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This document represents the basic layout and describes the required input for an ADD
(**Acorn Design Document**).

Of each project within Acorn an ADD should be provided. The ADD should be stored and made available on the Acorn platform for the stakeholders concerned. This report is drawn up in close collaboration between the local partner and Acorn staff members. The local partner is responsible for providing all required information and performing the assessments. Acorn is responsible for the quality and continuously updating of the ADD. The ADD can be requested by validation and verification bodies and certifiers for third party oversight or quality checks at any given time.

The following index box is provided before each section in the ADD to demonstrate the goal of the section, when each section needs to be performed, the frequency in which these sections need to be updated, who should complete the assessments within, and who should verify the information provided.

	Timing		Frequency		Editor		Reviewer
	Purpose of the section						

Table of Contents

Part A: Project Summary	3
Part B: Eligibility Checklists	9
Part C: Additionality Assessment	17
Part D: Carbon Baseline Assessment	21
Part E: Project Baseline Assessment	27
1. Famer income from carbon finance	28
2. Nutritional Variety	29
3. Agricultural Biodiversity	32
4. Agricultural land use productivity	35
5. Indicator Monitoring	37
Part F: Project Activities	38
Part G: Project Council	43
Part H: Organisational Capacity	46
Part I: Financial Feasibility	49
Part J: Payments and Benefit Sharing	50
Part K: Stakeholder Analysis	50
Part L: Reversal Risk Assessment	54
Part M: Technical Specifications	60
1. Applicability Conditions	60
2. Adjustment Factors	61
3. Root-Shoot	63
Annex 1: Map of project location & ecoregion	64
Annex 2: Organisational Structure	64
Annex 3: Solidaridad Peru Extension Methodology	64
Annex 4: Land Tenure Documentation (sample-based)	64
Annex 5: Agroforestry system design/implementation plan	64
Annex 6: Local partner and farmer business case	67
Annex 7: Project Council Reports and evidence of participation	67
Annex 8: Letter to national government	68
Annex 9: Farmer contract	68
Annex 10: Local partner contract	68
Annex 11: T-5 check failed plots	68
Annex 12: Additionality evidence	68
Annex 13: Solidaridad code of conduct	68

Solidaridad Acorn Design Document

Peru | San Martin

Date of Assessment: June 2022

Part A: Project Summary


At introduction after intake check


Every 3 years


Local partner


Acorn


Estimate the suitability of the project and provide a high level overview

Question	General Information	Answer
1	Project title	Climate Smart Coffee - Peru
2	Project location - country, region & district (attach map if possible)	Peru, San Martin (See Annex 1 for project location map).
3	Ecoregion(s)	Peruvian Yungas and Ucayali Moist Forests (See Annex 1 for ecoregion map).
4	Local partner representative (name & position)	<i>Provided. Concealed for data protection purposes.</i>
5	Local partner mission statement	We enable farmers and workers to earn a living income, shape their own future, and produce in balance with nature by working throughout the whole supply chain to make sustainability the norm.
6	Contact details (phone, email, & address)	<i>Provided. Concealed for data protection purposes.</i>
7	Main cash crop(s)	Coffee.
8	Project target group	Peruvian smallholder independent coffee producers who have recently begun the transition to agroforestry practices but do not have the technical resources and skills or finances to successfully operate a long-term agroforestry system.
9	Number of existing participants	<i>Provided. Concealed for data protection purposes.</i>
10	Number of potential additional participants	Solidaridad have acquired donor funding to reach 5,000 coffee producers in Peru by 2027. This is the minimum that they will scale to and

		believe that they can reach an estimated 10,000 producers more given they are able to acquire further funds.
11	Estimated total size of project area (ha)	In 2022 (1303 plots * 1.32ha = 1720ha) In 2027 (5.000 farmers * 1.32ha = 6.600ha)
12	Describe the project's aims and objectives (e.g. the problems this project will address)	The goal of this project is to achieve a sustainable coffee sector transformation in Peru by helping farmers transition to coffee grown in an agroforestry system. This aligns with Solidaridad's goal to prove that it is possible to produce coffee that isn't linked to deforestation and can benefit both nature and the communities in the face of climate change. Solidaridad Peru want to partner with Acorn for this interventions to create financial opportunities and incentives for coffee producers for adopting agroforestry systems.
13	Describe and provide evidence on how smallholder farmers/communities were involved during the design of the agroforestry project. (e.g. workshops, meetings)	The project design was created with community/technical input through meetings, workshops, and surveys with producers and community members. For example, Meetings have been held with the local community for knowledge exchange, including topics such as valued tree species (i.e. timber species that farmer can also gain income from) during project design. Solidaridad also holds inception meetings with coffee technical teams to explain the full agroforestry design (that has been created with community/technical input), who will then transfer this message onto the producers so they are full informed on what is expected from them during the implementation phase. Most contact going forward is with producer leaders as they help to diffuse the agroforestry design (information on optimal spacing, pruning etc.) to other project beneficiaries.
14	Provide a general description of current socioeconomic conditions in the project area (income, poverty level etc.)	Gender balance: Coffee production in Peru can be considered a family activity with different gender roles associated for different coffee production, harvest and post-harvest activities. Women and youth are typically excluded under traditional technical assistance models. Migration trends: Many of the coffee producer families are migrants from other regions in Peru. However, the younger generations typically see coffee farming as an unattractive proposition and typically seek opportunities in the city. Transport/roads: Road access can be considered poor in the project area. Access to

		<p>finance: The key issue with finance in the region is the ability to deploy existing financial mechanisms to support LCA. Credit lines have been developed with private, public or combined financial institutions to promote LCA and Deforestation-Free Production (DFP). Also, technical assistance models are being designed to support producers with so-called “green credit” lines. However, banks usually perceive investments in (smallholder) agriculture as high-risk, high cost, and with low returns.</p> <p>Income: the average annual income from coffee production in the project area in 2021 was identified as 16,514.48 PEN (€3,941.40). This is a 34% increase compared to before the project was established in 2018, 10,961 PEN (€2,824.7). It is estimated that coffee production represents 70% of total income in the project area. Poverty: In San Martin, most coffee producers score 0.44 on the Human Development Index (HDI), among the lowest compared to other regions.</p>
15	Describe how the agroforestry intervention proposed is expected to impact the following;	<p>a. Food security/nutritional intake: One of the objectives of the project is to maintain the dynamic of multiple land use within the farms in the project area (farmer growing a range of crops) to ensure they can have a more diverse and nutritious selection of fruits and vegetables for self-consumption. The income from carbon finance, if spent on food, is expected to allow farmers to purchase a wider variety of food rather than what is grown on their own farm (i.e. sources of protein).</p> <p>b. Farmer financial state: This project aims to increase the productivity of farmers through higher crop yield and less inputs (fertilisers and pesticides) resulting in more income for the farmers. Diversification of farmer income is also expected through the carbon finance offered for sequestration, giving farmers a more reliable and additional source of income.</p> <p>c. Gender equality: Solidaridad are not specifically targeting gender as a key pillar of their agroforestry program yet but are eager to determine where they can in the future with the help of Acorn. As Solidaridad aim to not reinforce gender inequalities, e.g. by promoting more inclusive approaches in the field and</p>





		<p>ensuring no discrimination against sex occurs when onboarding farmers and hiring employees, they believe there will not be any project-driven negative impacts but do not expect significant positive impacts either until they decide to target this indicator with specific mitigation actions.</p>
		<p>d. Farmer access to resources: Solidaridad will connect farmers to nurseries for provision of planting resources and offer training/guidance in their transition to agroforestry, timber tree species have been incorporated into the agroforestry design, farmers are encouraged to grow multiple crops alongside coffee on their farmers of self-consumption, and the additional income from carbon finance will increase their ability to purchase resources needed to maintain the agroforestry system and farm in general.</p>
		<p>e. Biodiversity on farms: The provision of shade from the trees planted is ideal in supporting a health ecosystem and habitat for native flora and fauna, protecting them from the extreme weather conditions that arise through climate change. Biodiversity will be increased on farms due to the variety of shade trees species planted and due to Solidaridad's objective of ensuring farmers grow a range of crops on their farmers other than coffee, this will bring benefits for the environment such as increase pollinators.</p>
16	<p>Describe any known local land degradation/deforestation processes or trends, and drives of these (e.g. population increase, fire, conversion for agriculture)</p>	<p>Conversion for agriculture and the high demand for timber have been the drive of local land degradation and deforestation in the past within the project area, however, in the last 5 years no such trends have been witnessed inside the project area. Unfortunately, these trends are still widespread throughout Peru, something Solidaridad is trying to halt through avoided deforestation.</p>
17	<p>Describe whether there is a low, medium or high risk of deforestation in the region surrounding the project (not project area)</p>	<p>There is a medium risk of deforestation in the area surrounding the project area due to land conversion for agriculture and demand for timber. Within the project area there is a low risk of deforestation as farmers also grow timber species on their land that are harvested to ensure they do not resort to deforestation activities within or nearby to the project area.</p>


18	Please select the following type of land use that best describes the project area	Existing agroforestry.
Land Tenure		
19	Estimated average plot size per farmer (ha)	1,32 hectares
20	How is land tenure organised among participants (formal titling, informal titling or land mapping)	Farmer possess informal land tenure including; Sales and Purchase Agreement or Vendor-Sale Declaration: usually signed by a local authority (for example: Mayor or local Priest) that recognizes the transaction as a valid one, but it has no granting of a concession or legality (see Annex 4).
The Agroforestry System		
21	Type of trees that have/will be planted under agroforestry scheme (shade, fruit-bearing, medicinal)	260 native timber tree species intended for shade, medicine, nitrogen fixing, prevention of soil erosion. Timber species are used so that if they need to be cut down due to overshadowing, end of life etc. farmers can use them on the farm or sell them for profit to purchase supplies for the farm or food etc.
22	Describe how the agroforestry system is expected to impact the land (e.g. more shade, less pests, less inputs – fertilisers, presence of pollinators)	This agroforestry system aims to provide shade for crops and other native fauna and flora species in the project area, protection against UV and extreme winds, reduce temperature and humidity on farms thereby reducing pests and diseases, increase the productivity of coffee plantations due to increased yield from partial shade approach and reduced inputs such as fertiliser, and it will build farm resilience and ability to adapt to climate change (i.e. floods).
Project Additionality		
23	Is the project incorporated by any other accounting program (e.g. compliance, voluntary or national GHG program)? If yes, describe how project ensures no double counting will take place.	No, it is not.
24	Did/will the project receive grant funding or investment for project start-up? If yes, who provided this?	Solidaridad has been receiving start-up grant funding from NORAD since 2018. This funding has been allocated to implement demonstration plots that disseminate knowledge of agroforestry practices amongst farmers and the community and is currently being used for ongoing operations (training etc.).

25	In what year and season will/were the first trees planted?	The first trees were planted in 2018. Due to their farmers limited financial resources and funding, they plant trees in a gradual and phased manner over a number of years until the agroforestry system reach the optimal density of 260 trees per hectare. Forest plantations are carried out during the rainy season in the area (Peruvian Amazon in general), i.e. from January to March-April. The rainy season in the Peruvian jungle, astronomically speaking, corresponds to the summer season in the southern hemisphere, so, strictly speaking, it is the summer rains.
26	Was the project established with the intent of receiving carbon finance for trees planted?	From the start of their project, Solidaridad have had the intention to scale their agroforestry project by offering farmers carbon finance for the trees they plant.
27	Is this project mandatory under any national or local laws? (List relevant forestry regulations, national climate change commitments etc.)	Solidaridad is not aware of any regulations/laws in which project interventions are mandated. This is evidenced in Peru's NDC Report (2020), the El Perú y el Cambio Climático (climate change strategy, 2016), and Perú Ley-N-29763 (Forest Legislation, 2011).
28	How is the initial implementation of this project being financed?	The initial implementation is financed by a combination of funding received from NORAD, farmers and Solidaridad.
29	Without the project's involvement, would farmers have the necessary resources, skills, knowledge, finances, or network to successfully transition to a long-lived agroforestry system?	No, farmers would not have been successful as they lacked the necessary agronomical knowledge and skills (suitable tree species), awareness of importance of preserving trees, technical assistance, finances, and planting materials (i.e. little availability of good quality seeds and seed banks).
30	What is the main driver encouraging farmers to transition to agroforestry?	Farmers are particularly eager to protect their crops and soil from strong winds, rain and sunlight and see a diversification in their income.
31	Was the promise of carbon credits the enabling factor for farmers to transition to agroforestry?	Although Peruvian farmers have their own motivation to undertake agroforestry practices, believing that the introduction of trees onto their coffee farms is beneficial for the environment and for their farms, such a transition is a risk in terms of financial input and returns during such a climate crisis. The offer of income diversification through carbon finance encouraged farmers to transition by offering an additional and more stable source of income as a reward for their behaviour change.
32	What are the biggest challenges faced by farmers (climate change,	Climate change (strong winds, rain and sunlight) and the resulting effects on crops

	volatility in commodity prices, low productivity, access to resources, financial security, crop damage from wildlife, human conflict etc.)	yield and productivity, and a lack of stable or diversified income.
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Part B: Eligibility Checklists

 **At introduction with project summary**
 **Once at the start**
 **Local partner**
 **Acorn**

 **The local partner, in consultation with Acorn, completes the local partner eligibility checklist to ensure basic conditions are in place**

Local partner eligibility checklist

Topic	Sub-topic	Requested information	Result
Organizational capacity	Organizational structure	Provide a description of your organizational structure and roles of each organization involved for the project (attach diagram/table in annex).	Solidaridad Peru is involved with different types of organizations from civil society organizations to government institutions and private sector. See Annex 2 for detailed organizational hierarchies.
	Organizational capacity	Provide a description of your “on the ground” capacity to undertake long-term community-led project(s) and implement agroforestry.	In total Solidaridad Peru has 37 FTE and the Coffee Programme has 17 FTE. Solidaridad Peru works at different levels locally with coffee producers, government’s organisations and trading companies. We have developed an extension methodology which we used to scale our climate smart model that includes agroforestry and silvopasture systems. See Annex 3 for the extension methodology. Since initiating operations in 2004, Solidaridad Perú’s coffee programme has supported more than 50,000 coffee farmers to be more resilient to the impact of poverty through the adoption of good agricultural practices. Since 2012, the focus has been to improve smallholder livelihoods based on agroforestry systems that can

		<p>demonstrate deforestation-free and climate smart practices. The climate-smart coffee technical assistance model based on agroforestry systems proved to reduce GHG emissions, increase productivity by 21% and coffee quality by 10% in conversion factor from parchment to green coffee. The model is based on an integrated and inclusive management, specifically the following five practices: Shade management: promote agroforestry systems, regeneration and diversify producer incomes. Plantation management: build capacities in pruning and appropriate tree densities. Fertilization plan: development of fertilization plans based on soil analysis to enable more efficient and effective application and increase in productivity. Soil management: promotion of a combination of preventive and regenerative soils techniques. Wastewater (aguas mieles) management: to enable more efficient use of water.</p>
Sustainability	The local partner agrees with the Rabobank's sustainability policy.	Yes
GDPR	The local partner's current data handling policies are compliant with GDPR regulations.	Yes
Participant organization	Is the project organized, or in the process of being organized, into cooperatives, associations, community-based organizations or other organizational forms able to contribute to the social and economic development of the participants and their communities, and which is democratically controlled by the participants.	Yes

Project effects	The project strives to not contribute, or does its utmost to avoid, environmental or (agricultural) biodiversity harm.	Yes
Entity	The local partner is an established legal entity that takes responsibility for the project and for meeting the requirements of the Acorn Framework for the duration of the project.	Yes
Local presence	The local partner has a strong in-country presence and the respect and experience required to work effectively with local participants and their communities.	Yes
Local policies	The local partner has a solid understanding of local policies and can confirm that the country's policy allows individual CRUs to be sold.	Yes
Influence	The local partner is capable of negotiating and dealing with government, local organizations and institutions.	Yes
Resources	The local partner is focused and has the organizational capability and ability to mobilize the necessary resources to develop the project (e.g. including access to seedlings, inputs, agronomic knowledge, monitoring and technical support).	Yes
Data collection	The local partner can provide reliable data (i.e. GPS polygons, phone numbers, other KYC data).	Yes
Training	The local partner has the ability to mobilize and train participants, and implement and monitor project activities.	Yes
Condition (i)	The local partner recognizes that the participant's involvement in the project is entirely voluntary.	Yes
Condition (ii)	The local partner recognizes that participants own the carbon benefits of the project intervention.	Yes

Tenure & rights	Participant payments (i)	The project coordinator ensures that payments are made in a transparent and traceable manner.	Yes
	Participant payments (ii)	The project coordinator ensures that mobile payments to participants are either already possible or there are no foreseeable obstacles for this in the near future.	Yes
	Contributions	The local partner does not draw more than 10% of sales income for ongoing coordination, administration and monitoring costs. Exceeding this percentage is only possible in exceptional circumstances where justification is provided and Acorn formally approves a waiver.	Yes
	Participant identity	The local partner is able to collect and provide proof of participant's identity.	Yes
	Land-tenure and carbon rights (i)	Provide a description of how land tenure is organized amongst the target project participants	In the Amazon region, only 28% of the farmers (not just Coffee) have title deeds properly registered within the National Public Registry System (SUNARP). Of the remaining, 16% have some kind of process pending in the Public Registry or title deed not registered, and the other 56% to not have any title of inscription process. In this way, the Coffee producers targeted by the project have mainly informal tenure of their land. It means that they have documents such as:- Sales and Purchase Agreement or Vendor-Sale Declaration: usually signed by a local authority (for example: Mayor or local Priest) that recognizes the transaction as a valid one, but it has no granting of a concession or legality. A traditional form of land tenure that used to be recognized formally (Request for assignment of lands: a document that followed the correct process to obtain agricultural concession in

Sustainable land use activity			the past), is no longer formally valid, and doesn't represent formal land tenure.
	Land-tenure and carbon rights (ii)	The project applies to land over which the participant/community has (formal/informal) ownership or long-term user rights.	Yes
	Land use	Provide a description of the current land use activities, before the start of the project intervention, within the project.	Smallholder production is characterized as a mini-landscape with various different land uses as part of their farmland. Typically a producer farm is divided in smaller parcels (usually from 4 to 8) with different kind of land use in each one, such as: coffee crops, primary forest, secondary forest, pasture, and crops for self-consumption (fruits and vegetables for the farmer to feed himself and his family). This project will only look at trees planted inside the polygon received by Acorn on the plot where they grow their coffee and where they will implement agroforestry. Only the parcels for coffee crops are the focus for this projects. One of the objectives of the project is to maintain this dynamic of multiple land use within the property, but take more advantage of the productivity of the land through the implementation of good agricultural practices, and also giving orientation to the farmer so they can have a more diverse and nutritious selection of fruits and vegetables for self-consumption.
	Project design	The project is/will be designed to promote sustainable land-use and has/will have a feasible business case underwritten by agronomist(s) and community representatives.	Yes
	Deforestation	The local partner confirms that no deforestation has taken place five years before the start of the project intervention (project baseline). If this cannot be confirmed, a description of the	No. Coffee production is associated with deforestation in Peru. However, Solidaridad aims to support their partners, including producers, to prevent the amount of deforestation and

	cause of the deforestation is provided, including the measures that have been taken to prevent deforestation from happening again.	regenerate natural ecosystems with agroforestry systems through the implementation of our climate smart model.
Additionality	The local partner ensures project additionality and ensures a durability period of 20 years.	Yes
Existing agroforestry (i)	Agroforestry at the farm level has been implemented less than 5 years before the start of the project intervention.	Yes
Existing agroforestry (ii)	Participants and local partners confirm that previously sequestered CO ₂ on the land has not yet been monetized.	Yes
Existing agroforestry (iii)	Existing agroforestry has been funded largely by donors/grants.	Yes
New agroforestry	There is sufficient supply of seedlings, inputs, water and other required resources.	Yes
Naturalized species	The local partner promotes the use of native species. The use of naturalized species is acceptable under the conditions outlined in the Framework.	Yes
Current habitat	Provide a description of the current ecosystem and flora and fauna species of the project area.	The vegetation of the Peruvian Amazon forest varies according to the physiography of the terrain, its altitude, humidity, soil composition, temperature, slope, etc. There are several distinct Amazon forest types which have marked differences. Coffee producers are intertwined in some of these forest types. It has been identified that producers are located in two eco-regions; Peruvian Yungas and Ucayali Moist Forests.



At introduction with project summary



Once at the start



Local partner and participants



Acorn




The local partner, in collaboration with participants, completes one overarching eligibility checklist to ensure basic conditions are in place.


Participant eligibility checklist			
Topic	Sub-topic	Requested information	Result
Organizational Capacity	Smallholder labour force	Participants are not structurally dependent on permanent hired labor, and manage their land mainly by themselves with the help of their families.	Yes
	Smallholder farm size	The cultivated land of participants does not exceed 10 ha.	Yes
	Resources	Participants, with the support of the local partner, have the ability to mobilize the necessary resources to implement the project.	Yes
	Data collection	Participants can allow reliable data to be collected for the project (i.e. GPS polygons, phone numbers, other KYC data).	Yes
	Condition (i)	Participants are aware that their decision to participate in the project is entirely voluntary.	Yes
	Participant identity	Participants are able to provide proof of their identity.	Yes
Tenure & rights			In the Amazon region, only 28% of the farmers (not just Coffee) have title deeds properly registered within the National Public Registry System (SUNARP). Of the remaining, 16% have some kind of process pending in the Public Registry or title deed not registered, and the other 56% to not have any title of inscription process. In this way, the Coffee producers targeted by the project have mainly informal tenure of their land. It means that they have documents such as:- Sales and Purchase Agreement or Vendor-Sale Declaration: usually signed by a local authority (for example: Mayor or local Priest) that recognizes the transaction as a valid one, but it has no granting of a
	Land-tenure and carbon rights (i)	Provide a description of how land tenure is organized.	


Sustainable land use activity			concession or legality.- Request for assignment of lands: a document that followed the correct process to obtain agricultural concession in the past, but may no longer be valid, and besides of that it doesn't implicate in the land tenure.
	Land-tenure and carbon rights (ii)	The project applies to land over which the participant/community has (formal/informal) ownership or long-term user rights.	Yes
	Land use	Provide a description of the current land use activities within the project.	Smallholder production is characterised as a mini-landscape with various different land uses as part of their farmland. Typically a producer farm is divided in smaller parcels (usually from 4 to 8) with different kind of land use in each one, such as: coffee crops, primary forest, secondary forest, pasture, and crops for self-consumption (fruits and vegetables for the farmer to feed himself and his family).One of the objectives of the project is to maintain this dynamic of multiple land use within the property, but take more advantage of the productivity of the land through the implementation of good agricultural practices, and also giving orientation to the farmer so they can have a more diverse and nutritious selection of fruits and vegetables for self-consumption.
	Deforestation	Participants confirm that no deforestation has taken place five years before the start of the project intervention (project baseline). If this cannot be confirmed, a description of the cause of the deforestation is provided, including the measures that	No. Coffee production is associated with deforestation in Peru. However, Solidaridad aims to support their partners, including producers, to prevent the amount of


	have been taken to prevent deforestation from happening again.	deforestation and regenerate natural ecosystems with agroforestry systems through the implementation of our climate smart model.
Additionality	Participants ensures project additionality and is aware that the project has a durability period of 20 years.	Yes
Existing agroforestry (i)	Participants confirm agroforestry at the farm level has been implemented less than 5 years ago.	Yes
Existing agroforestry (ii)	Participants confirm that previously sequestered CO2 on the land has not yet been monetized.	Yes
Current habitat	Provide a description of the current ecosystem and flora and fauna species of the project area.	The vegetation of the Peruvian Amazon forest varies according to the physiography of the terrain, its altitude, humidity, soil composition, temperature, slope, etc. There several distinct Amazon forest types are formed and which have marked differences. Coffee producers are intertwined in some of these forest types. It has been identified that producers are located in two eco-regions; Peruvian Yungas and Ucayali Moist Forests.


Part C: Additionality Assessment


After eligibility assessment introduction


Once at the start


Acorn


Local partner


Acorn, in consultation with the local partner, completes the additionality assessment to ensure basic conditions are in place. If the project expands into another country a new assessment must be completed.

Positive list

Demonstrate that the project meets requirements (a) and (b) and at least one of the requirements (c) and (d).

	(a) The project area is located in a country or region with a recent UNDP Human Development Indicator ¹ below or equal to 0.8.	Yes, the HDI is below 0.8 (0.44 in San Martin).
	(b) The project shall not be mandatory by any law or regulation, or if mandatory, the local partner shall demonstrate that these laws and regulations are systematically not enforced.	Solidaridad is not aware of any regulations/laws in which project interventions are mandated. This is evidenced in Peru's NDC Report (2020), the El Perú y el Cambio Climático (climate change strategy, 2016), and Perú_Ley-N-29763 (Forest Legislation, 2011). See Annex 12.
	(c) The project is located in a region with a mean annual precipitation of less than 600 mm ² .	No, the mean annual precipitation is above 600mm ² (1141mm ²).
	(d) The project area is (predominantly) located in a country or region with a recent UNDP Human Development Indicator below 0.6.	Yes, the HDI is below 0.6 (0.44 in San Martin).
Barrier analysis	Demonstrate that the project intervention would not have taken place due to a least one of the following barriers.	
Type of barrier	Situation without project	Situation with project
Financial & technical barriers	Although Peruvian farmers have their own motivation to undertake agroforestry practices, believing that the introduction of trees onto their coffee farms is beneficial for the environment and for their farms, they are hesitant to change their farming practises due to lack of agronomical knowledge and awareness, a lack of technical assistance, a lack of access to planting materials (i.e. little availability of good quality seeds and seed banks), and financial constraints. Such financial constraints include the lack of stability in income due to value changes in coffee (difference between 240 USD / 60kg bag and 100 USD / 60kg bag). This peak is due to the natural cycle of coffee that every 7 years have a peak price. Farmers are particularly eager to protect their crops and soil from strong winds, rain and sunlight and see a diversification in their income but they need an intermediary	Given the promise of carbon finance by partnering with Acorn, Solidaridad direct their grant funding to overcome the financial and technical costs associated with the transition to agroforestry that once restricted farmers ability to change their practices. Solidaridad coordinates with seed banks to provide farmers with access to high quality planting materials (i.e. seedlings) needed for a such a transition. Solidaridad employs local agronomists to determine what planting materials are needed by farmers by considering the suitability of tree species with the land and crop types and how to maximise both environmental and economic benefits alongside cultural input from the community. These agronomists also assist in

partner that supports them to overcome the obstacles they face and ensure a healthy nursery and future agroforestry system in the long term. It is likely than any transition to agroforestry a farmer was attempting to make without the support of this project would have failed and been unscalable, leaving them in a more vulnerable financial state than before. Alone, farmers are unable to receive financing for any transformation of their land and are therefore discouraged from changing their behaviours. A major barrier is the ability to deploy existing financial mechanisms to support low carbon agriculture/agroforestry as banks usually perceive investments in (smallholder) agriculture as high-risk, high cost, and with low returns. Without rewarding farmers with carbon credits for undertaking these new practises, they are unlikely to understand the long-term benefits of agroforestry, continue ongoing training, or turn into leaders that act as role models to their community.

providing agroforestry training and advice to farmers to ensure they can successfully maintain their trees in the longer term. This training comes in many forms so to not discriminate such as physical workshops, booklets and videos and includes the topics of environmental and socioeconomic impacts of agroforestry, appropriate practices, management of shade, plantations, wastewater and soil, and the development of a fertilisation plan. The technical support of Solidaridad and the start-up funding offered by NORAD made the transition to agriculture possible for these farmers, although the clear financial benefit in the form of carbon credits paid to farmers as a reward for their mitigation actions is the key enabling factor for their transition and long-term commitment to agroforestry. This extra income allows the farmer to finance the renewal of the agroforestry system with coffee, as well as the remainder for other investments on the farm or family expenses. These carbon credits diversify farmer income and provide them a financial buffer in times of high volatility in commodity prices, low productivity and high risk of crop loss from extreme climatic events, to ensure farmers have the resources and motivation necessary to maintain their agroforestry system.

Overall conclusion:

This assessment aims to prove that the agroforestry project, coordinated by Solidaridad in Peru, and the trees planted during this project are additional. This document explores the concept of additionality at the tree level, the farmer level and the project level, emphasizing the importance of the latter.

Tree Level

The agroforestry transition project led by Solidaridad was established in 2018. The collaboration between Acorn and Solidaridad began in 2020. From the start of their project, until the time

they connected with Acorn, Solidaridad have had the intention to scale their agroforestry project by offering farmers carbon finance for the trees they plant. Therefore, this agroforestry project was initiated and the first trees planted, in response to a promise of smallholder farmers receiving carbon credits. The first trees were planted by the initial lead farmers on demonstration plots in 2018. As part of Solidaridad's agroforestry design and due to their limited financial resources and funding, farmers plant trees in a gradual and phased manner over a number of years until the agroforestry system reach the optimal density of 260 trees per hectare. The carbon credits farmers receive for the trees planted in the project are ex-post based and will only be derived from one year before CRU issuance. To ensure additionality in response to the first trees planted by these farmers, the adjustment factor for pre-project trees will be applied as per the Acorn methodology.

Farmer level

Although Peruvian farmers have their own motivation to undertake agroforestry practices, believing that the introduction of trees onto their coffee farms is beneficial for the environment and for their farms, they lack the necessary agronomical knowledge and awareness, technical assistance, finances and planting materials (i.e. little availability of good quality seeds and seed banks. Farmers are particularly eager to protect their crops and soil from strong winds, rain and sunlight and see a diversification in their income but they need an intermediary partner that supports them to overcome the obstacles they face and ensure a healthy nursery and future agroforestry system in the long term. Solidaridad has received start-up grant funding from NORAD since 2018. This funding has been allocated to implement demonstration plots that disseminate knowledge of agroforestry practices amongst farmers and the community. Solidaridad still receives its funds from different sources, such as national and international funding, partnership with private institutions, and consultancy and technical services provision. This funding continues to help remove the financial and technical barriers that farmers faced with the aim of helping farmers reach a higher level of performance than what they currently have with a density of 260 trees / ha and one that includes the tree species with the highest carbon sequestration potential.

Given the promise of carbon finance by partnering with Acorn, Solidaridad direct their grant funding to overcome the financial and technical costs associated with the transition to agroforestry that once restricted farmers ability to change their practices. Solidaridad coordinates with seed banks to provide farmers with access to germinators and micro nurseries to improve supply of high quality planting materials (i.e. seedlings) needed for a such a transition. Solidaridad employs local agronomists to determine what planting materials are needed by farmers by considering the suitability of tree species with the land and crop types and how to maximise both environmental and economic benefits, alongside cultural input from the community. These agronomists are also consulted when developing the training and advice provided to farmers to ensure they can successfully maintain their trees in the longer term. This training comes in many forms so to not discriminate such as physical workshops, booklets and videos and includes the topics of environmental and socioeconomic impacts of agroforestry, appropriate practices, management of shade, plantations, wastewater and soil, and the development of a fertilisation plan. Such training would have been too costly to receive if a farmer was to seek this from an agronomist themselves. The demonstration plots, training and the high quality planting materials provided to farmers is only possible due to the start-up grant funding Solidaridad received.

The carbon finance that Solidaridad will receive from Acorn throughout this project will positively reinforce their continuous efforts to equip farmers with the tools and knowledge needed to successfully transition to agroforestry practises, especially while scaling. Farmer

knowledge and skills are the most important determinants of successful long-term agroforestry schemes. It is likely than any transition to agroforestry a farmer was attempting to make without the support of this project would have failed and been unscalable, leaving them in a more vulnerable financial state than before. If it wasn't for their lack of financial and technical resources, farmers would have attempted to transition to agroforestry long before the project implementation. Alone, farmers are unable to receive financing for any transformation of their land and are therefore discouraged. The technical support of Solidaridad and the start-up funding offered by NORAD made the transition to agriculture possible for these farmers, although the clear financial benefit in the form of carbon credits paid to farmers as a reward for their mitigation actions is the key enabling factor for their transition and long-term commitment to agroforestry. Without rewarding farmers with carbon credits for undertaking these new practices, they are unlikely to understand the long-term benefits of agroforestry, continue ongoing training, or turn into leaders that act as role models to their community. This extra income allows the farmer to finance the renewal of the agroforestry system with coffee, as well as the remainder for other investments on the farm or family expenses. These carbon credits diversify farmer income and provide them a financial buffer in times of high volatility in commodity prices, low productivity and high risk of crop loss from extreme climatic events, to ensure farmers have the resources and motivation necessary to maintain their agroforestry system. The success of this project relies on the compensation that farmers receive for the carbon they sequester.

Project level

Solidaridad does not work with a fixed number of smallholder farmers but with a constantly growing and expanding network. Solidaridad's aim for this project is to increase the uptake of climate smart agriculture in the coffee supply chain through agroforestry, resulting in higher productivity and grain quality, lower carbon emissions and avoid deforestation. The first trees planted under the initial phase of this project are few compared with what will be planted over the following phases with Solidaridad's intention to scale. Only focusing on the initial farmers who plant the first trees takes away from the additionality of the full project. The farmers expected to transition to agroforestry with the scaling of the project must also be considered. If farmers who transitioned with Solidaridad are not rewarded with income from the carbon credits, both Solidaridad and the farmers may be discouraged from maintaining and scaling up their agroforestry interventions using carbon credits after all their hard work and lack of significant benefits. This lack of reward will reflect poorly on agroforestry schemes for other farmers in the community and region that have the potential to transition, resulting in a barrier to scaling up.

The success of the first farmers who were financially compensated for the carbon they have sequestered will work as an extra stimulus to increase the participation of the wide range of farmers that Solidaridad has access to, roughly 10,000. Acorn provides carbon finance to the farmers and Solidaridad to overcome their financial barriers on a larger scale. This systems approach involves looking at the financial barriers these 10,000 farmers face and ensuring the first farmers receive carbon payment, critical to start the development of a carbon financing structure required for scaling, and as proof of payback for investors who want to fund the full 10,000. The project as a whole will not receive investment unless financiers have proof of and faith in the carbon credit system as a payment for investment. Providing carbon finance initially to compensate Peruvian farmers is the only practical way to achieve scale and proof of concept.

Part D: Carbon Baseline Assessment



**After additionality
assessment**



Once at the start



Local partner



Acorn



The local partner completes sample based carbon baseline assessment to provide complementary information to the T-5 biomass measurements and eligibility

Carbon Baseline		
Requested information	Format	Answer
Describe how land tenure has been demonstrated	Text	Farmer possess informal land tenure including; Sales and Purchase Agreement or Vendor-Sale Declaration: usually signed by a local authority (for example: Mayor or local Priest) that recognizes the transaction as a valid one, but it has no granting of a concession or legality (see Annex 4).
Describe potential land tenure issues and measures taken to mitigate these	Text	Potential issues include a lack of regulations regarding agroforestry and land use management, poor enforcement of such regulations, poor enforcement of new forestry law that rewards producers with formal conditions, and risk related to changes in government policies or laws. To mitigate these risks and promote increase agroforestry Solidaridad is articulating with the government to provide greater clarity in these areas.
Description of current land use	Text	Individual farmers have a plot size or total area of 1 – 5 Ha in which they practice existing agroforestry and predominantly grow their main cash crop, arabica coffee. Approximately 42% of the total project area is used to grow coffee. The other crops grown in the project area, all of which are sold at markets and consumed by the farmer, include Theobroma cacao, Zea mays, Oryza sativa, Musa sp., and Ananas comosus. Many farmers also have guinea pigs and hens on their farms. Most of the coffee farmers doing the traditional model of production use little or no external supplies such as fertilizers and other products for coffee production. For the Climate Smart model, Solidaridad recommends the inversion of about 105 soles (currency) on fertiliser per 60kg bag of green coffee produced. Smallholder production is characterised as a mini-landscape with various different land uses as part of their farmland. Typically a producer farm is divided in smaller parcels (usually from 4 to 8) with different kind of land use in each one, such as: coffee crops, primary forest, secondary forest, pasture, and crops for self-consumption (fruits and vegetables for the farmer to feed himself and his family). To control pests, the majority of farmers use a combination of prevention (pruning), manual extraction and pesticide (mainly predominantly fungicide - 1L/ha/year - Opera and Amistar). About 1/3 of farmers also use insecticide (mainly Tifon – 1.5L/ha/year). Most farmers apply a mix of organic

		<p>fertilisers such as compost and Roca fosforica (ranging from 1-30 sacks/ha/year) and inorganic fertilisers such as Yaramila, Hydran and Nitrabor (ranging from 1-15 sacks/ha/year). Without this project it is likely that farmers would continue to grow their coffee separate to trees (low density) and have a full sun approach, resulting in crop loss and poor quality of coffee from extreme weather conditions that are increasing in the project area. In times of financial hardship it is also possible farmers convert one of the parcels for primary/secondary forest into another area dedicated to just coffee, livestock or palm oil (all highly valued in the region and linked to substantial amounts of forest/biodiversity loss in Peru) as they have no tangible incentive for keeping the trees in these parcels. Producers would lack awareness of the quantity and distribution of trees required on farms to build resilience against climate change.</p>
Description of current habitat species	Text	<p>The vegetation of the Peruvian Amazon forest varies according to the physiography of the terrain, its altitude, humidity, soil composition, temperature, slope, etc. There several distinct Amazon forest types are formed and which have marked differences. Coffee producers are intertwined in some of these forest types. Common species in the area include Inga Edulis, Inga splendens, Schizolobium parahyba, Cordia alliodora. Areas in San Martin with high biodiversity value are the Alto Mayo Protected Forest, Abiseo River National Park, Cordillera Azul National Park (although only 39% of this area is located in the region) and Cerro Escalera Regional Conservation Area. 80% of San Martin's 40,000 coffee producers are located in the buffer zone of Alto Mayo Protected Forest, while the rest are distributed along the Cerro Escalera Conservation Area and Cordillera Azul National Park. Without project intervention biodiversity would continue to decline like it has in the last 20 or more years. Slash and burn agriculture would still be the dominant farming technique, threatening native flora and fauna in the project area. Farmers would not plant such a large range of trees on their property and keep the area designated for secondary forest to consist of majority eucalyptus trees due to their value. Too many eucalyptus trees can cause competition with other flora species, reducing biodiversity further. Wild fauna observed within the project area include squirrels, agouti's, sloths, monkeys, rabbits, various birds etc. Multiple</p>





		threatened bird species are also sometimes found within the project area including. Many pollinators are seen on a regular basis by farmers (see Part E, section 3).
Description of deforestation potential	Text	Solidaridad do not rule out the occurrence of deforestation in the project area in the last 5 years (before project intervention) as coffee production is often associated with deforestation in Peru. However, Solidaridad aims to support their partners, including producers, to prevent the amount of deforestation and regenerate natural ecosystems with agroforestry systems through the implementation of our climate smart model. The implementation of this Climate Smart model is only possible through the training of facilitators from the producer's associations and lead producers in techniques of agroforestry management so that the knowledge remains in the community and quality technical assistance is provided to the producers. As of project start date in 2018, Solidaridad explain there has not been any occurrence of deforestation in the project area and the risk is low due to the awareness/training provided to farmers and because timber trees for harvesting have been integrated into the agroforestry design to ensure farmers do not need to resort to deforestation activities within or nearby to the project area in times of climate or financial disasters.
Description of trees species <2m and their distribution	Text	There are no trees under 2m in height identified in the project area because of the species that they promote, all of them usually exceed 2 meters in height at 6 months, maximum 1 year. This has been confirmed through Solidaridad's tree inventory list and with Solidaridad's Forest Engineers.
Number of existing trees $\geq 2m$	Number	7997 (See tree species list below for description)
Number of existing trees older than 5 years	Number	4009
Coverage percentage of existing trees older than 5 years	%	50%


1. Existing tree species list ($\geq 2m$).

Species $\geq 2m$ (Latin name)	Number	Species $\geq 2m$ (Latin name)	Number
Abarema jupunba	9	Acrocarpus fraxinifolius	91
Alchornea castaneifolia	3	Alchornea latifolia	66
Alchornea triplinervia	2	Alchorneopsis trimera	2
Allophylus floribundus	6	Anacardium spruceanum	1

Aniba affinis	132	Aniba indet	255
Aniba williamsii	5	Annona muricata	6
Annona spraguei	9	Artocarpus sampor	1
Aspidosperma excelsum	1	Bixa orellana	2
Brosimum utile	5	Bunchosia argentea	3
Byrsonima arthropoda	1	Byrsonima crassifolia	1
Cabrlea canjerana	2	Calophyllum brasiliense	54
Calycophyllum multiflorum	26	Calycophyllum spruceanum	131
Caryocar microcarpum	11	Casearia battiscombei	1
Cassia spectabilis	2	Cecropia pachystachya	166
Cedrela angustifolia	268	Cedrela fissilis	137
Cedrela odorata	111	Cedrelinga cateniformis	174
Ceiba insignis	4	Ceiba pentandra	18
Ceiba speciosa	2	Chrysochlamys weberbaueri	2
Citrus medica	17	Citrus sinensis	107
Clarisia racemosa	11	Clethra ovalifolia	1
Colubrina glandulosa	116	Cordia alliodora	517
Corymbia torelliana	214	Couepia bracteosa	1
Crescentia cujete	1	Croton luciae	21
Cupania americana	2	Cupressus sempervirens	1
Dalbergia sissoides	6	Erythrina abyssinica	1
Erythrina crista-galli	52	Erythrina poeppigiana	8
Eucalyptus cinerea	2	Eucalyptus saligna	248
Eucalyptus sphaerocarpa	2	Eugenia acutangula	13
Ficus adenosperma	50	Ficus capensis	6
Ficus insipida	9	Franciscodendron laurifolium	1
Genipa americana	1	Grias peruviana	4
Guarea cedrata	5	Guarea grandifolia	2
Guarea macrophylla	1	Guazuma crinita	56
Gustavia augusta	51	Helicostylis pedunculata	1
Hevea brasiliensis	10	Hevea guianensis	6
Hura crepitans	7	Inga brevipedicellata	5
Inga edulis	1770	Inga splendens*	754
Iryanthera laevis	3	Jacaranda copaia	11
Juglans ailanthifolia	4	Laportea peltata	42
Licaria triandra	1	Litsea reticulata	77
Loreya arborescens	44	Machaerium scleroxylon	33
Mangifera indica	145	Manilkara paraensis	2
Matisia cordata	29	Miconia splendens	8
Minquartia guianensis	8	Morinda citrifolia	4
Morus alba	5	Myrcia splendens	2
Myrsine achradifolia	2	Nectandra purpurea	11
Neea divaricata	2	Ochroma pyramidale	105
Ochrosia ficifolia	104	Ocotea fragrantissima	26
Ocotea spathulata	20	Ormosia coccinea	3
Pentaspadon officinalis	1	Persea americana	201
Pinus patula	23	Poulsenia armata	1
Pourouma bicolor	6	Pouteria adolfi-friederici	2
Pouteria caimito	56	Pouteria speciosa	3
Protium amazonicum	13	Protium crassipetalum	35

Prumnopitys harmsiana	6	Prunus sphaerocarpa	2
Pseudolmedia spuria	1	Psidium acutangulum	14
Rollinia mucosa	35	Santalum spicatum	3
Sapium glandulosum	1	Schefflera morototoni	6
Schizolobium parahyba	419	Sclerolobium poeppigianum	1
Simarouba amara	2	Solanum acanthodes	2
Spondias purpurea	5	Sterculia speciosa	4
Swietenia macrophylla	44	Symplocos paucistaminea	2
Syzygium jambos	31	Tabebuia pedicellata	2
Terminalia oblonga	9	Terminalia porphyrocarpa	7
Theobroma cacao	236	Trema integerrima	1
Trema micrantha	17	Trichilia prieuriana	25
Vernonanthura patens	165	Virola albidiflora	7
Vitex acuminata	97	Vochysia ferruginea	14
Zanthoxylum brachyacanthum	17		

 **After onboarding**
 **Once at the start**
 **Acorn**
 **Local partner**


Acorn remote sensing team performs check on deforestation and land cover 5 years before the start of the intervention.

1. Provide T-5 check data to evidence loss of tree cover over the past five years from project start date.

Outcome	Number	Plot ID	Reason for failure
PASS	1196		
FAIL	28 (18 +11)	See Annex 11 Source: <i>Over rule_Resumen_T-5_18082022</i>	<p>Solidaridad presented us a methodology based on satellite images and specific databases from Peru for over-ruling t-5 fail plots. They found that 78 out of 107 failed plots need to be overruled (see attachment, polygons in color green). In yellow the ones (11) need to be checked on the field because the satellite images were very cloudy, and the red ones (18) are real t-5 failures.</p> <p>Solidaridad mentioned that they do not see burn agriculture. They expect the test initially to be failed because it might associated with coffee renovation of trees.</p>

2. Provide a description of the ecoregion(s)

The vegetation of the Peruvian Amazon forest varies according to the physiography of the terrain, its altitude, humidity, soil composition, temperature, slope, etc. There several distinct Amazon forest

types are formed and which have marked differences. Coffee producers are intertwined in some of these forest types. It has been identified that producers are located in two eco-regions; Peruvian Yungas (on ecoregion map marked with green) and Ucayali Moist Forests (on ecoregion map marked with brown).

The ecoregion is located entirely within Peru at the foot of the Andes mountains. The Ucayali moist forest ecoregion is to the east of the Andes mountains. It is bounded to the east by the Ucayali River, a major tributary of the Amazon River. The landscape is generally flat but is dissected with uplifted highlands and its elevations range from 200–1,100 m above sea level. Annual rainfall is 600–2,500 millimeters. Mean temperatures range from 24.7 °C in July to 26.1 °C in November. The ecoregion is in the Neotropical realm, in the tropical and subtropical moist broadleaf forests biome. The vegetation is generally tall, moist evergreen tropical rainforests with a high diversity of tree species. The canopies reach 40 m, with some emergent trees up to 50 m. The most important tree families are Meliaceae, Arecaceae, Moraceae, Leguminosae, Myristicaceae, and Rubiaceae.

The Peruvian Yungas occur on the eastern slopes and valleys of the Peruvian Andes. They form a transition zone between the Southwest Amazon moist forests and Ucayali moist forests at lower elevations to the east and the Central Andean puna and wet puna at higher elevations to the west. Just like the Ucayali, this ecoregion has a biome classified as tropical and subtropical moist broadleaf forests. The climate in this ecoregion varies from a tropical rainforest climate in the north to a subtropical highland climate in the south. The climate varies from moderately temperate at higher elevations to tropical at lower elevations, with heavy rains that can exceed 6,000 mm/year and declines between May and August. Precipitation ranges from 500 to 2,000 millimeters. At altitudes above 2,500 m, average temperatures range from 6–12°C (in the northern section) and 8–22°C (in the southern section). In low areas, the average temperature is 25°C. The ecoregion is considered to be in a nearly critically endangered state due to migratory agriculture, coca production, and gradual urban development.

Part E: Project Baseline Assessment


With the carbon baseline assessment


Every 3 years


Local partner and participants


Acorn


A sample of participants, in collaboration with the local partner, answer survey questions based on livelihood and environmental indicators

Number of participants surveyed		Total number of project participants	Percentage of total participants included in baseline		
30		1153	2.6		
Area	Indicator	Metric	Source	SDG	Result
Local livelihood	Farmer income from carbon finance	Revenue from CRU sales	Survey (information collected on the Acorn platform)	1, 2, 8	To be determined after first farmer payout.

	Nutritional variety	Number of food groups in the diet (see Appendix 7.9)	Household Dietary Diversity Score (HDDS) index survey ³	1, 2	On average farmers consume 9 food groups
	Agricultural land use productivity	Farm output value per hectare per crop type [kg/ha/crop]	Survey (information collected on the Acorn platform), FAO TAPE Tool ⁴	1, 2, 8	Average farm productivity is 1021.5kg/ha
Environmental improvement	Agricultural biodiversity	Crop/animal/pollinators count	Gini-Simpson Index survey ⁵	2, 15	58.4 (sustainable)

1. Farmer income from carbon finance

- I.) Describe the current financial state of farmers and how project intervention is expected to positively/negatively impact these.

At least 10% of farmers do not have enough finances or access to resources and struggle financially. The rest have exactly enough for basics but not enough for upgrading farm etc. Approximately half of the farmers could only afford half the costs of schooling, the others can afford schooling after saving for a very long time, while a small proportion can't afford schooling at all. Regarding the price, what the market usually takes as a reference is an average price taking into consideration the data of the last 20 years. So according to this, the price paid for the coffee is 100 USD / 60kg bag. But since Coffee is a commodity, its value changes every day. Since the end of 2021, the coffee price is rising, at the moment it is about 240 USD / 60kg bag. This peak is due to the natural cycle of coffee that every 7 years have a peak price, and added to that, in Brasil there was frost and excessive rain thought the year which generated a loss of 30% of the country's production (that represents about 65% of the world's production), therefore generating a scarcity of coffee worldwide. The average annual income from coffee production in the project area in 2021 was identified as 16,514.48 PEN (€3,941.40). This is a 34% increase compared to before the project was established in 2018, 10,961 PEN (€2,824.7). It is estimated that coffee production represents 70% of total income in the project area. Following the trends in farmer income after project intervention, it is expected that income will further increase as the trees will become larger and provide more shade and carbon sequestration with age. However, due to the unstable value of coffee and the increase in extreme climatic conditions, farmer income may continue to fluctuate but this time with higher lows due to the addition of carbon finance. Generally, the species promoted by Solidaridad can generate 20,000 to 30,000 USD of additional income after 20 years, which covers the costs of renewing the coffee crop (around 6,000 USD) and remains for investment in the quality of life of the family in the long term.

II.) Fill in the table below based on the carbon credits received by farmers
To be completed after first farmer pay out in 2022.

³ [Swindale & Bilinsky, 2006](#)

⁴ [FAO, 2019](#)

⁵ [Izsák & Papp, 2000](#)

[illegible]

2. Nutritional Variety

- I.) Describe farmer nutritional intake currently and how project intervention is expected to positively/negatively impact this.

According to the HDDS index results below. Farmers consume approx. 8 food groups on average within a 24 hour period. No farmer report of skipping meals and find they are able to eat 3 times a day. Roughly a third of farmers' diets consists of up to 25% of food grown on farm, and approximately 2/3 consisting of up to 50%. A very small percentage consume up to 75% of what they produce. Approximately half the farmers report that they consume fruit, vegetables and protein rich foods every day and the other half consume these mostly 3-4 days a week. Producers in general have a small area of the farm that they use to plant vegetables (potatoes / cassava) and fruits for their own consumption. This part of the plot is called "pan llevar", they are cultivation areas with less than 0.5 ha. Many times the species that are planted are little varied and do not offer a balanced diet. It is part of Solidaridad's project to teach and train farmers to diversify their food sources so that they have a more diverse and nutritious diet. Farmers will also be encouraged to grow fruit/nut trees in

their agroforestry system (i.e. macadamia nuts and citrus fruits) to increase variety and abundance of nutritious foods in farmer diets.

II.) HDDS Index Survey Results.

Farmer Acorn ID	# food groups	1	2	3	4	5	6	7	8	9	10	11	12
PA0017	6	Rice	- Cassava	Lettuce			Eggs,				Veg oil		Salt, coffee
OM0108	11	Rice, oats, vermicelli	- Cassava - Potato - Taro - Sweet potato	Tomato, lettuce, cabbage, carrots	Mandarins,	Chicken	Eggs		Beans	Milk	Veg oil	Sugar	- Salt - Cumin - Pepper-Coffee - Umami flakes - Saltsas
OM0044	11	Rice, maize, vermicelli, others	- Cassava - Potato	Tomato, lettuce, cabbage	Banana,	Chicken	Eggs		Beans	Cheese	Veg oil	Honey, sweets	- Salt - Cumin - Umami flakes - Coffee
OM0045	12	Rice, oats	- Cassava - Potato	Lettuce,	Plums, mandarins, oranges, banana	Chicken	Eggs	Mackerel	Peas	Yoghurt	Veg oil	Sugar	- Salt - Cumin - Umami flakes
OM0113	9	Maize, rice, vermicelli, oats	- Potato - Sweet potato -		Banana	Chicken	Eggs		Beans, peas,		Veg oil	Honey	- Salt - Cumin - Umami flakes - Coffee - Tea
AR0140	8	Rice, oats, vermicelli	- Cassava - Potato - Taro	Tomato, Caigua	Mandarins	Chicken					Veg oil	Sugar	- Salt - Cumin - Umami flakes - Coffee
OM0027	9	Rice, maize, vermicelli	- Potato	Tomato, carrots		Others	Eggs		Beans		Veg oil	Sugar	- Salt - Umami flakes
OM0014	9	Rice, oats, vermicelli	- Potato	Tomato	Banana		Eggs,		Peas		Veg oil	Sugar	- Salt - Cumin - Umami flakes
OM0111	10	Maize	- Potato	Caigua	oranges	Beef		tuna	Peas,		Veg oil	Sugar	- Salt - Cumin - Umami flakes - Coffee - Tea
OM0065	7	Rice, vermicelli	- Potato						Beans, lentils		Veg oil	Sugar	- Salt - Coffee
OM0140	6	Rice, oats, vermicelli					Eggs		Beans		Veg oil	Sugar	- Coffee - Salt
OM0011	11	Rice, vermicelli	- Cassava - Taro - Potato	cabbage	Oranges, others		Eggs	Horse mackerel	Beans	Milk	Veg oil	Sugar	- Salt - Coffee - Umami flakes
OM0084	8	Maize, rice, wheat, vermicelli	- Cassava	Tomato, celery	Bananas, mandarins, oranges		Eggs		Beans, peas,		Veg oil		- Salt - Cumin - Umami flakes - Coffee - Tea
OM0132	10	Rice, oats, vermicelli	- Potato - Cassava - Taro - Sweet potato	Tomato, lettuce, others	Mandarins, bananas			Tilapia, Horse mackerel	Beans		Veg oil	Sugar	- Salt - Pepper-Cumin - Umami flakes - Saltsas - Coffee - Tea
VG0077	12	Rice, oats, vermicelli	- Cassava	Lettuce, tomatoes, others	Mandarins, bananas,	Chicken	Eggs	Tilapia	Beans	Milk, cheese	Veg oil	Sugar	- Salt - Pepper-Cumin - Umami flakes - Saltsas -

													Tea - Fruit soft drink
OM0117	10	Rice, vermicelli	- Cassava				Eggs		Lentils	Cheese	Veg oil	Sugar	- Salt - Pepper-Cumin - Coffee
OM0023	8	Rice, vermicelli	- Cassava - Potato	Tomato, celery	Oranges, bananas			Tilapia	Beans, lentils		Veg oil		- Salt - Pepper-Cumin - Umami flakes
VG0080	10	Rice, oats, vermicelli	- Cassava - Potato - Sweet potato	Lettuce, celery, cabbage, carrots, others	Mandarins, Oranges	Chicken, others	Eggs		Beans		Veg oil	Sugar	- Cumin - Pepper-Salt - Umami flakes - Salsas - Tea
OM0053	11	Rice, vermicelli	- Cassava - Potato - Taro	Tomato, lettuce	Mandarins	Chicken, pork	Eggs		Beans	Cheese	Veg oil	Sugar	- Pepper-Salt - Cumin - Umami flakes - Coffee - Tea
OM0124	10	Maize, oats	- Potato	Tomato	Oranges		Eggs		Beans		Veg oil	Sugar	- Salt - Umami flakes - Coffee
OM0135	8	Rice, oats	- Potato		Passion fruit,			Mackerel	Peas		Veg oil	Sugar	- Salt - Umami flakes - Coffee
OM0069	8	Rice, maize, vermicelli	- Cassava - Potato		Banana	Chicken			Beans, lentils		Veg oil	Sugar	- Salt - Cumin - Umami flakes - Coffee
OM0040	11	Rice, vermicelli	- Potato - Sweet potato	Tomato, cabbage	Oranges	Chicken	Eggs		Beans	Milk	Veg oil	Sugar	- Salt - Cumin - Umami flakes - Coffee - Tea
OM0183	10	Rice, vermicelli	- Taro	Others	Banana		Eggs	Canned fish	Beans		Veg oil	Sugar	- Salt - Umami flakes - Coffee
CA0023	11	Rice, vermicelli	- Cassava - Potato - Taro	Lettuce	Banana	Pork, chicken	Eggs		Beans	Milk	Veg oil	Sugar	- Pepper-Salt - Cumin - Umami flakes - Coffee
CA0012	11	Rice, vermicelli	- Cassava - Potato	Lettuce	Mandarins	Pork	Eggs		Beans	Milk	Veg oil	Sugar	- Pepper-Salt - Cumin - Umami flakes - Salsas - Coffee
OM0095	9	Rice, vermicelli	- Cassava - Potato		Mandarins, bananas		Eggs	Mackerel	Beans, lentils		Veg oil	Sugar	- Pepper-Salt - Cumin - Umami flakes - Salsas - Coffee
OM0174	10	Rice, vermicelli	- Potato - Taro	Cabbage	Oranges, bananas		Eggs		Beans, lentils,	Cheese	Veg oil	Sugar	- Salt - Cumin - Umami flakes - Coffee - Tea
OM0028	10	Rice, maize, oats, vermicelli	- Cassava - Potato	Tomato, cabbage	- Banana - Mandarins	Duck	Eggs	Mackerel	Beans		Veg oil		- Salt - Cumin - Umami flakes - Coffee

OM0017	8	Rice, vermicelli	- Taro	Tomato					Split peas		Veg oil	Sugar	- Salt - Cumin - Umami flakes - Coffee
TOTAL	9 food groups												

3. Agricultural Biodiversity

- I.) Describe the current state of biodiversity and how project intervention is expected to positively/negatively impact this.

As seen in the Gini Simpson index below, biodiversity in the project area has been rated 58.4, translating to sustainable. This is due to many farmers also practising subsistence farming alongside their cash crop production. More than half the farmers have subsistence crops intercropped with the coffee trees, the other half separate from the coffee. There is a high amount of wild fauna observed in the project area and the presence of many threatened bird species. The project area is also abundant with various pollinator species. Most farmers believe their productive area is covered by a medium to significant level of vegetation (roughly 25%) and biodiversity is currently at a medium to high level. Coffee production, 98% of which is carried out by smallholder producers, has been identified by the Peruvian government as one of the major drivers of deforestation, covering 25.4 per cent of land under agricultural use in the Peruvian Amazon. San Martin is Peru's second coffee-producing region and is one of the top 5 forested regions in the Peruvian Amazon. Areas in San Martin with high biodiversity value are the Alto Mayo Protected Forest, Abiseo River National Park, Cordillera Azul National Park (although only 39% of this area is located in the region) and Cerro Escalera Regional Conservation Area. 80% of San Martin's 40,000 coffee producers are located in the buffer zone of Alto Mayo Protected Forest, while the rest are distributed along the Cerro Escalera Conservation Area and Cordillera Azul National Park. The project intervention will work to reduce deforestation (especially due to conversion for agriculture) as farmers are encouraged and rewarded for keeping planting and maintaining trees on their land. With more tree species planted, and less trees cut down this will reduce the loss of biodiversity that has been happening at a rapid in the project area over the last 20 years or more. With less land cleared and more trees planted the project area may even become a possible habitat and refuge for wild fauna that is pushed out of its habitat elsewhere, thereby increasing biodiversity in the project area. Soil biodiversity is also expected to increase (such as the variety and amount of micro-organisms) due to a reduction in inorganic inputs and increase in natural fertilisation of the soil and protection against extreme weather.

- II.) How many farmers perform beekeeping?

6 farmers perform breeding and keeping of bees in beehive boxes

III.) Gini-Simpson Index Results.

Crops	Area	pi	p2	Livestock	number	equivalent	pi	p2
Arabica coffee	68.56	.63241	0.3999	Cows	66	66	.63157	0.39888
Cassava	4.7	.04335	0.0019	Chickens (hens)	870	12.18	.11655	0.01358
Taro	4	.03689	0.0014	Pigs	20	6	.05741	0.00330
Banana	12.3	.11345	0.0129	Rabbits	7	0.14	.00133	0.00000
Corn	1.65	.01522	0.0002	Goats/sheep	0	0	0	0.00000
Cocoa	3.75	.03459	0.0012	Turkey	9	.27	.00258	0.00001
Beans	.6	.00553	0.0000	Guinea pigs	445	8.9	.085167	0.00725
Papaya	.1	.00092	0.0000	Ducks	61	.61	.00583	0.00003

Pineapple	1	.00922	0.0001	Donkey	13	10.4	.09952	0.00990
Sweet potato	.65	.00599	0.0000					
Arracha	1.55	.01429	0.0002					
Cocona	1.25	.01153	0.0001					
Dragon fruit	.3	.00276	0.0000					
Other	8	.07379	0.0054					
Total	108.41	.99994	.42 (58%)	Total	1491	104.5	.99995	.43 (57%)
Average of crop/livestock indices				57.5%				
Natural vegetation, trees and pollinators								
Description				Value				
Productive area with natural vegetation			Significant			.75		
Pollinator Presence			Abundant			1		
Beekeeping			Yes, raised			1		
Total						0.9		
Agricultural Biodiversity Score				58.4 (sustainable)				

IV.) List pollinator species in the project area.

Present in project area	Pollinator type
Regularly	Beetles, butterflies, moths, bats, ants, flies, mosquitos
Moderately	Bees, hummingbirds, opossums
Sometimes	monkeys
Rarely	

V.) List wild animal species in the project area.

Species (latin name)	Prevalence (Regularly/Sometimes/Rarely)
Dasyprocta fuliginosa	Regularly
Agouti paca (black agouti)	Sometimes
Dinomys branickiii (Picuro mama)	Rarely
Aotis nigriceps (monkeys)	Regularly
Choloepus didactylus (sloth)	Sometimes
Coendou bicolor (Hedgehog/porcupine)	Sometimes
sciurus igniventris (squirrel)	Regularly
potos flavus (chosna)	Rarely
didelphis marsupialis (fox)	Regularly
Sylvillagus brasiliensis (rabbit)	Regularly
Cavia porcellus	Sometimes
Nasua nasua (Badger)	Rarely
Dasypodidae (armadillo)	Regularly
Tayassu tajacu (Collared peccary)	Rarely
Ramphastos cuvieri (toucan)	Regularly
Rupicola peruvianus (bird)	Rarely
Aratinga leucophthalmus/Brotogeris cyanoptera (Parakeets)	Regularly
Pionus menstruus (Parrot)	Regularly
playa cayana - chicua (bird)	Regularly

Trogon personatus/Trogon curucui/Trogon viridis - pilcos (birds)	Sometimes
Thraupis episcopus (bird)	Sometimes
Tangara parzudakii (bird)	Rarely
Ictinia plumbea (bird)	Regularly
Cathartes aura (bird)	Regularly
Columbina talpacoti/Claravis pretiosa (birds)	Regularly
Veniliomis fumigatus (bird)	Regularly
Aburria aburri (bird)	Rarely
Penelope jacquacu (large bird)	Rarely
Alectoris rufa (bird)	Sometimes
Cacicus cela (bird)	Regularly
manacaracos/huataracos (birds)	Sometimes
Hirundo rustica (bird)	Sometimes
bubo bubo (Owl)	Sometimes
Furnarius cinnamomeus (bird)	Rarely
Passer domesticus (bird)	Rarely
Bufonidae (toad)	Sometimes
Snakes	Sometimes
Polychrus marmoratus (cameleon)	Rarely
Ameiva ameiva (lizard)	Sometimes

VI.) List species with a high local environmental and social conservation value in the project area, and if influenced by project intervention, describe relevant monitoring objectives/plan.

Solidaridad believe the template list of threatened species that was supplied to them of possible threatened species in the project area to select was not sufficient for their area and they are currently conducting research with experts in this area to make sure the most critical flora and fauna species (in terms of cultural significance and threatened status) are recorded to ensure the baseline for biodiversity is represented at a high level and can be effectively monitored. This is important for Solidaridad due to the close location to natural resources. The table below will be updated depending on the outcome of this research.

Species (Latin name)	Threat Classification (Culturally Significant/ Vulnerable/Endangered/ Critically Endangered)	Project Influence (Positive /Negative)	Monitoring Objectives/Plan
Vultur gryphus	Vulnerable	The influence of the project is positive for all the species observed, since through the SAF the habitat for these species is being generated. It may also be that in the future, when there is more SAF, some species that are not	Solidaridad are conducting research to determine more culturally significant and threatened species that could possibly be present in the project area than the example list provided in the template from Acorn. This will be used in the
Tapirus terrestris	Vulnerable		
Priodontes maximus	Vulnerable		
Ara militaris	Vulnerable		
Falco deiroleucus	Near threatened		
Picumnus steindachneri	Endangered		
Ateles belzebuth	Endangered		
Oreonax flavicauda	Critically Endangered		
Plecturocebus oenanthe	Critically Endangered		

Myrmecophaga tridactyla	Vulnerable	seen now may return to inhabit the lower area, especially certain birds and some mammals.	future when asking local employees and farmers whether they have seen such animals. Ideally, it would be ideal to have advice from an ecologist in this area. Data on species with high social/environmental value will be conducted at least every 3 year.
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4. Agricultural land use productivity

- I.) Describe the current productivity of farms in the project area and how project intervention is expected to positively/negatively impact this.

Currently, productivity is low and unstable in the project area. In 2021, a representative sample of producers reported 890 kg of parchment coffee per hectare and in the 2022 survey conducted in consultation with Acorn producers reported approximately 1021.5kg of coffee per hectare. Solidaridad have the objective to reach at least 1093 kg/hectare by 2023. No loss in productivity is expected, only increases. Adoption or improvement of the agroforestry systems enables maximum use out of the area, existing resources, soil, fertilization, air, and sunlight, allowing higher and better harvests, with less investment (1/3 less fertilization/year), less weeding expenses (less competition from weeds) and more carbon per hectare. The adoption of Solidaridad's climate smart model is expected to increase the productivity up to 21% and the coffee quality up to 10% in conversion factor from parchment to green coffee (in terms of being sellable), both results combined can reflect an overall increase in the price received by the producer of approx. 30%.

- II.) Total farm productivity of cash crop (coffee).

Farmer Acorn ID	Productivity of farm (kg/ha)	Other crops contributing to productivity	the amount (%) of other crops compared with total farm area
PA0017	454	Cassava	31
OM0108	681	Banana, taro	40
OM0044	363.2	banana, cassava, taro	30
OM0045	2497	Banana	14
OM0113	317.8	Cocona ,Cassava , banana	30
AR0140	1135	- Cocona - Cassava - Banana – wheat, taro	36
OM0027	3632	Taro	13
OM0014	227	Corn, cacao, beans, cassava	40
OM0111	181.6	Corn, beans, Cocona ,Cassava , banana, flour, sweet potato, taro	50
OM0065	1362	Banana	10
OM0140	681	Pineapple, banana, other	50

OM0011	1816	Banana, other	25
OM0084	1589	Corn - Cacao - Taro, Cocona ,Cassava, Banana	44
OM0132	454	- Cacao - Taro - Cassava - Other vegetables - Banana	23
VG0077	1589	- Cacao - Taro - Cassava - Banana	33
OM0117	908	- Cacao - Taro - Cassava - Other vegetables - Banana	25
OM0023	363.2	- Taro - Cassava - Banana	50
VG0080	1362	- Taro - Cassava - Other vegetables - Banana	13
OM0053	544.8	- Corn - Cacao - Taro - Cassava - Banana - Arracacha	58
OM0124	1816	- Banana - Potatoya - Other	55
OM0135	1225.8	- Banana	4
OM0069	454	- Corn - Cassava - Banana - Arracacha - Sweet potato - Other	60
OM0040	5448	- Cocona - Cassava - Banana	12
OM0183	726.4	- Banana	5
CA0023	1362	- Beans - Cassava - Banana - Arracacha	20
CA0012	317.8	- Taro - Cassava - Other vegetables - Banana	36
OM0095	5448	- Taro - Cassava - Banana - Arracacha - Dragonfruit	23
OM0174	544.8	- Taro - Cocona - Cassava - Banana - Arracacha - Sweet potato	0
OM0028	1135	- Taro - Cocona - Cassava - Banana - Sweet potato	14
OM0017	1362	- Banana	70
TOTAL MEAN	1021.5kg/ha		

5. Indicator Monitoring

- I.) Describe the monitoring objectives for any expected impacts on farmer livelihood and the environment from project intervention. If there are any negative impacts expected, describe the relevant mitigation actions.

Livelihood / environmental indicator	Impact description	Mitigation action (if <u>negative impact expected</u>)	Monitoring frequency and method	Responsible party
Nutritional Variety	One of the objectives of the project is to maintain the dynamic of multiple land use within the farms in the project area (farmer growing a range of crops) to ensure they can have a more diverse and nutritious selection of fruits and vegetables for self-consumption. The income from carbon finance, if spent on food, is expected to allow farmers to purchase a wider variety of food rather than what is grown on their own farm (i.e. sources of protein). Solidaridad do not expect food security to decrease only increase with the fruit trees planted and shade provided that protects vegetable crops from extreme weather conditions.	N/A	At least every 3 years, Solidaridad with the support of Acorn will survey a sample of farmers	Solidaridad
Agricultural biodiversity	The provision of shade from the trees planted is ideal in supporting a healthy ecosystem and habitat for native flora and fauna, protecting them from the extreme weather conditions that arise through climate change. Biodiversity will be increased on farms due to the variety of shade trees species planted and due to Solidaridad's objective of ensuring farmers grow a range of crops on their farmers other than coffee, this will bring benefits for the environment such as an increase in pollinators. A reduction in biodiversity is not a risk for this project.	N/A	At least every 3 years, Solidaridad with the support of Acorn will survey a sample of farmers.	Solidaridad and Acorn

Farmer financial state	This project aims to increase total farm productivity and therefore the income of farmers (see below). Diversification of farmer income is also expected through the carbon finance offered for sequestration, giving farmers a more stable and additional source of income. Coffee is a commodity that changes in value every day and is currently experiencing a peak due to the natural cycle of coffee that every 7 years. It is expected that the value of coffee may drop again due to economic of environmental hardships. However, this is not an impact of project intervention but is mitigated against with farmers receiving an additional income that is not related to the price of coffee (carbon finance and tree products) and through the encouragement of growing diverse crops.	N/A	Farmer income from CRUs will be monitored annually by referring to Acorn's platform. Additionally, income from CRUs and the general financial conditions of farmers will be surveyed at least every 3 years by a sample of farmers	Solidaridad and Acorn
Agricultural land use productivity	Adoption or improvement of the agroforestry systems enables maximum use out of the area, existing resources, soil, fertilization, air, and sunlight, allowing higher and better harvests, with less investment (1/3 less fertilization/year), less weeding expenses (less competition from weeds) and more carbon per hectare. Is also important to consider that coffee is a perennial crop with variable yields (high /low) on a 3 to 4 year cycle. Therefore, no loss in productivity is expected, only increases with project intervention.	N/A	At least every 3 years, Solidaridad with the support of Acorn will survey a sample of farmers as they have been doing since project start (surveys in 2018 and 2021).	Solidaridad

Part F: Project Activities


With the baseline assessments


Every 3 years

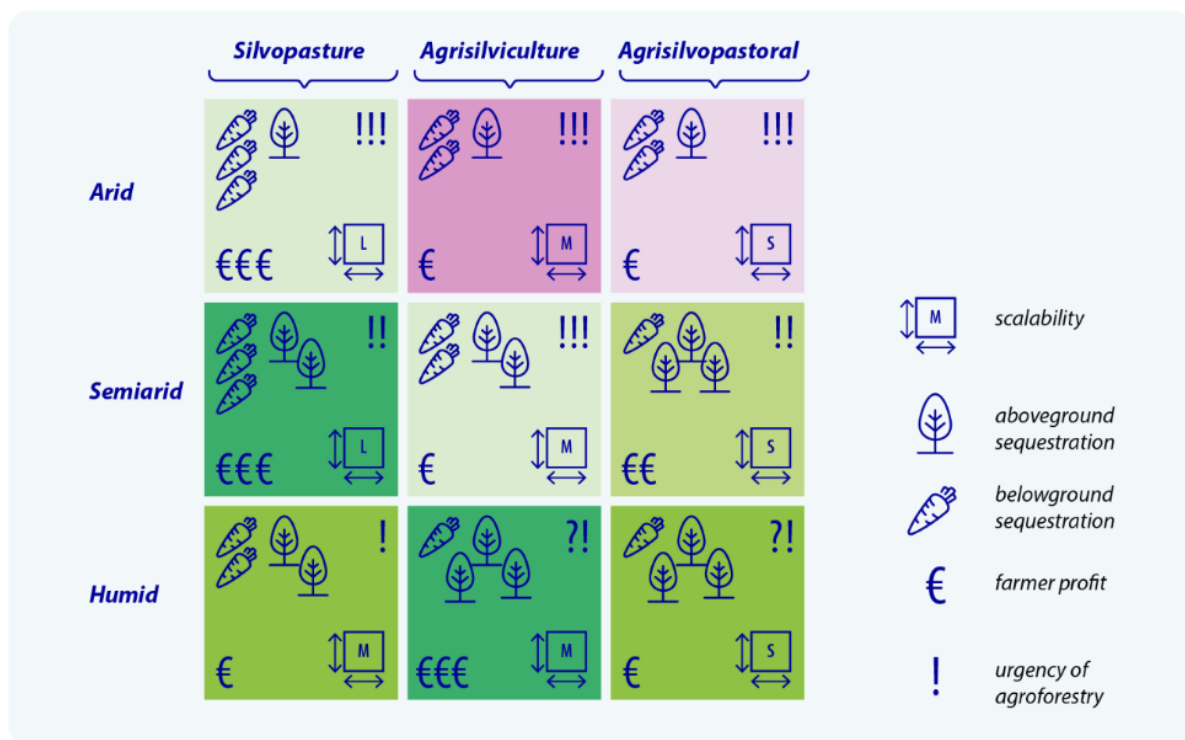

Local partner and agronomist


Acorn


The local partner and agronomist co-develop an agroforestry design and describe the associated activities within the agroforestry system

- Describe the agroforestry system to be implemented as part of the project using the figure below (silvopasture/agrisilviculture/agrisilvopastoral).

The agroforestry system is classified as existing agrisilvicultural agroforestry in a humid environment on which coffee is the main cash crop. The planting of shade trees is prioritised in this system. See question 3 below for more detail.



- For each agroforestry system fill out Table 2 below (use additional tables if necessary):

Type	Species	Species details		
		Native, naturalised or invasive?	If naturalised, please describe its likely: Livelihood benefits that make it preferable to any alternative native species	Impact on biodiversity or other provision of key ecosystem services in the project and surrounding areas
Tree	Eucalyptus saligna	Naturalised	Medicinal eucalyptus oil, culturally important to farmers	Provide ecosystem benefits (i.e. shade for crops and soil, protection of ecosystem against extreme weather events, edible flowers/leaves for fauna species) for 200 years.
Tree	Cedrelinga cateniformis	Native	N/A	N/A
Tree	Cordia alliodora	Native	N/A	N/A
Tree	Vitex pseudolea	Native	N/A	N/A

Tree	Corymbia torrelliniana	Native	N/A	N/A
Tree	Croton matourensis	Native	N/A	N/A
Tree	Cedrela odorata	Native	N/A	N/A
Tree	Calycophyllum spruceanum	Native	N/A	N/A
Tree	Swietenia macrophylla	Native	N/A	N/A
Tree	Vochisia Ferruginea	Native	N/A	N/A
Tree	Simarouba amara	Native	N/A	N/A
Tree	Schizolobium amazonicum	Native	N/A	N/A

Growth management				
Preparation and Planting	<p>1. Cleaning of the ground, by means of weeding that can be manual or with scythe.</p> <p>2. Design, layout and pegging of the land under the agroforestry system, in curves or against the slope. Depending on the variety of coffee the spacing of planting between street and plant is established, we recommend an average distance of 2Mt between street and 1 mt between plant. In the case of agroforestry, their distance will depend on the species selected according to their capacity for adaptation and development in the area of installation. (Torrelianas, Salignas, Tornillos, Laureles, Cedrillos, Pino Tecunumanii, etc).</p> <p>3. Plot the land; use of "Type A Level" is made when planting on a slope to make a curve-to-level plantation, or "with twine" when a direct, non-specialized plantation is desired. Both when performed on sloping ground are performed against the direction of the slope. At each point a stake/peg is left demarcating that the coffee plant or timber tree is to be transplanted there.</p> <p>4. Making holes for sowing seeds, at each point where a peg has been demarcated, proceed to make the hole of 30 cms x 30 cms in order to be able to carry out the subsequent transplant of the coffee tree or timber tree. These are considered appropriate for coffee seedlings produced by the growers (for 5 months). This is done with a hoe/pick tool or a seed driller.</p> <p>5. Definitive transplantation; the seedlings of the nursery are taken to the field and the hole is cleaned first, then organic fertilizer is applied, compost and sometimes phosphoric rock (depends on each farmer and his resources) to the bottom of the pit at the time of sowing. Subsequently, the coffee seedling or tree species is placed, filled with the soil, a slight pressure is given to the soil and water irrigation.</p>			
	<p>Tree/Shrub Management</p> <p>The management of pure plantations or agroforestry systems requires adequate and timely activities, such as (1) maintenance activities, (2) sanitary evaluations, and (3) silvicultural practices.</p> <p>1. Maintenance activities</p>			

	<p>These include cleaning and weeding of the plantation or agroforestry system. Weed control is of great importance and is a determining factor in the success of the agroforestry plantation, since weeds are aggressive and compete with the seedlings installed in the field, causing mortality, malformation, weakening, growth retardation, and competition for nutrients. Weed control is important during the first two years of planting in pure plantations and in agroforestry systems in order to prevent damage to the coffee plants.</p> <p>Weed control can be done manually with machetes, shovels, or others, which requires a great deal of labor and increases costs. Motorized mowers or shearing machines are also used, which require an operator, and good yields are obtained. There are also machines (brush cutters) that are efficient but are intended for large extensions and land with slopes of less than 20%.</p> <p>2. Sanitary Evaluations</p> <p>These include activities of prevention and response to the presence of pests and/or diseases that are associated with coffee cultivation and forestry species.</p> <p>Control can be done manually, mechanically, biologically, chemically, or a combination of the above through an Integrated Pest and Disease Management.</p> <p>3. Silvicultural practices</p> <p>These mainly refer to <i>pruning</i> and <i>thinning</i> activities. <i>Pruning</i> consists of eliminating live or dead branches from the trees in order to generate knot-free wood, improve the quality of the wood, and allow light to enter the coffee plantation, among other things. On the other hand, <i>thinning</i> is the process of regulating the density of the trees in the agroforestry system with the objective of stimulating the growth of the remaining trees, improving the quality of the plantation, generating income, and allowing light to enter the coffee plantation.</p> <p><i>Pruning</i> activities are carried out manually, using manual tools (pruning shears, pruning saws, bow saws, pole saws, ladders, among others) or mechanized tools (telescopic chainsaw).</p> <p><i>Thinning</i> activities require chainsaws, which provide better results in the directed felling.</p>
Crop Management	<p>Solidaridad's recommendation is to plant 4000 to 5000 units of coffee trees per hectare. In 2021, the average amount of coffee trees farmers had was 3926,12/ha. With this coffee tree target, Solidaridad recommends approximately 260 trees per hectare in order to achieve optimal shade conditions for the coffee and help cover the soil and prevent erosion. Solidaridad promotes "high systematic pruning", to say each year one out of every 3 rows of coffee should be pruned, or only $\frac{1}{3}$ of the crop is pruned. This results fertilizer use to dropping $\frac{1}{3}$ as well.</p>

3. Describe the project's agroforestry design/implementation plan.

The agroforestry design is based on an integrated and inclusive management, specifically the following five practices (See table above and Annex 5 for more information):

- *Shade management: promote agroforestry systems, regeneration and diversify producer incomes.*
- *Plantation management: build capacities in pruning and appropriate tree densities.*
- *Fertilization plan: development of fertilization plans based on soil analysis to enable more efficient and effective application and increase in productivity.*
- *Soil management: promotion of a combination of preventive and regenerative soils techniques.*
- *Wastewater (aguas mieles) management: to enable more efficient use of water.*

Solidaridad promotes the following criteria for choosing forest species associated with coffee: already a presence in coffee plantations or in the area, fast growth, easy to obtain seeds, adapted to the conditions of the area, good market value. Native timber shade species are commonly promoted including: Tornillo (Cedrelinga cateniformis), Laurel (Cordia alliodora), Saligna, Inga and Guaba.

Management practices Solidaridad recommends weed control (2 to 4 times a year according to the agroforestry system design), thinning (carried out to harvest non-mature trees, from the 6th year onwards, depending on the species selected), and Pruning. Pruning includes

- Growth: Plant 1 to 2 years after planting. Low branches and suckers are removed.*
- When becoming fully formed: After 3 to 4 years.*
- Sanitary: Eliminating dry, defected, diseased plants and/or branches.*

Due to the characteristics of its ecological temperament, as well as the technology appropriate to the conditions of the producer, the cultivation of coffee under shade is promoted. The main shade that is designed and implemented with the producers consists mainly of timber and commercial forest species. Traditional shade is generally basically service shade and with species of the Inga genus (commonly known as guabas, shimbillos, pacaes) which, although they are good at producing shade, organic matter (mulch), fruit, firewood, nitrogen fixers, etc., at the end of the coffee production cycle they die and do not produce commercial timber. Our proposal, on the other hand, is to implement shade from timber forest species that during their growth fulfil the function of shade, incorporate organic matter into the soil, sequester carbon in greater volume, and, at the end of the productive cycle of coffee cultivation and the turn of the trees, generate important additional income for the producer, as well as maintain the sequestered carbon captured for longer than a traditional plantation with ingas that end up as firewood or decomposed in the same place.

The Climate Smart model of Solidaridad proposes to have 200 to 260 shading trees per hectare. It is also recommended to plant shade trees that are also timber species which have higher density and capture more carbon. The 12 species promoted can generate 20,000 to 30,000 USD of additional income after 20 years, which covers the costs of renewing the coffee crop (around 6,000 USD) and remains for investment in the quality of life of the family in the long term.

4. Provide an estimate of the carbon benefits for each tree species per hectare over a likely median project period.

Tree species	Expected carbon benefit/ha	Project period used (e.g. 10 years)
Eucalyptus saligna	33.6 CO ₂ e kg	10 years
Cedrelinga cateniformis	34 CO ₂ e kg	10 years

Cordia alliodora	28.1 CO ₂ e kg	10 years
Vitex pseudolea	19.5 CO ₂ e kg	10 years
Corymbia torrelliniana	64.4 CO ₂ e kg	10 years
Croton matourensis	33.2 CO ₂ e kg	10 years
Cedrela odorata	38.9 CO ₂ e kg	10 years
Calycophyllum spruceanum	50.6 CO ₂ e kg	10 years
Swietenia macrophylla	42.4 CO ₂ e kg	10 years
Vochisia Ferruginea	29.2 CO ₂ e kg	10 years
Simarouba amara	26.6 CO ₂ e kg	10 years
Schizolobium amazonicum	28 CO ₂ e kg	10 years

**These figures will not be used to issue CRUs*

- Describe how this agroforestry system is expected to impact the land (i.e. shade, less pests, increase in pollinators).

The Climate Smart Coffee is a coffee that grows within agroforestry systems, allowing the soil to replenish nutrients, providing natural pest control, and a habitat for native species. In addition, in such systems coffee can be combined with other complementary crops, such as fruit trees and timber species that help to maintain the ecological balance on the farms and provide a diversified income for the families. In addition, the coffee farms with agroforestry systems will help in the preservation of the buffer zone preserved areas. Thus, the improvement of their traditional production systems towards the climate-smart system is extremely important to be an example in the region of how to coexist with nature, biodiversity, water resources, and to continue producing excellent coffee of high altitude. This agroforestry system aims to provide shade for crops and other native fauna and flora species in the project area, protection against UV and extreme winds, reduce temperature and humidity on farms thereby reducing pests and diseases, increase the productivity of coffee plantations due to increased yield from partial shade approach and reduced inputs such as fertiliser, and it will build farm resilience and ability to adapt to climate change (i.e. floods).

- How do you ensure that the trees already in the project area before project intervention (if any) do not perish due to competition with the trees planted during this project or are damaged due to project activities?

Collaboration with an agronomist to identify the existing tree species in the project area and assess their compatibility with ideal native shade trees that sequester high amount of carbon. Most of the timber forest species (90%) that are installed are native and only a few exotic species (mainly Eucalyptus saligna). It is proposed to progressively increase the use of native species. The use of native species is chosen because the tradition of reforestation was associated with naturalised E. saligna, however, it can be seen that there is an increasing knowledge about the benefits of using native species (tornillo, laurel, cedrillo, among others) with existing tree species.

Part G: Project Council


After the baseline assessments


Annually


Local partner and participants


Acorn


The local partner demonstrates active engagement of participants in project design and execution and describes the method for communicating and resolving grievances

- Describe the project council governance structure, showing that participants or community

groups collectively nominate project representatives who have the capacity to operate and make decisions on their behalf and determine a decision-making mechanism for the project council.

Most of the producers who are part of the Acorn project come from organizations /cooperatives/producer associations, all of which have some type of certification (organic etc). In order to be certified as an organization an organizational structure is created with internal regulations and a system of self-assessments . The current structure is that producer associations meet once or twice a year with all their partners and elect a board of directors (8 to 9 people) representing producers and meet throughout the year on a regular basis to discuss and implement actions of common interest. However there are different farmer cooperation's with each different plenary meetings of the cooperative.

Solidaridad aims to register the farmers who are nominated to participate and meetings in a database and develop upon this existing cooperative structure a project council specific for Acorn. Once this is established, project council members (Solidaridad representatives, community representative, representatives from various farmer associations, and nominated farmers) will attend meetings at least twice a year (maybe in cooperation with Geobosques, an organization that belongs to the ministry of Environment).

As Solidaridad were only made aware of the requirements for a project council in the last month with the provision of informational slides, they want to ensure they implement this structure properly so that they have a strong foundation moving forward were farmers are represented and engages on a regular basis for this project. Therefore, they are taking the time to plan and implement this properly, with the condition that two meeting occur before the ADD is updated in June 2023. Please see the planning as follows;

	Start planning project council	Nominating lead farmers	Formal communication to the lead farmers	Providing the list of lead farmers names to Acorn / and holding the first meeting
Date	June/2022	November/2022	December/2022	January/2023

2. Describe how project council allows participants to provide feedback on the project design and implementation.

Within the organization there is constant feedback. For the project council, the feedback will likely be based on the current structure of how the plenary meetings of cooperatives work. Here all members of the cooperative can participate and make comments and new agreements. Afterwards, an agenda will be send to the directives. Currently most farmers are part of WhatsApp-groups per community, which is one of the channels of which they can discuss feedback among each other. In addition, contact details are distributed to all farmers such as phone number, address and email of Solidaridad regarding the project. Solidaridad will follow the instructions outlined in the project council slideshow to ensure participants can sufficiently provide feedback on the project design and implementation.

3. List the lead farmers that have been nominated by participants to represent project participants during project council meetings to voice concerns and needs, and actively

engage in decision making.

First name	Last name	Gender	District	Years participating in council
Farmer 1	n/a	Masculine	Bajo Mayo	1
Farmer 2	n/a	Masculine	Alto Carrizal	1
Farmer 3	n/a	Masculine	Carrizal	1
Farmer 4	n/a	Masculine	Nuevo Cutervo	1
Farmer 5	n/a	Feminine	Alfarillo	1
Farmer 6	n/a	Masculine	Primero de Mayo	1

4. Describe the grievance mechanism for this project, including;
- I.) The method for communicating grievances (whatsapp/phone, email, facebook, meeting, letters, anonymous box etc.).

Currently most farmers are part of WhatsApp-groups per community, which is one of the channels of which they can discuss feedback among each other. In addition, contact details are distributed to all farmers such as phone number, address and email of a representative of Solidaridad regarding the project, in this way grievance can be communicated in a low-threshold way. Farmers can also talk to a confidential advisor of Solidaridad without any direct consequences to determine how they want to officially report a grievance. To do this, Solidaridad has a list of confidential advisors who can be reached through email or phone number. This person provides guidance and advice on the official procedure of a complaint. Additionally, there are three official channels for complaints: 1) Your immediate supervisor and senior management. 2) The integrity advisor. 3) The external complaints organization. The first two are internal complaints channels and encouraged by Solidaridad to enable the organisation to respond. However, if this is not trusted, there is also the possibility to use the external whistle-blowing organization.

- II.) How you ensure that complaints and/or recommendations can be done at any time and can be identified or be anonymous.

Through WhatsApp complaints can be done in time in a low-threshold way. There are two ways to ensure an anonymous complaint; 1) a direct report to the Integrity Advisor. 2) the external reporting organisation. There is a policy of confidentiality within grievance mechanism of Solidaridad. Any personal information obtained by Solidaridad will be treated in accordance with the relevant privacy laws and will be used only to comply with the law to protect privacy as much as possible.

- III.) The process in place to ensure grievances raised are dealt with in a transparent, fair and timely manner (e.g. chain of escalation).

There is an internal complaints protocol and chain of escalation event with actions taken in case of any raised grievance. Starting with your immediate lead farmer, then the local Solidaridad supervisor who will take the next step. If you are not comfortable talking to your local supervisor you may approach the person who supervises your immediate supervisor until -> the director General of the REC, The Executive Director of Solidaridad Network, the President of the International Oversight Board. Any member of the organisation (farmers and employees) who experiences misbehaviour is being urged to speak up at the start of the project and reminded regularly in meetings (i.e. with community or with farmer associations). This protocol also describes the process that takes place after the complaint has been pronounced.

IV.) Describe how the grievance mechanism is communicated to participants.'

During onboarding, contact details are distributed to the farmers such as phone number, address and email of a representative of Solidaridad (local supervisor) regarding the project, in this way grievance can be communicated in a low-threshold way. This information is also available to at any time as it is include in the Solidaridad Code of Conduct.

Solidaridad are in the process of creating a new Acorn specific grievance mechanism as their current manner is generalized to all agricultural projects in Peru. This is in progress and should be supplied as soon as possible. However, time should be allowed for consultations between farmers, field technicians, project officers and HR etc. to create such a document. Solidaridad have been advised to include a requirements for grievances to be reported within 35 days to Acorn.

5. List any grievances that have been raised outside of project council meetings and the actions taken to resolve them.

Grievance reported	Action taken	Responsible party
None reported at 18-12-2022	n/a	n/a


6. All project council reports that have been produced after the first year (minimum of 2) are stored by the local partner and can be requested upon validation. These reports must be completed based on the Project Council Report template provided by Acorn (including what decisions were made, how they were made, any feedback given and how it is been acted upon, grievances reported and how they are dealt with, satisfaction with grievance mechanism, proof of meeting (minutes and attendee list).


For further information on the project councils, please refer to Annex 7 : "Project council reports"


7. The project council reports demonstrate participants contributing to the selection and design of activities, considering :
 - Local livelihood (customs, needs and opportunities)
 - Land availability and tenure
 - Food security
 - Inclusion of marginalized groups
 - Opportunities to enhance (agricultural) biodiversity
 - Monitoring
 - Project implementation
 - Field management
 - Payments


Please refer to the Annex 7 : "Project council reports"


Part H: Organisational Capacity


With the baseline assessments


Every 3 years


Local partner


Acorn


The local partner demonstrates their capacity and experience in undertaking this agroforestry project while inclusively supporting their farmers

1. Describe your legal status as a local partner (e.g. NGO, local co-op or trader).

Solidaridad is an international civil society organization (NGO) with over 50 years of experience in developing solutions to make communities more resilient.

2. Describe your in-country presence and relationship with participants and communities in the project area.

Solidaridad Peru works with small and emerging farmers organizations or cooperatives that search to grow and improve their coffee production and quality. Those associations are also usually interested in certifying their crops or their organizations since those certifications have been a growing demand in the market. The farmers chosen by Solidaridad are also the ones that have less access to resources and technical assistance since most of the funding capital goes to bigger and more established organizations.

3. Briefly describe how you contribute to the social and economic development of the participants and their communities.

Solidaridad is increasing food security by promoting the dynamic of multiple land use within the farms in the project area (farmer growing a range of crops) to ensure farmers and the community have a more diverse and nutritious selection of fruits and vegetables. The planting of shade trees is expected to result in better quality (sellable) coffee and more yield, in addition to income from CRUs, resulting in higher farmer income in the project area and a more stable economy in the community. It is expected that biodiversity will increase in the project area with the planting of multiple tree species and growing multiple crops. The environmental impacts this will have include examples such as protection of villages and farms from floods and protection of local water sources for drinking, especially due to less pesticides and less fertiliser use in addition to trees preventing high surface water runoff. The community was also involved in the agroforestry design to ensure intervention did not negatively impact them (See annex 7 for photos).

4. What is the experience of the local partner working with farmers and in the project location (organising land tenure, implementing agroforestry, providing training etc.).

Since initiating operations in 2004, Solidaridad Peru's coffee programme has supported more than 50,000 coffee farmers to be more resilient to the impact of poverty through the adoption of good agricultural practices. Since 2012, the focus has been to improve smallholder livelihoods based on Agroforestry systems that can demonstrate deforestation-free and climate smart practices. The climate-smart coffee technical assistance model based on agroforestry systems proved to reduce GHG emissions, increase productivity by 21% and coffee quality by 10% in conversion factor from parchment to green coffee.

5. Describe how the project will securely store project information, including project designs, business case details, proof of payment, record of participants events and monitoring results.

Solidaridad works with their digital tool Extension Solutions and, they are developing a data monitoring platform for small producers. Since 2019 using their digital tool Extension Solutions, they have collected data from 130 coffee producers. The data collected is internal polygons (coffee plots) and external polygons (farm). This also means georeferencing the farm through tracking of georeferenced points. This data storage method (Extension Solutions) has been checked with Acorn in terms of its compliance with GDPR.

6. List relevant local, national and international policies, laws and regulations and demonstrate how the project is aligning project activities to comply.

Solidaridad has been actively promoting public and private agreements that incentivize climate-smart production. Solidaridad worked through multi-stakeholder platforms such as the Tropical Forest Alliance and the Coalition for a Sustainable Future in Peru. Other policies include:

- *El Perú y el Cambio Climático (climate change strategy, 2016) promotes Sustainable Production Systems and sustainable economic activities that reduce pressures and threats to the forest, such as agroforestry practices. This directly aligns with the project's goal for sustainable coffee sector transformation in Peru and the production of deforestation free coffee.*
- *Perú Ley-N-29763 (Forest Legislation, 2011) regulates and promotes forestry activities (including agroforestry). It promotes planting forest species in land without primary and secondary forests, aligning with the projects goal of using cultivated/degraded land for planting trees species among crops.*

7. Describe project's mechanisms to identify and address barriers to participation for groups that could be excluded based on the basis of gender, age, income or social status, ethnicity or religion, or any other discriminatory basis.

In Peru a gender assessment in San Martin Peru was carried out to better understand the role played by women in the production of coffee and their potential to adopt innovative practises. After gender roles were identified, we increased the involvement of women in project activities, especially in forestry training activities, by facilitating the attendance and participation of women in the trainings by adapting schedules, locations, methodology, etc. The communications plan implemented by the project has considered the language, mass media and forms of communication used mostly by women, not limiting access to information on Climate Smart Agriculture, climate change, project results, etc. The project has permanently promoted women's access to results, opportunities and benefits of the project. In addition to gender, Solidaridad also survey and interviewed community members to identify other farmer groups who are discriminated against and barriers they face. This input was used when developing farmer trainings (providing both physical and digital methods) for example.

8. Describe process for onboarding participants.

All smallholder coffee farmers within the area of San Martin who show interest are onboarded. Each farmer is asked information to determine eligibility based on the Acorn framework (farm size, when trees were planted if existing agroforestry, deforestation etc.) At the moment Solidaridad works with cooperation's, therefore it depends on the group farmers within these cooperation's to undertake these checks. Based on information from the past of these cooperation's we can see potential candidates of agroforestry and through the cooperation we communicate to interested farmers. There is no selection criteria as Solidaridad do not want to discriminate and want to accommodate all farmers regardless of status, race, gender etc. The farmers who are eligible have their farm polygons measured and the ecoregion is determined to tree species suitable for their land.

9. Describe project employment policies regarding employment of youths, women, and disadvantaged groups.

See Solidaridad Code of Conduct (Annex 13).

10. Describe how women are involved in the project but NOT as farmers (i.e. partnering nurseries, training).

Within the project there are 3 women in the field providing technical assistance and 3 women within Solidaridad regarding coordination.

11. Describe how the project will promote knowledge sharing among participants and the community

See Annex 3 for Solidaridad's extension methodology.

Part I: Financial Feasibility



1. Provide a detailed business case for the project, including:
 - the expected annual income from agricultural production and carbon sequestration
 - the expected costs associated with the transition to agroforestry and the generation and trading of CRUs (e.g. planting materials, fertilizer costs, temporary labor cost)
 - The expected productivity changes that will result from project interventions

SUMMARY:

The Agroforestry design in Peru makes sense for a farmer's perspective. A typical farmer, predominantly growing coffee with a baseline profit of ~EUR 1000 per year (for 1,32ha). Although the farmer spends quite a lot on purchasing seedlings and providing labour for planting and ongoing maintenance of the additionally planted trees, he/she earns additional income due to the increased productivity of coffee (up to 35%) after 5 years. Through working with Acorn, coffee farmers of Solidaridad generate an average of ~12 CRUs over a 20-year period leading to ~EUR 200 in additional carbon revenues per year and a total of EUR 4000 over a 20-year period. Carbon revenues represent 15-25% of additional revenues compared to a farmer's baseline which is considerable given the high number of trees and relatively low baseline profit of Peruvian coffee farmers/

The business case for Solidaridad, entitled to withhold 10% of the CRU revenue, generates a recurring income stream through the CRU revenue (EUR 2,8 million in a 20 year period) by which it can fund ongoing operations. CRU revenues exceed Solidaridad's direct local partners costs (those that have to be covered by the 10% of the CRU revenue) in 2023. The work Solidaridad did before engaging with Acorn has been financed through pre-available grant funding. Furthermore, Solidaridad Nicaragua has additional grant funding available to finance its ongoing operations through the USAID (through which it wants to add an additional 5000 farmers to its project).

2. What measures are in place to ensure that you do not draw 10% of sales income for ongoing coordination, administration and monitoring costs? (e.g. earmarked funds or separate account for farmer payments).

It is expected that 10% will cover costs of maintaining farmers engagement. Currently, a business case for the Local Partner is being built to check that this would be the case or to plan in advance, if extra funds are required (see Annex 6). It is the aim that when received, the 80% of funds that will be paid to farmers will be clearly labelled or earmarked for that purpose. It is not permitted for

Solidaridad to take more than a maximum of 10% of CRU revenue, which is stated in the signed local partner contract.

Part J: Payments and Benefit Sharing



After CRUs have been paid



Annually



Local partner



Acorn



The local partner provides evidence demonstrating how the farmers receive their CRU payments.

1. Provide evidence on how CRU payments have been disbursed to participants and equate to at least 80% of proceeds.

Evidence will be provided in the annual update of the ADD after year 1 (as LP/farmers have not yet been paid at time of baseline). This evidence can be provided in the form of a receipt of transaction, a signed statement that the farmer has been paid, and in the Acorn's platform.

2. Describe what proportion of cash payments have been disbursed to farmers.

Farmers are yet to be paid. All payments will be cash (digitally) as Solidaridad Peru is committed with paying back to the farmer the full 80% in a transparent and measurable way. The exact method of payment (i.e. bank transfer, mobile payment) will be determined before farmer payment depending on farmer circumstances and needs to ensure payment is performed in a fair and just manner.

3. Describe what proportion and type of in-kind benefits have be provided to farmers.

No in-kind benefits will be paid to ensure farmers can easily see the reward for keeping these trees in the ground and maintaining their agroforestry system.

Benefit	Examples	Description
Inputs	<ul style="list-style-type: none"> Seedling costs Sapling costs Fertilizer 	n/a
Education	<ul style="list-style-type: none"> Training costs Agronomist consultation costs 	n/a
Operation	<ul style="list-style-type: none"> Mobile communication costs Mobile payment costs Fencing 	n/a
Livelihood	<ul style="list-style-type: none"> Land tenure consultation costs 	n/a

Part K: Stakeholder Analysis



With the baseline assessments



Once at the start



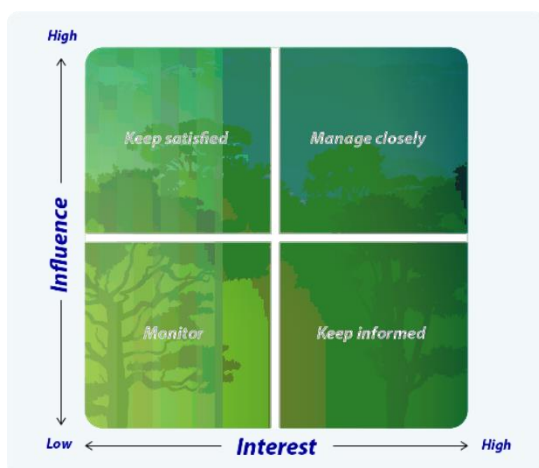
Local partner



Acorn



The local partner, in consultation with Acorn, maps out the stakeholders with high interest/influence in the project and those that need to be informed of project intervention



1. Referring to the stakeholder analysis figure above, describe the interest and influence each stakeholder has in the project and justify the reason for this in the table below. All stakeholders that receive outcomes other than “Monitoring” must be informed of the project (e.g. newsletters) and their views/approval sought where necessary. Please add rows for additional stakeholders as necessary.

Stakeholder	Interest	Influence	Justification	Outcome	Informed
Participants/ farmers	High	High	The incentive mechanism generates motivation and interest, since it contributes to generating income in the management of their farm and their family. Participants in the project must be informed and involved in a participatory manner, which has been achieved since Project design (Annex 7) and will continue to be through the project council.	Manage closely	Y
Local communities	High	High	They have high interest since the project is directly related to activities of great importance for the area, such as coffee cultivation. The local community has been involved since the design of the Project (see Annex 7) and will continue to be, for example by lead farmers who will spread word and seek insight from on the community.	Manage closely	Y

National Government	High	Low	What is done in ITC is aligned with national agrarian development programmes and this work adds to the efforts of the National Government. But this does not have so much direct influence for two reasons: they do not usually hinder the projects and, in addition, they have little presence in the area, which is quite isolated, making their contribution not enough to suppress the demands (technical, infrastructure, etc.) A presentation has been made with MINIM and letters have been sent (Annex 8)	Keep informed	Y
Local government	High	Low	For the same reasons of the National Government, the Regional Government also has great interest, but little influence. An agreement will be signed with the regional government to have the support and institutional coverage necessary to promote the project. In addition, there is also an agreement with the agricultural regional directorate.	Keep informed	Y
Donors	High	High - medium	They are interested in this type of project and that more people are adding to the same goal. It is necessary to work closely with other donors interested in similar initiatives to find synergies and not confuse the target audience, so as not to create false expectations for the producer.	Manage closely	Y
NGOs	High	High	NGOs working in the field of institutional and political advocacy have high interest and influence because they can influence national and regional	Manage closely	N

			governments. For example: Helvetas, GIZ, CI. There is an upcoming event in Lima to inform all NGOs		
Farmer associations	High	High	They are the direct partners of Solidaridad to achieve scaling the CCI model. They are the ones that facilitate the approach to communities and farmers.	Manage closely	Y
Financial partners/ institutions	Low	Low	The institutions are not yet so interested in financing the small farmer, it is something that is in process.	Monitor	Y
Procurement services	Low	Low	This type of service is incipient in the area. An initiative like ACORN can generate motivation to improve/create AF service provider initiatives.	Monitor	N
Buyers (companies/ traders)	High	Low	If there is more coffee produced in SAF, which are of better quality, it is of great interest to buyers. They are interested in producers having better incomes to invest in their farms, but at the same time they want to be able to offset their carbon emissions without buying credits for the platform. They can switch to high influence once the requirements of the Green Deal are in place and they don't want to buy from deforestation-related systems.	Keep informed	Y

2. Please provide the results of the local stakeholder mapping activity carried out during the project council meeting.

Stakeholder	Interest	Influence	Informed
Young citizens of the area	High	Low	Yes
People in charge of community activities	High	High	Yes

Local families	Medium	Low	Yes
Young farmers	Medium	Medium	Yes

Part L: Reversal Risk Assessment


With the baseline assessments


Every 5 years


Acorn


Local partner


Acorn, in consultation with the local partner, assesses the risk of project reversal against potential drivers to identify mitigation/monitoring actions for high risks

Project phase	Drivers behind reversal risk	Risk level	Potential mitigating measures	Justification
Project adoption/start	Limited education or inadequate understanding of agroforestry	Low	<ul style="list-style-type: none"> Build on local culture, traditions and markets⁶ Ensure accessible training Secure agronomist assistance 	<p>Since initiating operations in 2004, Solidaridad Peru's coffee programme has supported more than 50,000 coffee farmers to be more resilient to the impact of poverty through the adoption of good agricultural practices. Since 2012, Solidaridad have supported pilots in Latin America with a focus to improve smallholder livelihoods based on agroforestry systems that can demonstrate deforestation-free and climate smart practices. Solidaridad employs local agronomists to determine what planting materials are needed by farmers by considering the suitability of tree species with the land and crop types and how to maximise both environmental and economic benefits. These agronomists also assist in providing agroforestry training and advice to farmers to</p>

				<p>ensure they can successfully maintain their trees in the longer term. . This training comes in many forms so to not discriminate such as physical workshops, booklets and videos and includes the topics of environmental and socioeconomic impacts of agroforestry, appropriate practices, management of shade, plantations, wastewater and soil, and the development of a fertilisation plan.</p>
	<p>Marginal community support or low community involvement</p>	<p>Low</p>	<ul style="list-style-type: none"> • Explore farmer needs • Promote program • Demonstrate positive impact on social and economic well-being 	<p>Solidaridad surveyed and interviewed participants to identify what farmers want out of agroforestry and the barriers they face. This input was used when developing the AF design and farmer trainings. The farmers chosen by Solidaridad are also the ones that have less access to resources and technical assistance since most of the funding capital goes to bigger and more established organizations. Solidaridad has a series of written materials and video/radio materials about the agroforestry program proposition. They hire national or regional radio stations where they broadcast these programs. Here Solidaridad begin to encourage producers to improve and think about how they can make changes to create a better and more</p>

				sustainable life on their farm. To complement this, lead farmers also regulate this by spreading the Word in the community. Solidaridad look for lead farmers within a specific zone and provide them with a more focused training so that they can be the promotor in their zones/area.
	Inadequate operational capacity (limited experience, no local presence)	Low	<ul style="list-style-type: none"> • Use the train-the-trainer principle 	In total Solidaridad Peru has 37 FTE and the Coffee Programme has 17 FTE. Solidaridad Peru works at different levels locally with coffee producers, government's organisations and trading companies. We have developed an extension methodology which we used to scale our climate smart model that includes agroforestry and silvopasture systems. See Annex 3 for the extension methodology.
	Insufficient (local) nurseries	Low	<ul style="list-style-type: none"> • Make upfront arrangements • Negotiate purchasing power 	Solidaridad have access to and manage multiple local nurseries and seedbanks and ensure farmers are connected to germinators and micro nurseries to improve supply of high quality planting materials (i.e. seedlings) needed for a such a transition.
	Animal or human interference	Low	<ul style="list-style-type: none"> • Erect fencing (natural, etc.) • Help mediate disagreements between 	In the coffee area there are no human conflicts and interference from people is very unlikely. There are no risks to crops that are

			perceived land boundaries	potentially caused by animals.
Project progress	Negative project cash flow	Low	<ul style="list-style-type: none"> • Ensure adequate financial planning • Ensure local financing for unforeseen events 	<p>Solidaridad has been receiving start-up grant funding from NORAD since 2018. This funding has been allocated to implement demonstration plots that disseminate knowledge of agroforestry practices amongst farmers and the community and is currently being used for ongoing operations (training etc.).</p> <p>Solidaridad still receives its funds from different sources, such as national and international funding, partnership with private institutions, and consultancy and technical services provision. Public and private grant funding such as from USAID, USDA, the Dutch, Norwegian and German Governments, the Gordon and Betty Moore Foundation, Cargill, ADM, McDonalds has been split among multiple agroforestry projects with Solidaridad in Latin America.</p> <p>Solidaridad has several sources of funds, and its planning considers a long-term horizon. International cooperation funds that serve as a buffer have already been secured.</p>
	Poor agroforestry schemes	Low	<ul style="list-style-type: none"> • Encourage species and genetic diversity 	<p>The implementation of this Climate Smart model is only possible through the training of facilitators from the producer's association in</p>

			<ul style="list-style-type: none"> Secure agronomist assistance 	<p>techniques of agroforestry management so that the knowledge remains in the community and quality technical assistance is provided to the producers. Solidaridad also have a range of highly qualified professional on its team, such as agronomists, environmental engineers, geographers, etc. The model is based on an integrated and inclusive management, specifically the following five practices:</p> <p>Shade management: promote agroforestry systems, regeneration and diversify producer incomes.</p> <p>Plantation management: build capacities in pruning and appropriate tree densities.</p> <p>Fertilization plan: development of fertilization plans based on soil analysis to enable more efficient and effective application and increase in productivity.</p> <p>Soil management: promotion of a combination of preventive and regenerative soils techniques.</p> <p>Wastewater (aguas mieles) management: to enable more efficient use of water.</p>
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	Change of land ownership and coverage	Low	<ul style="list-style-type: none"> Involve one entity to manage/track rights status 	Solidaridad maintains an updated monitoring database which lists the producers that are part of the cooperatives that work hand in hand with us and their ownership of land.
	Political instability (e.g. war, economic crisis)	Low	<ul style="list-style-type: none"> Keep up-to-date on local and national political conditions 	Solidaridad has an office based in Peru and good knowledge of what the local situation is like due to Solidaridad's presence in the country since 2004.
	Natural risks: <ul style="list-style-type: none"> Fires Pests & disease Extreme weathers Other events 	Medium	<ul style="list-style-type: none"> Perform historical risk analysis and apply applicable preventive measures Training in effectively containing natural risks 	Solidaridad takes resilience of crops and risks such as bushfires, floods, pest/disease outbreaks into account in the training offered to farmers. However, Solidaridad does not directly develop studies of "natural risks" in the area. See Part F on what is taken into consideration in AF design.
Project maturity	Logging risk	Low	<ul style="list-style-type: none"> Ensure alternative fuel for wood Ensure food productivity of trees 	There is a medium risk of deforestation in the area surrounding the project area due to land conversion for agriculture, slash and burn agricultural practices and demand for timber. Within the project area there is a low risk of deforestation as farmers are trained on the importance of keeping their trees in the ground, receive a reward in the form of CRUs, and also grow timber species on their land that are harvested to ensure they do not resort to deforestation activities


				within or nearby to the project area.
	Waning or short-lived local partner commitment	Low	<ul style="list-style-type: none"> Facilitate continuous dialogue and evaluation Sign commitment agreements 	<p>Solidaridad enables public-private dialogue to reach commitments and implement policies that create conditions and incentives for producers to adopt sustainable practices. They also regularly convene stakeholders and design sustainability policies to enhance long term implementation and commitment to the project. Agreements are also signed as part of this project with Acorn, the local partner and the farmer, demonstrating their commitment to the longevity of this project. The ACORN supply team will keep communication open with the local partner and evaluate their commitment to the project.</p>


1. List any reversal risks in Part M that are high-risk, provide appropriate mitigation actions, and describe how often these risks will be monitored.


Risk	Mitigation action	Monitoring Frequency	Responsible party
No high risks identified	n/a	n/a	n/a


Part M: Technical Specifications


1. Applicability Conditions


After the baseline assessments


Once at the start


Acorn


Local partner


Acorn completes the applicability conditions checklist to ensure basic conditions of the methodology are in place.

In the table below, explain how this project meets the applicability conditions of the Acorn Methodology:

	Applicability Condition	Met	Reasoning
A	The Project Interventions meet the Agroforestry definition (see Section 3 of Acorn methodology v1.0) and any trees planted are Native or Naturalized species.	Yes	Confirmed by local partner and explained in carbon baseline
B	The Project Area must not have been cleared of native vegetation within 5 years of the start of the Project Intervention.	Yes	Initially, a verbal check was performed with the local partner who confirmed this and t-5 checks from remote sensing measurements confirmed it as well
C	Individual plots within the Project Area are between 0.1 and 10 ha and are not on wetlands.	Yes	Confirmed through polygon checks
D	All land within the Project Area is either cropland or degraded land under the Baseline Scenario	Yes	Initial verbal explanation in carbon baseline by local partner and land cover check performed confirmed
E	The project interventions must not include activities that increase the total number, weight or number of grazing days for any livestock type, relative to the baseline scenario.	Yes	Explained to participants and to be confirmed by sample-based agricultural biodiversity check over the coming years
F	The project intervention must not include the planned harvesting of planted trees during or after the crediting period.	Yes	Covered in local partner contract
G	Heavy machinery must not be used for site preparation or management.	Yes	Not applicable for these smallholder farmers and covered in the local partner contract
H	The project intervention must not increase the use of synthetic (nitrogen-containing) fertilizers relative to the baseline scenario.	Yes	Covered in local partner contract
I	Soil disturbance attributable to the project intervention must not occur on more than 10% of a plot that is under any of the following types of land: <ul style="list-style-type: none"> - Land containing organic soils; - Land which, in the baseline, is subjected to land-use and management practices and receives inputs listed in Annex 4 of Acorn Methodology 	Yes	The SoilGrid confirmed that project is not on high organic soils, with the following results thickness detail >200cm, SOC content less than 20%, but 2,60%, limited clay 34%.

2. Adjustment Factors



After polygons processed



Every 3 years



Acorn



Acorn determines the adjustment factors for pre-project trees, leakage and uncertainty to ensure adequate and valid generated CRUs and informs local partner

This table below gives an overview of the adjustment factors applied for this specific project (see Annex 8 for equation input data).

AdjF	Factor (%)	Reasoning
Leakage	0%	See section 3.1 for analysis and land cover assessment results.
Uncertainty	0%	Aggregated uncertainty is calculated to be 39% hence below 50%.
Pre-project	10%	Equations 1 – 3 of the methodology give us an outcome of 17,49 %, hence an adjustment factor of 10% is applied to the CRU calculations. Please refer to the 52Impact analysis.

2.1 Leakage Assessment

Estimated reduction in project productivity (%)	Cash crop(s) contributing most to project productivity	Proportion of project land used to grow cash crop (%)	Type of land production will be shifted to
0	Coffee	42%	Categorized as '1'

I.) Describe the potential leakage situation of the project over its lifetime.

The climate-smart coffee technical assistance model based on agroforestry systems proved to reduce GHG emissions, increase productivity by 21% and coffee quality by 10% in conversion factor from parchment to green coffee. In 2021, a representative sample of producers reported 890 kg of parchment coffee per hectare, representing a result of increased productivity of 35% compared to the start of tree planting in 2018 (an average yield of 660 kg of parchment coffee per hectare). During the baseline assessment with Acorn in 2022, total farm productivity was measured by a sample of farmers and was represented at 1021.5kg/ha. Solidaridad have the objective to reach 1093 kg/hectare by 2023. Is also important to consider that coffee is a perennial crop with variable yields (high /low) on a 3 to 4 year cycle. Therefore, no loss in productivity is expected, only increases. This increased productivity will ensure that farmers activities are not displaced and production will remain within the farmers plot. In this situation, it is highly unlikely that farmers would participate in leakage related activities inside or outside of the project area.

II.) Describe the land between farms and a maximum of 5km outside of the project area (i.e. cropland, degraded land, forest).

Shrub land	Grass land	Crop land	Built-up	Bare/Sparse vegetation	Permanent water bodies	Tree cover <60%	Tree cover >60%
0.41	11.94	2.35	0.48	0.42	0.33	16.93	67.14


III.) List farmer activities (performed before project implementation) that will be displaced from project interventions and lead to an increase in emissions outside of the project area, if any.


Displaced farmer activity	Area activity displaced to
Not applicable	-


IV.) If leakage is like to be significant, outline the leakage mitigation and monitoring plan below


Source of leakage	Mitigation action	Monitoring Frequency	Responsible party
Not applicable	-	-	-

3. Root-Shoot


With the adjustment factors


Once at the start


Acorn


Acorn determine the ratio of below-ground biomass to above-ground biomass and informs local partner

Ratio	Reasoning
0.32	Applied the default value for the calculations as alternative literature is very limited to no existing and IPCC values could not yet be sufficiently matched

Annex 1: Map of project location & ecoregion

Provided. Concealed for data protection purposes.

Annex 2: Organisational Structure

Provided. Concealed for data protection purposes.

Annex 3: Solidaridad Peru Extension Methodology

Provided. Concealed for data protection purposes.

Annex 4: Land Tenure Documentation (sample-based)

Provided. Concealed for data protection purposes.

Annex 5: Agroforestry system design/implementation plan

IMPLEMENTATION PLAN

The implementing process starts with an assessment to get to know the current conditions of the farm and from that establish with the producer a plan of action based on his ambitions and possibilities. The plan can be short, medium, or long-term depending on the project and funding available.

Our working methodology is to transfer all technical knowledge regarding our Climate Smart production model and best practices to the association's technical team. Therefore the technical team is responsible for training the farmers and keeping track of the implementation of the model. This approach makes it possible for Solidaridad to reach a higher number of producers.

As part of the model of good agricultural practices promoted by coffee producers, we promote income diversification through agroforestry systems, soil retention/improvement, as well as measures to reduce risks of pests and diseases brought about by climate change. More specifically, in the agroforestry system, we promoted the planting of high economic value trees, which provide two important functions; (i) provide shade conditions to reduce humidity and risk of diseases (ii) provide access to the legal timber market and diversified source of income and (iii) prevent soil erosion. In addition, we promote other soil erosion prevention techniques such as dead and alive barriers, sewing to the level of the curve, coffee plot density, and soil covering which are considered important to prevent erosion in the location of intervention which is characterized by steep terrains and projected vulnerable to climate change due to likelihood in increased rainfall which would accelerate erosion. To improve soil health, compost practices are promoted. In addition, to prevent pests and disease in coffee plantations, our model also supports farmers in seed selection, germination, tree nursery management, and selective pruning to minimize the risk of pests and disease.

A more detailed description of the practices promoted in the Climate Smart model is given below:

Activity Actividad	Description Descripción	Costs* (in 5 years) Costo	Does the farmer pay it? ¿Lo paga el agricultor?
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Crop and Soil Management	Cover cropping (or soils): Consist of plants that are planted to cover the soil rather than for the purpose of being harvested. Cover cropping helps to fix nitrogen in the soil, slows the velocity of runoff from rainfall, reducing soil loss due to sheet erosion.		
	Dead and alive barriers: Plant residues (branches and leaves) cut as part of the pruning of shade trees should be implemented as dead barriers for erosion control. Live barriers can take the form of planting trees around the perimeter of the producer farm plot.	year 1: - S/ 2,841.00 year 2: - S/ 438.40	
	Sewing to the level of the curve: Sewings are carried out against the slope of the land in order to create living barriers with the cultivation of coffee and thus reduce erosion and loss of soils.	year 3: - S/ 5,260.80 year 4: - S/ 6,122.00 year 5: - S/ 5,076.80	Yes
	Improving spacing of trees per hectare: An optimum planting density allows a high number of trees per hectare while still balancing the requirements for light and water of each tree. It also helps to prevent soil erosion.		
	Systematic & timely pruning: means that dead or unproductive parts of the plant are removed on time to allow the plant to reach optimal productivity and reduce risk of pests and diseases.		
Shade management	Agroforestry: The integration of woody perennials (trees/shrubs) in the farming system. The presence of shade species in agroforestry systems provides protection from sunlight for coffee to reduce heat stress on crops to increase productivity, ameliorating the microclimate, while storing water and nutrients for the plantation. Main advantages of the agroforestry systems include: a more efficient land use, soil protection, higher yield and income, biodiversity conservation. Moreover, it provides the farmer	year 1: - S/ 510.00 year 2: - S/ 60.00 year 3: - S/ 180.00 year 4: - S/ 120.00 year 5: - S/ 240.00	Yes

	<p>with timber, fruits, wood and natural fertilization.</p> <p>Zero deforestation: no expansion of agricultural grounds into forests - use low carbon areas / eroded lands.</p>		
Fertilization management	<p>Soil testing (mapping) in the last two years: Analysis of a soil sample to determine nutrient content, composition, and other characteristics such as the acidity or pH level.</p> <p>Composting: Decomposition of organic material into a humus-like material, known as compost which helps improve soil characteristics such as nutrient content, soil structure and moisture content and reduces the need for costly synthetic fertilizers that contribute high levels of GHGs. eg. Cocoa husks.</p>	<p>year 1: - S/ 1,350.00</p> <p>year 2: - S/ 1,380.00</p> <p>year 3: - S/ 1,380.00</p> <p>year 4: - S/ 1,380.00</p> <p>year 5: - S/ 1,380.00</p>	Yes
Wastewater management	<p>Wastewater treatment in coffee: The goal of wastewater management is to clean and protect water. This means that water must be clean enough to release into nearby water sources such as rivers and lakes. This can be done by putting a biofilter in place.</p> <p>Reusing wastewater for pastures (recycle): Reusing wastewater refers to the application of sprinkler systems over pastures that can withstand high acidic waters and serves as to improve grassland growth and fodder for livestock.</p> <p>Wastewater management (the use of anaerobic digestion to create organic fertilizer or digestate): Increase the uptake of digestates/fertilisers involves the integration of organic remains of animals and plants (manure, crop residues e.g. coffee pulp and wastewater) and treatment through anaerobic processes. Digestates are rich in phytohormones, a component that improves seed germination, strengthens roots and plant</p>	<p>year 1: - S/ 1,762.50</p> <p>year 2: - S/ 30.00</p> <p>year 3: - S/ 30.00</p> <p>year 4: - S/ 30.00</p> <p>year 5: - S/ 30.00</p>	Yes

	flowering. Their action results in increases in yields at low costs.		
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*In addition to those costs there are other production costs related to supplies, equipment, tools, and transportation.

AGROFORESTRY DESIGN

The traditional agroforestry systems use 80 to 100 shading trees per hectare. The Climate Smart model of Solidaridad proposes to have from 200 to 260 shading trees per hectare. When a tree must be cut down to competition, overshadowing or end of life, the farmer receives more benefits as timber shade trees are used. The 12 species promoted could generate 20,000 to 30,000 USD of additional income after 20 years, which covers the costs of renewing the coffee crop (around 6,000 USD) and remains for investment in the quality of life of the family in the long term. The species highlighted in green are those that are mainly promoted.

Common Name (in Spanish)	Specie	Mortality rate and pruning practices*
Tornillo	<i>Cedrelinga cateniformis</i>	Natural seedling mortality: 5-10% considered as good. Subsequent thinning is carried out in years 4 and 8, leaving 35-40% of the total.
Pino chuncho	<i>Schizolobium amazonicum</i>	Natural seedling mortality: 5-10% considered as good. Subsequent thinning is carried out in years 3 and 6, leaving 35-40% of the total.
Laurel	<i>Cordia alliodora</i>	Natural seedling mortality: 5-10% considered as good. Subsequent thinning is carried out in years 4 and 8, leaving 35-40% of the total.
Paliperro	<i>Vitex pseudolea</i>	Natural seedling mortality: 5-10% considered as good. Subsequent thinning is carried out in years 4 and 8, leaving 35-40% of the total.
Cedro	<i>Cedrela odorata</i>	Dense plantations are not carried out due to the presence of <i>Hypsipyla grandella</i> , which generates a mortality rate of 80-95% in 4-year plantations, otherwise the trees become obsolete for timber purposes due to the damage caused by the insect.
Eucalipto torrelliana	<i>Corymbia torrelliniana</i>	Natural seedling mortality: 5-10% considered as good. Subsequent thinning is carried out in years 2 and 4, leaving 35-40% of the total.
Eucalipto saligna	<i>Eucalyptus saligna</i>	Natural seedling mortality: 5-10% considered as good. Subsequent thinning is carried out in years 2 and 4, leaving 35-40% of the total.
Capirona	<i>Calycophyllum spruceanum</i>	Natural seedling mortality: 5-10% considered as good. Subsequent thinning is carried out in years 3 and 6, leaving 35-40% of the total.
Caoba	<i>Swietenia macrophylla</i>	Dense plantations are not carried out due to the presence of <i>Hypsipyla grandella</i> , which generates a mortality rate of 80-95% in 4-year plantations, otherwise the trees become obsolete for timber purposes due to the damage caused by the insect.
Quillosisa	<i>Vochysia sp.</i>	Natural seedling mortality: 5-10% considered as good. Subsequent thinning is carried out in years 3 and 6, leaving 35-40% of the total.
Marupa	<i>Simarouba amara</i>	Natural seedling mortality: 5-10% considered as good. Subsequent thinning is carried out in years 3 and 6, leaving 35-40% of the total.
Cedrillo	<i>Huertea sp.</i>	Natural seedling mortality: 5-10% considered as good. Subsequent thinning is carried out in years 3 and 6, leaving 35-40% of the total.

Annex 6: Local partner and farmer business case

Provided. Concealed for data protection purposes.

Annex 7: Project Council Reports and evidence of participation

2 x Project council reports to be provided in 2023.

Provided. Concealed for data protection purposes.

Annex 8: Letter to national government

Provided. Concealed for data protection purposes.

Annex 9: Farmer contract

Available on request by the local partner.

Annex 10: Local partner contract

Provided. Concealed for data protection purposes.

Annex 11: T-5 check failed plots

Provided. Concealed for data protection purposes.

Annex 12: Additionality evidence

Provided. Concealed for data protection purposes.

Annex 13: Solidaridad code of conduct

Provided. Concealed for data protection purposes.