single click (no need of Excel based tools)
- Random selection of a farmer group sample for QA/QC is done by system
- Provision to send comments to lower admin unit
- Export data to excel
- Login management for changing password and setting deadlines for editing
- Create new farmer groups where MIS system designs ID (no scope of duplicate ID)
- Data validation (mathematical and logical)

Monitoring changes in farmers' livelihoods

To monitor changes in farmers livelihoods, the project uses biannual social economic survey coded in Devindicator. Data is collected using a mobile App and analysed to track changes in farmers livelihoods.

SUSTAINABLE AGROFORESTRY BASED DAIRY VALUE CHAIN IN MOUNT ELGON, KENYA
Revised Social Indicator Survey

Revised Social Indicator Survey

Survey

1: Farmer ID

2: Farmers Name

3: Do the food crops you produce able to feed the family until the next harvest?

a. ☐ No
b. ☐ Yes

Figure 22: Social indicators survey questionnaire

DevIndicator
Managing For Development Results

Survey data

Survey: Revised Social Indicator Survey | Assessment: Revised Social Indicator Baseline

Structure: All Structures | Users: All Users | Load | Download

Revised Social Indicator Survey... / Revised Social Indicator Baseline...

Show 10 entries | Search:

	FarmerID	FarmersName	FoodCropsProduction	MaizeFeedingMonths	LegumesFeedingMonths	1stSeasonIncome	2ndSeasonIncome	WorkingsUpload
Action	71010302	phelistus kirui	No	7	4	74900	-500	1
Action	12010104	Justine N. Simiyu	No	6	5	12200	-	1
Action	12030106	Irene Barasa	No	9	4	53250	10800	1
Action	12030113	ALice Lupekho	No	8	6	28915	-	1
Action	71010207	Eunice mukoni	No	8	4	33100	5100	1
Action	71020108	Beatrice kaburio	No	7	2	240	700	1

Figure 23: Data in social indicators survey

B.7.1. Data and parameters to be monitored

Parameters for SGD 13: Climate Action

Relevant SDG Indicator	SDG 13 – Climate Action
Data/parameter:	Dairy farm stratum
Unit	Dimensionless
Description	Number of heads in dairy management system Extensive, Semi-intensive, Intensive so that the weighted average emission intensity can be calculated for each group
Measured/calculated/default	Measured
Source of data	Project monitoring – Activity Based Monitoring System, aggregated on a farmer group level and then sent to project MIS system via SMS
Value(s) of monitored parameter	See Excel spreadsheet provided: “free_range_grazing”, “semi_extensive”, and “zero_grazing” in the spreadsheet “Mt Elgon project data” (Tab “ABMS”) as well as “Mt Elgon project data and ER calculation” (Tab “Database with ER-Calculations”)
Monitoring equipment	Farmer commitment form and farmer group summary, and project MIS
Measuring/reading/recording frequency:	Annually
Calculation method (if applicable):	None
QA/QC procedures:	Training of farmers to ensure correct recording. Quality checks of records and corrections thereof done at various levels - by farmer group leader, community facilitator, and Vi field staff and monitoring unit. Inbuilt QA/QC in MIS checks for outliers or unrealistic values, which trigger corrective actions
Purpose of data:	Quantifying project GHG emissions
Additional comments:	None

Relevant SDG Indicator	SDG 13 – Climate Action
Data/parameter:	Annual total milk yield per farmer group
Unit	kg milk * farm group ⁻¹ * year ⁻¹
Description	Total uncorrected volume of milk produced per farmer group per year
Measured/calculated/default	Calculated
Source of data	Project monitoring (milk monitoring) records
Value(s) of monitored parameter	See Excel spreadsheet provided: “Annual total Milk production per group” in the spreadsheet “Mt Elgon project data and ER calculation” (Tab “Database with ER-Calculations”)
Monitoring equipment	Annual milk record forms and Project MIS
Measuring/reading/recording frequency:	Annually

Calculation method (if applicable):	The farmers report on a group level the average daily milk production of that group. From this the total annual milk production is calculated per year and group
QA/QC procedures:	Training of farmers to ensure correct recording. Quality checks of records and corrections thereof done at various levels - by farmer group leader, community facilitator, and Vi field staff and monitoring unit. Inbuilt QA/QC in MIS checks for outliers or unrealistic values, which trigger corrective actions
Purpose of data:	Quantifying project GHG emissions
Additional comments:	None

Relevant SDG Indicator	SDG 13 – Climate Action
Data/parameter:	Number of mature lactating and dry cows per farm (HS _j)
Unit	Head
Description	The number of mature lactating and dry cows in each farm in each year
Measured/calculated/default	Measured
Source of data	Project monitoring – Activity Based Monitoring System, aggregated on a farmer group level and then sent to project MIS system via SMS
Value(s) of monitored parameter	See Excel spreadsheet provided: mature lactating cows is denoted by “adult_productive”, and dry cows by “adult_non_productive” in the spreadsheet “Mt Elgon project data” (Tab “ABMS”) as well as “Mt Elgon project data and ER calculation” (Tab “Database with ER-Calculations”)
Monitoring equipment	Farmer commitment form and farmer group summary, and project MIS
Measuring/reading/recording frequency:	Annually
Calculation method (if applicable):	None
QA/QC procedures:	Training of farmers to ensure correct recording. Quality checks of records and corrections thereof done at various levels - by farmer group leader, community facilitator, and Vi field staff and monitoring unit. Inbuilt QA/QC in MIS checks for outliers or unrealistic values, which trigger corrective actions
Purpose of data:	Quantifying project GHG emissions
Additional comments:	None

Relevant SDG Indicator	SDG 13 – Climate Action
Data/parameter:	Number of bulls maintained per farm (CB _j)
Unit	Head
Description	The number of bulls maintained on the j th farm in each year
Measured/calculated/default	Measured
Source of data	Farmer reported value
Value(s) of monitored parameter	This parameter will be updated in the updated ABMS system in the future.
Monitoring equipment	Farmer commitment form and farmer group summary, and project MIS
Measuring/reading/recording frequency:	Annually

Calculation method (if applicable):	None
QA/QC procedures:	Training of farmers to ensure correct recording. Quality checks of records and corrections thereof done at various levels - by farmer group leader, community facilitator, and Vi field staff and monitoring unit. Inbuilt QA/QC in MIS checks for outliers or unrealistic values, which trigger corrective actions
Purpose of data:	Quantifying project GHG emissions
Additional comments:	None

Parameters for SDG 1, SDG 2 and SGD 5

SDG 1 – No Poverty

Relevant SDG Indicator	SDG 1 – No Poverty
Data/parameter:	Average milk production
Unit	Litres/day
Description	Average amount of milk produced per day in the project
Measured/calculated/default	Calculated from project's milk monitoring
Source of data	Project monitoring (milk monitoring) records and Project MIS
Value(s) of monitored parameter	
Monitoring equipment	Monthly and bi-annual milk record forms and Project MIS
Measuring/reading/recording frequency:	Monthly and biannually
Calculation method (if applicable):	Value is averaged across all farmer groups reporting milk production (dairy farmers)
QA/QC procedures:	Training of farmer group leaders/Community Facilitators to ensure correct recording. Testing and re-testing of data collection tool (milk record forms). Quality checks by Vi field staff and monitoring unit.
Purpose of data:	Determining the achievement of the project's hunger reduction target
Additional comments:	None

Relevant SDG Indicator	SDG 1 – No Poverty
Data/parameter:	Farmers with secure milk contracts
Unit	Number of farmers
Description	Number of farmers in the project with secured contracts to supply milk
Measured/calculated/default	Calculated from project's livelihood survey
Source of data	Project livelihood survey
Value(s) of monitored parameter	
Monitoring equipment	Survey questionnaire/data collection tool
Measuring/reading/recording frequency:	At every Certification event
Calculation method (if applicable):	Proportion of households with secured contracts to supply milk divided by all dairy farmers in the project

QA/QC procedures:	Training of enumerators to ensure correct recording. Testing and re-testing of data collection tool. Quality checks by Vi field staff and monitoring unit.
Purpose of data:	Determining the achievement of the project's hunger reduction target
Additional comments:	None

Relevant SDG Indicator	SDG 1 – No Poverty Hunger
Data/parameter:	% of people earning > USD 2/day
Unit	%
Description	Percentage of households participating in the project that earn more than USD 2/day
Measured/calculated/default	Calculated from project's Livelihood socio-economic survey
Source of data	Project's Livelihood socio-economic survey
Value(s) of monitored parameter	Not applicable as monitoring occurs every third year of the project (will occur end of 2018)
Monitoring equipment	Survey questionnaire/data collection tool
Measuring/reading/recording frequency:	Every third year of the project
Calculation method (if applicable):	Proportion of households reporting earnings of > USD 2/day divided by all households in the survey
QA/QC procedures:	Training of enumerators to ensure correct recording. Testing and re-testing of data collection tool. Quality checks by Vi field staff and monitoring unit.
Purpose of data:	Determining the achievement of the project's hunger reduction target
Additional comments:	None

SDG 2 – Zero Hunger

Relevant SDG Indicator	SDG 2 – Zero Hunger
Data/parameter:	% of people having 2 meals/day
Unit	%
Description	Percentage of households having at least two meals per day before project start
Measured/calculated/default	Calculated from project's Livelihood socio-economic survey
Source of data	
Value(s) of monitored parameter	Not applicable as monitoring occurs every third year of the project (will occur end of 2018)
Monitoring equipment	Survey questionnaire/data collection tool
Measuring/reading/recording frequency:	Every third year of the project
Calculation method (if applicable):	Proportion of households reporting having 2 meals/day divided by all households in the survey
QA/QC procedures:	Training of enumerators to ensure correct recording. Testing and re-testing of data collection tool. Quality checks by Vi field staff and monitoring unit.
Purpose of data:	Determining the achievement of the project's hunger reduction target

Additional comments:	None
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SDG 5 – Gender Equality

Relevant SDG Indicator	SDG 5 – Gender Equality
Data/parameter:	% of women participating in farmer organizations in the project
Unit	%
Description	Percentage of women participating in the project through the farmer organization (i.e., farmer groups)
Measured/calculated/default	Calculated from project's livelihood survey
Source of data	Project training/capacity building monitoring
Value(s) of monitored parameter	
Monitoring equipment	Survey questionnaire/data collection tool
Measuring/reading/recording frequency:	At every Certification event
Calculation method (if applicable):	Proportion of women participating in the project through the farmer organization (i.e., farmer groups) divided by all households in the survey
QA/QC procedures:	Training of enumerators to ensure correct recording. Testing and re-testing of data collection tool. Quality checks by Vi field staff and monitoring unit.
Purpose of data:	Determining the achievement of the project's gender equality reduction target
Additional comments:	None

B.7.2. Sampling plan

Detailed Standard Operating Procedures (SOPs) of the Activity-Based Monitoring System (ABMS) and the MIS system with all technical features is available as supporting documentation including the mobile apps used in the project.

LUF uncertainty requirements:

As described in the overall monitoring deviations, this project has set up the ABMS as a full census, meaning that all farmers and farmer groups registered are reporting in a particular year their farm activity data to the web-based Management Information System (MIS)¹⁶. Therefore, sampling, where uncertainty estimate is a valid statistical practice, does not apply.

To ensure the farmer self-reported data are within the LUF Uncertainty requirements, the following QA/QC procedures are implemented:

- Training of farmers to ensure correct reporting/recording.
- Quality checks of records and corrections thereof done at various levels - by farmer group leader, community facilitator, and Vi field staff and monitoring unit.
- Inbuilt QA/QC in MIS checks for outliers or unrealistic values, which trigger corrective actions.

The process of verification checks are summarized in the slides below for 2016 as an example. For details, refer to the supporting documents (*Monitoring -Vi Verification*):

¹⁶ The project MIS can be accessed [here](#). Access credentials to be provided by the PD.



LIVELIHOOD DATA VERIFICATION REPORT 2016 DATA

Process

Desk check- web data anomalies

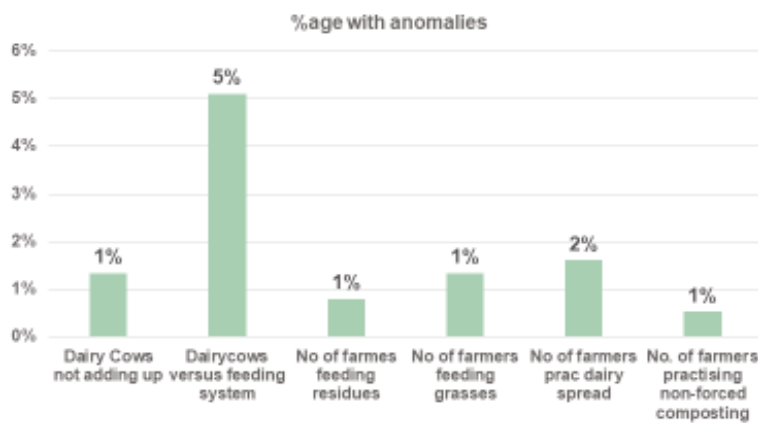
Field visits – Group data and Farm Activity monitoring checks, on record versus ground checks



DESK CHECKS-General Observation

Great improvement in quality of data when compared to 2015 – more consistency, more accurate, more realistic

Run through the web revealed few anomalies highlighted below



General Observation

- 99% of these disparities were SMALL mistakes e.g differences of less than 1 acre
- 1% of them were data entry mistakes e.g in Kulwa SHG, the difference between acreage under maize and acreage under Agriculture was 111.37 acres. They entered 125 acres under maize instead of 12.5 acres probably, while area under Agric was 13.63 acres
- In Bungoma again, for Mafuli the difference was 38.75 acres, they may have entered 63 acres instead of 6.3 acres under beans against 24.25 acres of Agric land



Any identified anomalies are resolved with the responsible data collection and management team, and corrected as necessary.

Furthermore, outliers were checked in the dataset (see values for year 2015 in Excel "Mt Elgon Project data and ER calculation"). The data for FCPM yield per productive cow per year in 2015 did not follow a normal (Gaussian) distribution – whereby the Standard deviation could not be used as a means to identify outliers. Therefore, we used the interquartile range (IQR) to identify outliers. For this, we multiplied the IQR by 1.5. The product of this multiplication was then subtracted from the first Quartile Q_1 , and added to the third Quartile, Q_3 . Any milk yield value outside of these two resulting values was considered an outlier.

Lower Outliers $< Q_1 - IQR * 1.5$

Upper Outliers $> Q_3 + IQR * 1.5$

Applying this procedure resulted in the following outcomes:

- Milk yield values of 0 kg FPCM are not outliers because not possible.
- Milk yield values per productive adult above 3,464 kg FPCM for 2015 are outliers

B.7.3. Other elements of monitoring plan

None

SECTION C. Duration and crediting period

C.1. Duration of project

C.1.1. Start date of project

02/03/2016

This project could be described as advisory service performance project where on an annual basis recruitment of new groups, consultations and trainings is given to registered groups – while monitoring happens simultaneously each year. The actual implementation of practices which are carbon relevant therefore is always depending on the quality of the Vi advisory and extension system (which also includes the provision of seeds for framers to establish farm based nurseries, other than this no other inputs are

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provided by Vi). The results of this performance of a given year is then monitored retrospectively around March/April of the following year before the new cropping season starts (in this region there are two cropping seasons: The first season is from April to September and corresponds to the long rains period. This is the main season and usually has a higher productivity. The second season is from October to March the following year and corresponds to the short rains period).

Therefore the most logic project start date and the project start date of the crediting period would be the 2nd of March 2016 where the final contract between Livelihoods and Vi was signed and the first financial statement between the two parties for the first year of implementation was endorsed (see below)

VI AGROFORESTRY

**LIVELIHOODS FUND SICAV SIF 'LIVELIHOODS' AND
BROOKSIDE DAIRY LIMITED 'BROOKSIDE's FUNDED
"LIVELIHOODS MOUNT ELGON" PROJECT, IMPLEMENTED BY
THE VI AGROFORESTRY KENYA COUNTRY OFFICE**

SPECIAL PURPOSE FINANCIAL STATEMENTS

FOR THE PERIOD 2 MARCH 2016 TO 28 FEBRUARY 2017

After 2nd of March 2016, all the simultaneous activities started and rolled out. The first annual report produced by Vi for the first year of this implementation states the following achievements:

'The project was incepted in March 2016; this was followed by sensitization and recruitment of 15 dairy cooperatives societies into the project. The cooperatives were involved in the planning process for project implementation. During the first year of implementation, the project has sensitized, recruited 606 (not all finally contracted In 2016) primary producer groups with 7,719 members. These are mainly small scale farmers involved in agricultural production. The cooperatives were supported to carry out risk and opportunity assessment to establish climate related risks and plan for appropriate interventions to mitigate the risks. They were also exposed to financial risk assessment to establish financial management and governance capacities. Initial training activities were conducted involving 7614 farmers. The trainings focused on improved dairy management and Sustainable Agricultural Land Management (SALM). Of the trained farmers, 4131 adopted SALM practices on their farms. The implemented SALMs included: Agroforestry practices- establishment of long term trees (389,960 trees) and Short term trees (356,218 metres of trees) – which are used also for livestock feed. Soil and water conservation including mulching and water harvesting structures like terraces, grass strips, trash lines and water retention ditches. Agronomic practices including; alley cropping, intercropping, use of certified seeds and crop rotation. Soil nutrient management practices like composting, slurry utilization, mulching, residue management and proper use of inorganic fertilizers. 3500 farmers adopted improved dairy management practices including; fodders tree and crops establishment, construction of dairy cow stables (zero grazing units), feed conservation and improved routine management practices like feeding and tick control.'

C.1.2. Expected operational lifetime of project

The first contract between all parties of this project has a duration of 10 years, however, it is already planned to add a second tranche of 10 years after this first period to also include the restoration of riverbanks within the project region into the project activity portfolio. The expected operational lifetime of the project is thus longer than the crediting period.

C.2. Crediting period of project

The crediting period has been set as per the methodology::

- Activities under Gold Standard Agriculture Smallholder Dairy Methodology have **7 years crediting period, which can be extended twice**. Therefore, the project crediting period is 7 years, with at least one renewal of another 7 years.

C.2.1. Start date of crediting period

02/03/2016

C.2.2. Total length of crediting period

The total length is 7 years with at least one renewal, so 14 years in total.

SECTION D. Safeguarding principles assessment

D.1. Analysis of social, economic and environmental impacts

The Project Developer and Implementer have set high standards regarding safeguards as demonstrated in the Vi Agroforestry Strategy 2017 – 2021. The analysis of the project's safeguards as per the GS SAFEGUARDING PRINCIPLES AND REQUIREMENTS is presented below covering social, economic and environmental principles.

Safeguarding principles	Assessment questions	Assessment of relevance to the project (Yes/potentially/no)	Justification	Mitigation measure (if required)
SOCIAL & ECONOMIC SAFEGUARDING PRINCIPLES AND REQUIREMENTS				
Principle 1 – Human Rights	The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights	Potentially	The Project Developer applies the Human Rights-Based Approach (HRBA) in all its work, thereby addressing the root causes of poverty. The HRBA operationalises internationally proclaimed human rights.	Not required
	The Project shall not discriminate with regards to participation and inclusion	Yes	The Project Developer applies six HRBA principles (PLANET ¹⁷), one of which is Non-discrimination. Hence, the project shall not discriminate regarding participation and inclusion	Recruitment of participants in the project is done as described in A.5 - through traditional institutional structures such

¹⁷ PLANET stands for Participation, Links to human rights, Accountability, Non-discrimination, Empowerment, Transparency

				as <i>Barazas</i> and other community meetings, where every member of the community is completely free to participate
Principle 2 – Gender Equality and Women’s Rights	For all questions, see Section A.8., Question 3	Yes	For all justifications, see Section A.8., Question 3	The project has put in place a number of measures such as: Gender-sensitive consultations, Gender training manual, and Household roadmap
	<p>The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women. Specifically, this shall include (not exhaustive):</p> <p>Sexual harassment and/or any forms of violence against women – address the multiple risks of gender-based violence, including sexual exploitation or human trafficking. Slavery, imprisonment, physical and mental drudgery, punishment or coercion of women and girls. Restriction of women’s rights or access to</p>	Yes	<p>Participation in the project is on voluntary basis, based on free prior informed consent principle, hence, no form of harassment or force/coercion – physical or mental is associated with it. Regarding women’s rights or access to resources, the project is promoting a proactive approach to gender equality – through gender assessments, consultations, and the incorporation of gender equality in day-to-day project activities. (See supporting documentation such as Gender training curriculum and the</p>	The project has put in place a number of measures such as: Gender-sensitive consultations, Gender training manual, and Household roadmap

	resources (natural or economic). Recognise women's ownership rights regardless of marital status – adopt project measures where possible to support to women's access to inherit and own land, homes, and other assets or natural resources.		Women Organizing for Change in Agriculture and Natural Resource (WOCAN) gender assessment, A gender guide to families working together for sustainable livelihoods: A Training Material)	
	<p>Projects shall apply the principles of non-discrimination, equal treatment, and equal pay for equal work, specifically:</p> <p>Where appropriate for the implementation of a Project, paid, volunteer work or community contributions will be organised to provide the conditions for equitable participation of men and women in the identified tasks/activities.</p> <p>Introduce conditions that ensure the participation of women or men in Project activities and benefits based on pregnancy, maternity/paternity leave, or marital status.</p> <p>Ensure that these conditions do not limit the access of women or men, as the case may be, to Project</p>	No	Not applicable to the project	Not required

	participation and benefits			
	The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks	Yes	Kenya has a national policy on gender: Kenya National Policy on Gender and Development, 2000. In addition, the Ministry of Gender, Children and Social Development has prepared a ministerial Gender Policy (Gender Policy, 2011), for use internally and by development partners. The project gender assessments, e.g., by WOCAN, makes reference and borrow from these commitments	The project has put in place a number of measures such as: Gender-sensitive consultations, Gender training manual, and Household roadmap
Principle 3 – Community Health, Safety and Working Conditions	The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community	No	Not applicable to the project	Not required
Principle 4 – Cultural Heritage, Indigenous Peoples, Displacement and Resettlement	Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g., knowledge, innovations, or practices)?	No	There are no such sites, structures or objects. The project is implemented on farms belonging to individual farmers	Not required
	Does the Project require or cause the physical or economic relocation of	No	The project area are existing farms, so it does not require or	Not required

	peoples (temporary or permanent, full or partial)?		cause the physical or economic relocation of peoples	
	Does the Project require any change to land tenure arrangements and/or other rights?	No	No, land tenure and rights remain unchanged. Only the legal rights to carbon is passed on to the Project Developer as described in section A.3	Not required
	For Projects involving land-use tenure, are there any uncertainties with regards land tenure, access rights, usage rights or land ownership?	No	No, there are no uncertainties regarding land tenure, access rights, or ownership. The land tenure system in the project area is private "free hold", which does not have expiry date and is only transferable through sale or inheritance. The legal title of the land is evidenced through legally registered land certificates (available upon request), issued by the Government Registrar of Land Titles	Not required
	Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?	No	Not applicable to the project	Not required
Principle 5 – Corruption	The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	Potentially	Project funds, provided by Livelihoods Fund, is subject to rigorous financial accountability. The Project Developer undertake financial	Not required

			accountability and audits of all its project regularly (see <i>PWC Audit Livelihoods Management Letter</i> for example). Therefore, the project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	
Principle 6 – Economic Impacts	Labour Rights: The Project Developer shall ensure that there is no forced labour and that all employment is in compliance with national labour and occupational health and safety laws, with obligations under international law, and consistency with the principles and standards embodied in the International Labour Organization(ILO) fundamental conventions. Where these are contradictory and a breach of one or other cannot be avoided, then guidance shall be sought from Gold Standard. Workers shall be able to establish and join labour organisations.	No	Not applicable to the project	Not required
	Working agreements with all individual workers shall be documented and implemented.			

	<p>The Project Developer shall justify that the employment model applied is locally and culturally appropriate</p> <p>Child labour, as defined by the ILO Minimum Age Convention is not allowed.</p> <p>The Project Developer shall use adequate and verifiable mechanisms for age verification in recruitment procedures.</p> <p>The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures.</p>			
	<p>Negative Economic Consequences:</p> <p>The Project Developer shall demonstrate the financial sustainability of the Projects implemented, also including those that will occur beyond the Project Certification period</p> <p>The Projects shall consider economic impacts and demonstrate a consideration of potential risks to the local economy and how these have been taken</p>	Yes	<p>The project's funding is secured by a contractual agreement signed between Vi Agroforestry and Livelihoods Funds. In addition, the project has conducted financial risk assessments for the project participants (cooperatives). Both are meant to ensure financial sustainability of the project. Refer to <i>Financial Risk assessment reports</i> documents in</p>	<p>The project has set social-economic targets for SDG 1, and 2, and implements socio-economic (livelihoods surveys) to determine achievement of targets</p> <p>Financial Risk assessments have been done for the participating cooperatives. Also Livelihoods Fund has agreed</p>

	into account in Project design, implementation, operation and after the Project. Particular focus shall be given to vulnerable and marginalised social groups in targeted communities and that benefits are socially-inclusive and sustainable.		supporting documentation The project baseline survey (and future monitoring) includes socio-economic surveys, which help to identify potential risks to local economy and the communities. These are incorporated in the project design and implementation	to renew the contract signed with the Project Implementer to cover at least 30 years.
ENVIRONMENTAL & ECOLOGICAL SAFEGUARDING PRINCIPLES AND REQUIREMENTS				
Principle 1 – Climate and Energy	Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	No, the project will in fact reduce GHG emissions due to implementation of the project activities outlined in section A.5. the estimated emissions reductions presented in section B.6.5	Not required
	Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	No	Instead, the project is increasing biomass availability on the farm through tree planting.	Not required
Principle 2 – Water	Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability,	Potential	Due to tree planting, the project is expected to increase tree cover in the landscape, hence, reduce run-off and increase infiltration, hence, recharging ground water. Hence, the	Not required

	flooding potential, lack of aquatic connectivity or water scarcity?		effect is considered positive. Also refer to the project environmental impact assessment in supporting documentation	
	Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?	No	No, the project activities (see section A.5) are would in fact reduce anthropogenic erosion and soil loss	Not required
	Is the Project's area of influence susceptible to excessive erosion and/or water body instability?	Yes	The project's area of influence is susceptible to erosion in the absence of the project. However, the project activities (see section A.5) will reduce erosion and soil loss	Measures to mitigate erosion are part of the project activities – such as tree planting; see section A.5 for detail descriptions
Principle 3 – Environment, ecology and land use	Does the Project involve the use of land and soil for production of crops or other products?	Yes	The project is promoting tree planting and fodder production (see section A.5). Thus, its effect on environmental, ecology and land use is considered to be positive. Also see the project's ESIA in supporting documentation	The project activities mitigate land degradation and promote sustainable use see section A.5 for detail descriptions
	Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	The project activities do increase vulnerability to those factors	Not required

	Could the Project be negatively impacted by the use of genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development)?	Potential	Kenya Biosafety Act 2009: and associated Regulations, i.e., :Contained Use GMOs, Environmental Release of GMOs, Import, Export and Transit of GMOs, and Labelling (2012) of GMO containing material(e.g. foods and feeds) all limit GMOs use. In addition, the project does not support use of GMOs	Not required
	Could the Project potentially result in the release of pollutants to the environment?	No	Not applicable to the project	Not required
	Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	Not applicable to the project	Not required
	Will the Project involve the application of pesticides and/or fertilisers?	No	The use of pesticides, fertilizers, and herbicides could release pollutants into the environment. These practices exist in the baseline. However, the project does not promote them	Not required
	Will the Project involve the harvesting of forests?	No	Not applicable	Not required
	Does the Project modify the quantity or nutritional quality of food available such	No	Not applicable	Not required

	as through crop regime alteration or export or economic incentives?			
	Will the Project involve animal husbandry?	Yes	The project will improve animal husbandry and animal welfare standards – aligning with best international practices and the Gold Standard requirements	The project measures to promote animal husbandry include: improved feeding, breeds, housing, and animal health care in general. As described in section B.2, subsection 8., animal welfare standards will follow best international practices and the Gold Standard requirements
	Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	Potential	No HCV ecosystems, critical habitats, landscapes, key biodiversity areas or sites are found within the farms implementing the project as the project is implemented on grasslands and croplands belonging to individual farmers. However, the project plan to plant 4 million trees to enhance biodiversity, and ensure 10% of more of the project area is managed to protect or enhance the biological diversity	Not required

	Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)	No	Not applicable	Not required
	Does the Project potentially impact other areas where endangered species may be present through transboundary effects?	No	No, the project does not impact other areas where endangered species may be present. The Mt Elgon National Park, is the transboundary ecosystem, but it does not host endangered species	Not required

SECTION E. Local stakeholder consultation

E.1. Solicitation of comments from stakeholders

As described in section A.6, this project is retrospectively applying for Gold Standard Certification. Hence, the GSF Consultation Procedure and Guidelines could not be followed systematically. However, Vi Agroforestry, with over 20-year experience of sensitizing, aggregating and implementing farmer-led livelihoods programs in Kenya and other countries in East Africa, has a very strong internal structure of standardized stakeholder consultation procedure and applied this in the consultation process of this project. The solicitation of comments for this project started by preparing and creating a clear plan for the consultation (consultation plan) including list of stakeholders and the resources (budget) required. Then actual stakeholders consultations (physical meetings) were conducted. The consultation process and feedbacks were documented. Assessments were made of the feedbacks received and then incorporated in the project design as appropriate. Some feedbacks were provided to the stakeholders straight away during the consultation processes, and others later on regarding how their (stakeholders') comments/feedbacks are being addressed. These procedures were largely consistent with the Gold Standard Stakeholder Consultation & Engagement Procedure, Requirements & Guidelines, and is enshrined in the partnership approach of the *Vi Agroforestry Strategy 2017 – 2021* document. Also see details contained in the Stakeholders Consultation Report.

Gold Standard®

It is acknowledged that as the project is retrospectively applying for Gold Standard Certification, the GSF Consultation Procedure and Guidelines could not be followed precisely. The differences/gaps are indicated in the Table 14 below:

In terms of gender, the project consultation process incorporated gender equality aspects through the following:

Participation during meetings: Gender equality aspects were incorporated during consultations by purposely inviting women-led farmer organisations – see invitation list in Stakeholders Consultation Report provided. This has also resulted into registering many women-led farmer groups in the project.

Household Road Map: Each household joining the project is encouraged to prepare a roadmap (see Figure below). The roadmap is a visioning and planning process done jointly by the husband and wife (for couples) and other members of the household. This ensures increased and equal participation of women in decision-making regarding accepting, joining and implementing the project.

Table 14: Gaps in the Project's stakeholders' consultations relative to GS requirements

GS Stakeholders' consultations requirement	What PD did	Gap
STEP 1: PREPARE		
1. Formal "stakeholders consultation plan"	A plan for carrying out stakeholders' consultations, which considered the purpose, process, and who and how to engage stakeholders was executed, but not written down into a formal "stakeholders consultation plan"	Plan not written down as a formal document
2. Key Project Information (KPI) Note: short summary of the project, which is understandable for a lay-person	The project prepared and used a document: " <i>Project Communication Brief</i> ". It was prepared in English, with translations done in local languages during meetings only	The format and language meant the document could not be understood by lay-persons without the translation/interpretation done during the meetings
3. Stakeholder identification: all relevant stakeholders to be identified, but at minimum those listed in the GS Consultation & Engagement Procedure, Requirements & Guidelines	The project made attempts to identify all relevant stakeholders, but some stakeholders were not considered, as it was not a fore-thought it would be a Gold Standard project	In particular, "a Gold Standard representative at help@goldstandard.org or Relevant international Gold Standard NGO Supporters with a representation in your region and all Gold Standard NGO Supporters located in the host country of the project" were not considered

STEP 2: HOLD A CONSULTATION MEETING	The meetings followed agreed agenda and processes and stipulated in the GS guidelines but the aspects below (numbered 1. and 2.) were missed	
4. Complaint procedures and protocols	Though the project implements Inputs and Grievance Mechanism, the selection of the best methods for this was not discussed during the meetings	The stakeholders did not make any inputs/select the best methods for the project's "Inputs and Grievance Mechanism"
5. Sustainable Development Exercise	Discussions on the project's sustainable development impacts were held, but stakeholder's inputs to the GS Safe Guarding Principles were not sought in the meetings	Stakeholder's inputs to the GS Safe Guarding Principles were missed as it was not afore-thought this would be a Gold Standard project
6. Evaluation Forms	Meeting evaluations were implemented, the exception being for stakeholders' meetings organized at cooperative level	Some meeting evaluations were missed out
STEP 3: DOCUMENT		
7. Meeting minutes and attendance	Implemented in all stakeholders' meeting. However, not all comments raised have been documented with those minutes, especially for meetings organized at cooperative levels	Some stakeholders comments were not missed out in documentation
STEP 4& 5: INCORPORATE FEEDBACK & FEEDBACK ROUND		
8. Stakeholder Feedback Round	Feedbacks were provided for some comments straightaway during the meetings. However, feedback on comments that were responded to/considered later could not be provided effectively to the individuals who raised them since a dedicated Stakeholder Feedback Round was not implemented	No dedicated Stakeholder Feedback Round was implemented, so feedbacks on some comments, whether considered or not, were not provided to the people who raised them

E.2. Summary of comments received

The following key comments were received:

On training: The dairy training materials have gaps – they were not fully elaborated. This could affect the quality of dairy training and adoption of improved practices.

On monitoring: there are many monitoring aspects/data and information that the project will require, which needs to be dealt with efficiently.

On information sharing: a system for sharing all relevant information among project partners is currently lacking, hence, very much needed to ensure all concerned persons have timely and adequate information about the project.

E.3. Report on consideration of comments received

The dairy training materials will be further elaborated by the collaboration of Vi Agroforestry, Brookside and EAMDA.

Furthermore, it was agreed during the meeting to find a way of sharing information better by establishing a system of "shared folder" for sharing with project partners all relevant documents – such as:

- List of criteria for the community facilitator selection
- Communication brief about the project to farmers
- Cooperatives evaluation tools
- Groups record information
- All training material
- Baseline data requirements
- Community facilitator training material
- Structure and contents of the training on leadership and transformation for FA (field advisor) and FO (field officer)
- Structure of the "quick appraisal" survey required by EAMDA:

Finally, it was then agreed to ensure the project monitoring system is harmonized into one synchronized reporting scheme. This will involve:

- updating of "DevIndicator" with Dairy Module action trackers (Vi+EAMDA)
- adapting the dairy recommendations in SMS-based system
- defining indicators and measurement methods for food security and income (Vi+Livelihoods)
- incorporating rapid survey into Vi's cooperative diagnostic survey (EAMDA+Vi)
- defining the roles of Vi staff in the training phase of the dairy module (EAMDA+Vi)

Appendix 1. Contact information of project participants

Organization name	Livelihoods Fund SICAV SIF
Registration number with relevant authority	
Street/P.O. Box	48-50 rue de la Victoire
Building	
City	Paris
State/Region	Paris
Postcode	75009
Country	France
Telephone	+33 1 44 35 26 15
Fax	
E-mail	
Website	http://www.livelihoods.eu/
Contact person	Danny Torres
Title	Technical & Innovation Director
Salutation	
Last name	Torres
Middle name	
First name	Danny
Department	
Mobile	
Direct fax	
Direct tel.	
Personal e-mail	dtorres@livelihoods-venture.com

Organization name	Vi Agroforestry
Registration number with relevant authority	
Street/P.O. Box	45767, 00100, Nairobi, Kenya
Building	
City	Nairobi
State/Region	Nairobi
Postcode	
Country	Kenya
Telephone	+254 20 418 4480/1383, +254 717 969 426 / +254 732 544 555
Fax	
E-mail	info@viagroforestry.org
Website	http://www.viagroforestry.org
Contact person	Lena Martens Kalmelid
Title	Regional Director
Salutation	
Last name	Kalmelid
Middle name	Martens

First name	Lena
Department	
Mobile	
Direct fax	
Direct tel.	+254 743 794 527; +254 418 4480/1383
Personal e-mail	lena.kalmelid@viagroforestry.org

Appendix 2. Summary of post registration design changes

Revision History

Version	Date	Remarks