

Project Proposal Template

1. General information

General project information			
Applicant organization	Grupo Empresarial Alquería (Freskaleche S.A.S y Productos Naturales de la Sabana S.A.S.) and Nestlé de Colombia S.A.		
Project title	Sustainable Development of the dairy sector competitiveness in Cesar, Colombia.		
Country & project area Coverage area	Colombia - Cesar Alquería: La Gloria; Aguachica; Gamarra; Curumaní; Tamalameque; Chimichagua, Pailitas. Nestlé: Valledupar; Bethania; San Juan; Becerril - Curumaní; N. Granada - Santana.		
Agricultural or forest commodities	Dairy Products, pastureland.		
Project partner(s)	Yara and a commercial bank (Bancolombia or Banco Agrario)		
Proposed starting date	01/12/2020	Proposed ending date	30/11/2023
Total Project budget	€ 1,487,997		
Contribution Private Sector	€ 761,224 (Nestlé 92.976; Alqueria 147.469; Yara 13.197; Cattle raisers investment – direct cost production 236.962)		
Contribution Financial Institutions	€ 726,773 (loan)		
Contribution Public Sector	N/A		
Contribution requested from IDH	€ 270,620		
Project summary	<p>This project seeks to increase the competitiveness of tropical milk cattle raisers in Cesar, Colombia, by prototyping a productive reconversion model. This model will improve cattle productivity and product quality while promoting resilient agricultural practices that mitigate the excessive pressure exerted on natural resources and the tropical dry forest ecosystem, creating a positive impact on the environment and people's livelihoods. This project already had a pilot test and moved to a second phase involving 100 tropical milk cattle raisers in 5,000 ha in total. In a subsequent third phase, the project will be scaled-up to 800 milk cattle raisers in Cesar. In line with this objective, the actual degree of the project follows a PPI approach by:</p> <ol style="list-style-type: none"> Production pillar - Achieve 2,700 ha of tropical milk production (2,250 ha Alquería and 450 ha Nestlé) by prototyping a silvopastoral model to increase the current 2.5l/cow/day productivity to 6.0l/cow/day within the next three years. Protection pillar - Reforest 300 ha (250 ha Alquería and 50 ha Nestlé) and conserve additional 3,000 ha of tropical dry forest and natural ecosystems surrounding the project 		

	<p>(2,500 ha Alquería and 500 ha Nestlé).</p> <p>3. Inclusion pillar - Organize 60 families of agriculture farmers (50 families Alquería and 10 families Nestlé) by providing them with technical assistance, knowledge transfer, a blended-finance flexible credit line, and a land regularization plan to implement in the scale-up phase.</p> <p>The specific objectives are:</p> <ol style="list-style-type: none"> 1. Strengthen livestock productivity to increase milk production and quality while reducing GHG intensity. 2. Improve systems for small cattle raisers to access financial knowledge, economic markets, and land legalization. 3. Carry out sustainable soil management practices for better land use and GHG capture. 4. Promote the efficient use of resources and waste from livestock farming. 5. Improve systems and methodologies for monitoring greenhouse gas (GHG) emissions and sustainable land-use.
--	---

2. Project applicant, implementer, and other partners

Project Applicant Details & Contact Persons	
Full name of organization	Grupo Empresarial Alquería (Freskaleche S.A.S. y Productos Naturales de la Sabana S.A.S.)
Legal form of entity	Joint stock companies
Full name & position legal representative	Diego Sigifredo Legal representative Freskaleche S.A.S. Jaime Eduardo Gómez Gómez Productos Naturales de la Sabana S.A.S.
Address of the organization	Freskaleche S.A.S.: Vía Chimita KM 3, Bucaramanga Productos Naturales de la Sabana S.A.S.: Vía Tabio KM 5, Cajicá
Name of contact person	Ricardo Chirivi
Contact details of contact person	rchirivi@alqueria.com.co +57 310 231 2414
Financial contact person for this Application (responsible for fin. reporting to IDH)	Juan Camilo Lozano jlozano@alqueria.com.co +57 313 348 2196
Financial auditor of the Applicant and contact details	Javier Antonio Niño Gutiérrez By Deloitte & Touche Ltda.
Main role and responsibilities in the project	Implementation partner
Experience in similar projects and please describe how that experience relates to this proposed project (list maximum of 2 projects, if possible, with a link to websites or an annex where	1. FOCA: Promote the competitiveness of milk producers in Colombia, through methodologies of education and accompaniment in business planning, increasing productivity, decreasing expenses, and improving their income and quality of life. That led the company to obtain a premium material premium with the characteristics needed.

<p>more information is provided)</p>	<p>It has four work fronts: Finca Plan, Field Schools, Heirs of tradition, and complimentary training. The last two in association with SENA and the second to last also with CIAT. https://www.alqueria.com.co/programa-formacion-campesina https://www.youtube.com/watch?v=jLYV2VbqTvk</p> <p>2. Miraka: Productivity, competitiveness, and sustainability for the Colombian dairy industry. It is a private (Alquería proprietary land) productive reconversion project in 2,300 ha in Puerto Gaitan, Meta, to improve land usage, cattle productivities and decrease GHG emissions. It started in 2012, but the milking process started only until 2016. Alquería aims to achieve in 2025:</p> <table border="1" data-bbox="635 689 1422 840"> <thead> <tr> <th></th> <th>Current metrics</th> <th>Goal for 2025</th> </tr> </thead> <tbody> <tr> <td>Food</td> <td>16 ton/ha/year</td> <td>+30 ton/ha/year</td> </tr> <tr> <td>Burden</td> <td>+3 cows/ha</td> <td>+6 cows/ha</td> </tr> <tr> <td>Production</td> <td>13.2k Lt/ha/year</td> <td>25k Lt/ha/year</td> </tr> </tbody> </table> <p>https://www.youtube.com/watch?v=HTOwc4KutyQ</p>		Current metrics	Goal for 2025	Food	16 ton/ha/year	+30 ton/ha/year	Burden	+3 cows/ha	+6 cows/ha	Production	13.2k Lt/ha/year	25k Lt/ha/year
	Current metrics	Goal for 2025											
Food	16 ton/ha/year	+30 ton/ha/year											
Burden	+3 cows/ha	+6 cows/ha											
Production	13.2k Lt/ha/year	25k Lt/ha/year											
<p>List the name and position of staff assigned to this project</p>	<ul style="list-style-type: none"> ● Ricardo Chirivi - Project Manager ● Juan Camilo Lozano - Agribusiness Manager ● Santiago Cortés Riveros - Sustainability coordinator ● Cesar Augusto Rodríguez - Livestock development specialist ● Alexander Otálvaro Morales - Environmental specialist ● Carolina Olivera - Technical trainer 												

Project Applicant Details & Contact Persons	
<p>Full name of organization</p>	<p>NESTLÉ DE COLOMBIA S.A.</p>
<p>Legal form of entity</p>	<p>Limited company</p>
<p>Full name & position legal representative</p>	<p>Phyllis Gleiser Blufstein Legal representative</p>
<p>Address of the organization</p>	<p>Diagonal 92 # 17A – 42</p>
<p>Name of contact person</p>	<p>Carlos Lozano</p>
<p>Contact details of contact person</p>	<p>Cel 3173821241 Carlos.Lozano1@co.nestle.com</p>
<p>Financial contact person for this Application (responsible for fin. reporting to IDH)</p>	<p>Joselin Parra joselin@parra1@co.nestle.com</p>
<p>Financial auditor of the Applicant and contact details</p>	<p>By Ernst & Young Audit S.A.S.</p>

Main role and responsibilities in the project	Implementation partner
Experience in similar projects and please describe how that experience relates to this proposed project (list maximum of 2 projects, if possible, with a link to websites or an annex where more information is provided)	1. https://www.iadb.org/ ATN/OC-14761-CO - SP/OC-14-05-CO Reconversion for sustainability by milk producers in Caquetá. It is an initiative supported by the Interamerican Development Bank that aims to improve the social and economic prosperity of 100 milk producers in Caquetá. The latter, through the implementation of a model that allows them to have more and better milk. Furthermore, silvopastoral systems' performance can help prevent deforestation by enabling more efficient soil use and encouraging watersheds and native forests.
List the name and position of staff assigned to this project	Norman Díaz – Social coordinator Juan Ortega – Technical trainer

Project Partner 1	
Full name of organization	Yara
Legal form of entity	Yara Colombia S.A.
Full name & position legal representative	Marcelo Francisco Altieri Bequío - SVP Business Unit Latin America
Address of the organization	Mamonal, Km. 11 Cartagena, Bolivar, Colombia Carrera 11 No 94 A – 34. Edificio LG Piso 3 Bogotá
Name of contact person	Miguel Amado Rodriguez – Agronomy Manager
Contact details of contact person	miguel.amado@yara.com Tel: +57 323 4835872
Main role and responsibilities in the project	Lead Yara's implementation and participation teams within the project and follow up on project execution with the stakeholders and steering committees. Yara will support Alquería, Nestlé, and small producers with knowledge, diagnostic tools, and a diverse portfolio of fertilizers to improve the quality of the land, which will enhance the quality of milk. The latter contribution can be quantified as COP\$ 80 million or € 19,400.
Experience in similar projects and please describe how that experience relates to this proposed project (list maximum of w projects, if possible, with a link to websites or an annex where more information is provided)	Yara's experience was on a sustainable project in the coffee sector with Comercializadora global de Café and NORAD. It aims to achieve positive economic, environmental, and social indicators. The project was developed in 2 areas of post-conflict (Cauca and Huila) with an approximate reach of 1,050 coffee growers. It started in 2019 and is projected to close in Q1 2022.
List the name and position of staff assigned to this project	Sergio Henriquez – Agronomy leader. Dilsa Hernandez – Key account manager. Estefania Chaves – Business specialist (Supply chain).

3. Project description and work plan

Please answer the questions below to describe the project. Please formulate your answers in both qualitative and quantitative terms, and be as SMART (Specific, Measurable, Achievable, Realistic, and Time-bound) as possible.

3.1 Project area context

Explain the project area and how it relates to the wider landscape by providing the information requested in the table below.

The project will take place in Cesar, a department with 22,905 km² (2'290,500 ha) and 1'809,792 inhabitants (2.2% of Colombian population). Its economy contributes 2.16% to the national GDP mainly due to the exploitation of open-pit coal mines, which represents 45% of its total output, followed by public administration (14%), hotels & commerce (11%), and agriculture and cattle raising (8%).

Despite agriculture and cattle raising representing only 8% of the entire department's GDP, the production of vegetable-based oils (58%), dairy products (28%), and other food and beverage (5%) make up more than 90% of the total industrial production. Furthermore, 86% of the total population is involved in the production of dairy products (34%), vegetable-based oils (33%), or another food & beverage (19%).

Notwithstanding the agricultural sector crisis caused by climate change, phytosanitary problems, producer indebtedness, and the armed conflict, Cesar is a territory with enormous potential in livestock and agroindustry. The Cesar department is characterized by three differentiated landscape units (evident in figure 1):

1. The first one, belonging to the Caribbean plain's macro-region, comprises large stretches of savanna between 0 and 200 meters above sea level.
2. The second one is composed of Sierra Nevada de Santa Marta's mountainous system, to the north, bordering with the departments of Magdalena and La Guajira. This region rises from 100 to 5,300 meters above sea level, where ecosystems range from dry and tropical humid forests (crossed by cultivation areas and pastures) to the moorland area and snow.
3. The third one, the Serranía del Perijá, is a mountain that belongs to the Andes Mountains, which range between 100 and 3,600 meters above sea level. It borders the North of Santander Department and the Republic of Venezuela. In this area, the annual average temperatures decrease as the terrain rises, from 26 to 12°C, with an average 2,000 mm of rainfalls.

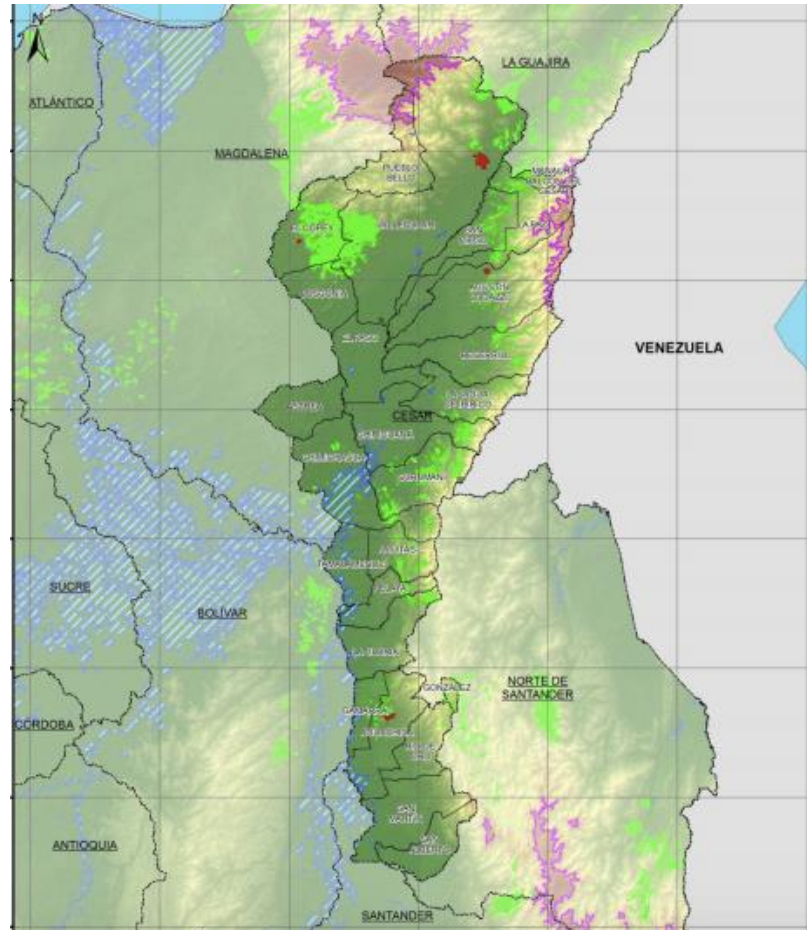
Given the presence of various thermal floors, Cesar department favors developing activities as diverse as livestock and palm farming or growing food such as cocoa, coffee, or fruit trees:

- Ninety-four thousand hectares of palm oil are planted in the department, making Cesar the second most crucial department in the palm oil industry.
- 28,911 hectares of coffee planted in Cesar's territory is another productive system with great potential, benefiting 8,500 families in the department.
- Although only 7,000 hectares of cocoa are planted, cocoa has attracted companies such as the Compañía Nacional de Chocolates.

But livestock is the largest contributor to Cesar's gross domestic agricultural product with more than 50%. More than a million hectares of the department (40% of total land) are destined to livestock with more than 1,500,000 heads of cattle (8% of total national livestock count), becoming one of the essential meats and milk producers in the Colombian Caribbean.

Finally, Cesar experiences significant climate variability. The Colombian Caribbean has experienced periodic episodes of severe climate impacts caused mainly by the effects of both "El Niño" and "La Niña" phenomenon. These events that cause droughts and floods, respectively, increase the risk and vulnerability of any agro-industrial activity performed in the territory.

Figure 1. Map of Strategic Ecosystems (Map)



	Tropical dry forest		Urban settlements
	Wetlands		Moorland

Ecosystems Description

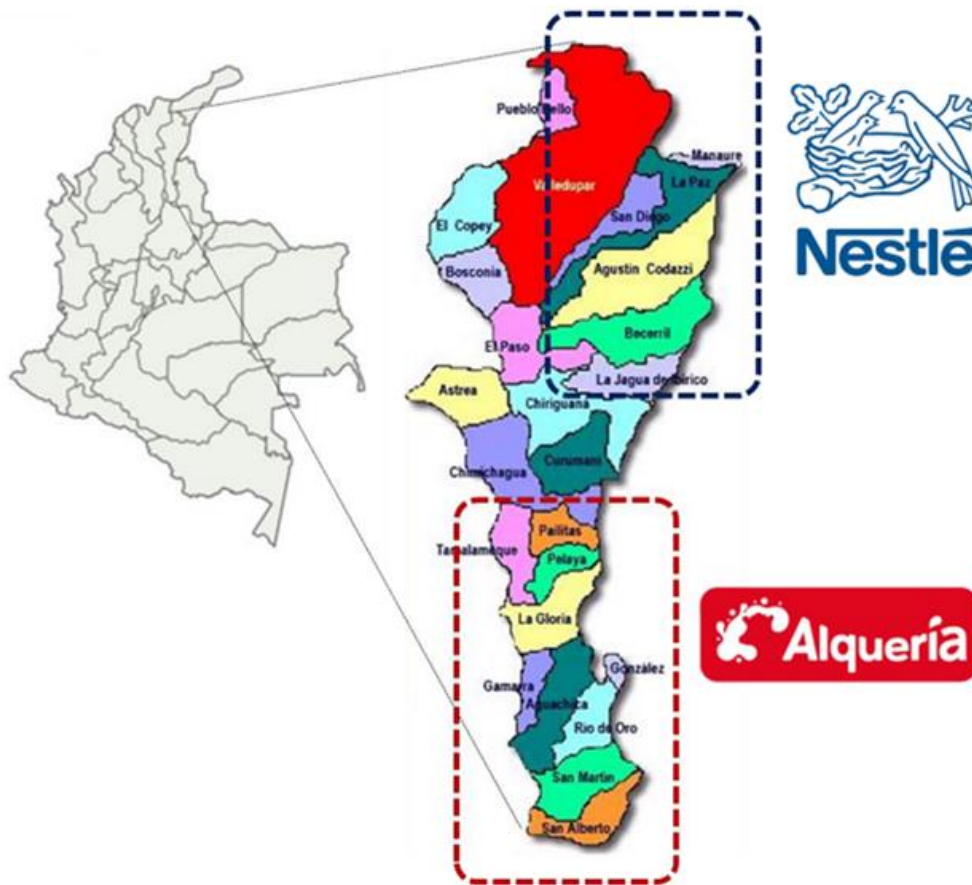
Cesar Department has one of the soils with the most erosion degradation in Colombia.

- 81.9% of the soils are degraded:
- 0.27% is very severely degraded
- 11.6% severely degraded

According to the Agustín Codazzi Geographical Institute (IGAC)

- 63% of the land of Cesar is productive land
- 28% with an agricultural vocation
- 8% with an agroforestry vocation
- 10% with a livestock vocation
- 17% with a forest vocation
- 5% of areas under legal protection
- 32% are priority areas for the conservation (Forest Aguachica)

Figure 2. Map of Alquería and Nestlé sourcing areas – Coverage Natural areas of influence in the purchase of milk



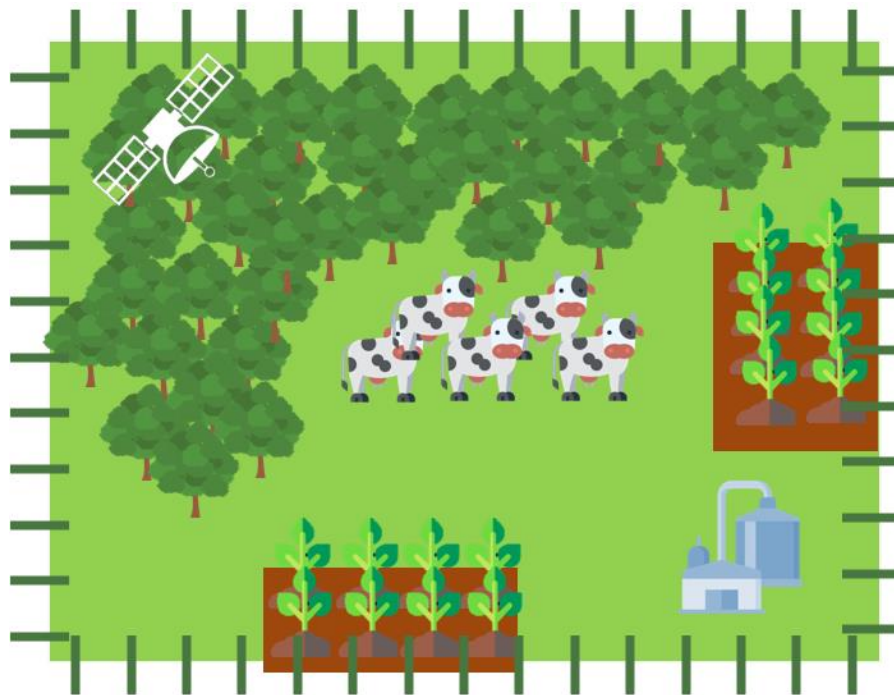
Production and protection land targeted by the project

<Provide information about the land-use and land status in the project area in the table below. Be specific on which areas are directly targeted by the project activities. Delete the examples and add extra rows if needed>:

Size of area (ha)	Land-use/land cover	Legal status	What part of the area is directly targeted by the project? Natural areas of influence in the purchase of milk	Other relevant information
3,000 ha (60 farms X 50 ha)	Pastureland (cattle)	This region's pattern is that the owners have legalized the property and the right to use, not representing any challenge in the required investment.	90% (2,700 ha) - 2,250 ha Alquería: La Gloria; Aguachica; Gamarra; Curumaní; Tamalameque; Chimichagua; Pailitas. - 450 ha Nestlé:	Cesar's annual milk production is around 328 million liters, coming from 15,000 milk producers, most of them small producers with less

		However, it is estimated that 50% (1,500 ha) can have a deed and public instrument registration.	Valledupar; Bethania; San Juan; Becerril Curumaní; N. Granada - Santana.	than 50 cows each. Today, Nestlé works with 500 small cattle ranchers in the north of the department and, Alquería works with 1,900 small cattle ranchers in the south of the department.
300 ha	Secondary forest (degraded)	Forest reserve	100% (300 ha) - reforestation - 250 ha Alquería: La Gloria; Aguachica; Gamarra; Curumaní; Tamalameque; Chimichagua; Pailitas. - 50 ha Nestlé: Valledupar; Bethania; San Juan; Becerril Curumaní; N. Granada - Santana.	
3,000 ha	Tropical dry forest	Forest reserve	100% (3,000 ha) - 2,500 ha Alquería: La Gloria; Aguachica; Gamarra; Curumaní; Tamalameque; Chimichagua; Pailitas. - 500 ha Nestlé: Valledupar; Bethania; San Juan; Becerril Curumaní; N. Granada - Santana.	

Figure 3. Summary of the previous table and Property Distribution



With an average land of 50 ha, each tropical milk cattle raiser will distribute the land as follows:

- 90% (45 ha): Dedicated to milk production
- 10% (5 ha): Solely for reforestation

Importance of project area in wider landscape

Indicate why the project area is important as part of the wider landscape, for example because of ensuring ecological connectivity, protecting major forest areas in the wider landscape, covering a large share of the supply chain, etc.

The need to transform extensive cattle raising systems is explicit in national and local policies. For example, Cesar's Comprehensive Plan for Territorial Climate Change Management (PIGCCT), in the axis of food security and agricultural development, aims that by 2032:

“The department has low carbon agricultural production systems which are adapted to climate change, guaranteeing the growth of the sector and departmental food security, taking into account the productive vocation of its soil and generating positive external effects, for environmental goods and services of the territory.”

The importance of project area on a broader landscape is precisely to contribute to achieving sustainable and inclusive development identified by national and local authorities with a Production, Protection, Inclusion approach, particularly important due to the rich but fragile ecosystem.

1. **Production** - While nowadays, 1'214,145 hectares are dedicated to grazing areas, the Unidad de Planificación Rural Agropecuaria ("UPRA") states only 295,810 hectares are optimal for livestock activity. On the other hand, 192,092 hectares of these optimal areas are used under cattle raising activities with low productivities (2.5liters/day) (IGAC 2012, UPRA 2017). This project aims to position Cesar as a milk producer powerhouse to take advantage of its land potential for agriculture while improving its current productivity at least by four times, by implementing a proven sustainable and productive silvopastoral model that relies on better cattle grazing and better practices to improve these productivities.

2. **Protection** - The project promotes the conservation efforts of the highly threatened tropical dry forest (TdF) that are vital areas for the connectivity between the ecosystems of the Serranía del Perijá, Sierra Nevada de Santa Marta, and the Ciénaga de Zapatosa marshes. The Cesar TdF represents 23% of the national area of these ecosystems. Additionally, 34% of the department is in the Sierra Nevada de Santa Marta biosphere reserve, and 25% is under the protection of forest reserves. However, the TdF is an ecosystem of low representation in the National System of Protected Areas, one its most vulnerable ecosystems. The commitment to protection is further honed by Alquería's and Nestlé's zero deforestation, restoration, and productive reconversion. Silvopastoral systems create a rich and varied habitat that hosts a wide variety of wild birds, invertebrates, and native forest plants, achieving biodiversity, forest conservation, and ecosystem services such as natural pest management, carbon sequestration, water, and soil conservation.

3. **Inclusion** – 34% of the department (+400.000 people) live and participate in the milk cattle raising value chain. Nonetheless, most of them have access neither to the capital resources (credit) nor the technical knowledge or assets to perform a productive reconversion by themselves. Additionally, despite having the property right of use, it is estimated that only 50% of the small cattle raisers can have a deed and registration in public instruments. This project aims to ease the obstacles preventing small cattle raisers from accessing credits, as it also seeks to facilitate the means to scale a sustainable reconversion cattle raising model. This can be achieved mainly through structuring a blended-finance flexible credit line and a continuous accompaniment for knowledge transfer and technical assistance. The project also aims to facilitate land legalization and provide a regularization plan to implement it in the scale-up phase.

3.2 Description of the main issue

Describe the main problem(s) or issue(s) that the project will address. What is the situation today? Include quantitative data related to the issue when possible (e.g. number of farmers or communities, and/or number of ha of land affected by the issue, baseline production and productivity information, etc.).

Colombia has been steadily growing (4.0% each year) and enjoying increased foreign investment. As for the COVID-19 effect, the International Monetary Fund projects a real GDP contraction of 2.4%, which will recover for 2021 with a 3.7% growth.

Despite the favorable conditions, the country still faces significantly interrelated competitiveness, social, and environmental issues that have impeded inclusive and sustainable economic development. Cesar suffers from these barriers that have hindered them, despite its enormous

potential of becoming an agricultural referent in the country, becoming an agroindustry powerhouse. These issues are:

Agricultural lag (Competitivity)

The violence left profound consequences in the countryside, such as abandonment of land due to forced displacement caused by illegal armed groups. As a result, Colombian agriculture has lagged neighboring countries despite its immense potential:

- Over the past decade (2005-2015), the agricultural sector grew at a slower rate than the GDP (3% per year) despite Colombia having 44.5 million hectares of land suitable for cultivation (out of which only 7.13 million ha are used for this purpose) according to the UPRA, a governmental institution in charge of planning the efficient land use for the country. As a result, agricultural activities represented only 6% of the total GDP (2017) despite significant employment absorption. As their contribution to full production is lower, a stagnation in employment is evident, resulting in occupational maintenance from wages. Cesar's situation is similar, where only 36% of the land has adequate uses concerning its natural vocation. Currently, in this department, underutilization amounts to 31%, which in other words, is the land not being used or not dedicated to the land vocation stated by UPRA.

The latter is seen in local communities where even if the land has a vocation for agricultural activities, communities implement extensive livestock using slash and burn practices, wasting the land's potential (UPRA 2017). According to DANE, 83% of producers lack sufficient machinery and infrastructure to produce at competitive prices, which is one explanation for this agricultural lag (2015). Land utilization is destined 59% on average to produce meat and cattle, and 17% to milk production. The remaining land used is for cattle raising, including bulls used for reproductive purposes, and preweaning and replacements calves.

Inequality (Social)

Equal access to productive resources (land) and credit is one of the main challenges that restrain small producers and cattle raisers from participating in world-class sustainable value chains. That represents more than incipient agroindustry (e.g., palm oil) operating value chains do not represent an economical alternative for its inhabitants.

- Productive Resources (Land) - According to the World Bank, Colombia is in the top ten most unequal countries globally in terms of family income. Closely linked to income inequality, and playing an even more central role in Colombia's conflict, is the land concentration problem. As the United States Development Agency (USAID) states, just 0.4% of the population owns 62% of its best land, and Cesar is no different.
- Financial Resources (Credit) - In the last decade, more than 12 million Colombians were linked to the financial system, with which the financial inclusion indicator went from close to 55.5% in 2008 to 81.4% in 2018. Despite these advances, two significant challenges remain. On the one hand, the financial system includes 6.3 million Colombian adults, equivalent to 18.6% of the country's legal age population. Differentiated solutions are required to overcome the barriers that limit access to financial services for specific segments of the population, given the heterogeneity of age, geography, and gender. Regarding access, in Cesar, the indicator of financial inclusion ranged between 88.7% for in the capital city and 55.4% for scattered rural municipalities.

Natural resources destruction and GHG emissions (Social)

This lack of opportunities and competitiveness of agroindustry has led to the unsustainable expansion of agribusiness development, leading to negative environmental consequences. Due to poor paddocks and the unsophisticated, inefficient, extractive, and unsustainable practices, the pressure exerted by farmers and small cattle raisers has led to:

- Negatively impacted ecosystems, resulting in the loss of biodiversity and a threat to the conservation of the tropical dry forest (TdF) and overexploitation and contamination of water resources negatively affects the health of the inhabitants and resource availability and balance of production systems.
- According to IDEAM, deforestation in the Cesar reaches 1,100 ha per year. It is a department characterized by one of the least known but most threatened ecosystems. According to the Alexander von Humboldt Institute, the TdF used to cover more than 9 million hectares, but currently, barely 8% remains since it exists in areas with fertile soils that are intervened. This has increased the net GHG emissions due to the change in land use. Cesar's agricultural sector emits 4.0 M ton CO₂e in GHG, ranking fifth in the country (IDEAM; UNDP, 2016).
- Ecological imbalances that have triggered the region's degradation ecosystem services and raised desertification are causing a decrease in land productivity and profitability, as well as more degradation of meadows and soil compaction that accelerate land desertification affecting grassland growth, moisture retention, infiltration rates, and agricultural and cattle productivities.
- Nonetheless, livestock production systems in Colombia, as well as in Cesar, are characterized by low production efficiency and high soil degradation, one of the largest contributors to GHG emissions (Siavosh et al., 2017).

Finding a profitable, inclusive, and sustainable economic activity that can be performed in rural Cesar and easing the suffering from the cited endemic problems is an opportunity to foster peace and generate economic opportunities while generating conservation and soil restoration. With this project, the competitiveness of small tropical milk cattle raisers in Cesar is expected to increase through prototyping a productive model. This model will increase milk quality and productivity, contributing to producers' adaptation to climatic variability and a positive impact on the environment through improved land management and resource use. Besides the environmental and economic effects, the project also has a significant social component. Small producers' income will increase due to increased productivity and efficiency, reducing producers' vulnerability, and supporting sustainable production systems complementary to their livestock activities. The project will face the void of an unstable job, guarantee access to financial and economic markets, and give the producers the possibility to create a credit history for further credit access.

This project's target population comprises 100 small milk producers that own farms of 30 and 80 hectares of extension and production between 40 and 120 liters per hectare. They are in La Gloria, Aguachica, Gamarra, Curumaní, Tamalameque, Chimichagua, Pailitas, Valledupar, Bethania, and Santana. At a later stage, 800 farmers will be targeted. Small producers in the region are not specialized as a rule in dairy farming, but usually manage meat and milk production systems so, Cesar dairy farming can be considered carefully related to double production purposes. The threat of pressure exerted on the TdF is a common feature in these municipalities, which have high desertification levels, in line with the rest of the department.

Three main aspects ensure the feasibility of the implementation of this project:

- **Proven model** – Alquería and Nestlé have implemented the proposed productive cattle raising technical reconversion in model farms that have achieved the desired productivity, land restoration, and conservation and thus the expected reduction in GHG emissions.

This project is the escalation and improvement of this model farm but with small cattle raisers as beneficiaries.

- **Technical assistance** – Alquería and Nestlé will oversee the knowledge transfer to small cattle raisers to implement and maintain best practices by defining farm-specific reconversion systems.
- **Access to credits**– Nestlé and Alquería will work with financial institutions such as Banco Agrario and Bancolombia to structure tailored-made credit products (leveraged by flexible long-term credits granted by both Nestlé and Alquería) to achieve short term cash-flow stability and long-term financial sustainability. Similarly, it will work with input partners such as Yara, to ensure product quality consistency and achievement of productivities.

3.3 Objectives

Describe the specific objectives for the project, which should be clear, measurable, realistic, and achievable within the duration of the project. This should address the issues described in 3.2.

This project seeks to increase the competitiveness of tropical milk cattle raisers in Cesar, Colombia, by scaling up and improving a sustainable, productive reconversion model that will increase cattle productivity and product quality while promoting resilient agricultural practices that mitigate the excessive pressure exerted on natural resources and the tropical dry forest ecosystem, creating a positive impact on the environment.

The specific objectives that this project aims to achieve are:

1. Strengthen livestock productivity to increase milk production and quality while reducing GHG intensity.
2. Improve systems for small cattle raisers to access financial knowledge, economic markets, and land legalization.
3. Carry out sustainable soil management practices for better land use and GHG capture.
4. Promote the efficient use of resources and waste from livestock farming.
5. Improve systems and methodologies for monitoring greenhouse gas (GHG) emissions and sustainable land-use.

This project and its allies will perform the strategies to create a sustainable cattle process ecosystem:

- Increase animal productivity by increasing its useful life, and implementing efficient techniques, reducing the need to acquire more animals.
- Increase carbon sinks by improving soil forage and reforestation, increasing the absorption of GHG in production processes. The Colombian Strategy for Low Carbon Development (“ECDBC”) supports these findings with research that found that the silvopastoral systems serve as carbon sinks. Additionally, the FONTAGRO project, published by the Inter-American Institute for Cooperation on Agriculture (“IICA”), studied these mitigation strategies and concluded that emissions could be reduced by a more efficient system and capturing carbon in sinks through the conservation of forage and reforestation.
- Improve the feeding program by strengthening animal nutrition quality to reduce livestock methane emission. The latter strategy is supported the FAO’s findings in their publication: “Innovations in meat production with low carbon emissions” (2018).
- Improve manure management by taking advantage of organic waste, improving soil nitrification, and denitrification. The use manure helps to close nutrient cycles, such as nitrogen fixation, and reduce emissions at all production stages, as FAO explains in the paper above mentioned. One of the primary macroelements for fertilizers is nitrogen, found

on manure from cattle. It can be generated by microorganisms during nitrification and denitrification processes in grassland and pasture soils, as IICA states on its FONTAGRO project. That is why, manure management will be divided into two main activities. The first one, will ensure no accumulation of manure, distributing it through the land to fertilize it. The second activity corresponds to a manure management area, with the necessary implements to manage manure properly.

- Increase small cattle raisers' wellbeing and income by creating the necessary conditions to access the required resources (new credit lines linked to long-term offtake agreements and productive resources) to scale the productive reconversion.

This project seeks to carry out a productive reconversion linked to the net reduction of GHG emissions, quality, and productivity improvement. Small cattle raisers do not have the knowledge and incentives to implement best cattle raising practices.

Focus	Challenges / Issues	Specific Objective / Expected Result	Strategies
Productivity	Lack of technical knowledge	<i>Best practices correctly implemented and adopted</i>	Transfer productive knowledge and accompany producers with technical implementation.
Inclusion	Lack of access to financial resources (credit)	<i>Flexible credits disbursed and repaid</i>	Implement systems for small cattle raisers to access to financial markets.
Protection	Unsustainable expansion of the agricultural frontier	<i>Forest, meadows, biodiversity, and ecosystems protected</i>	Increase model and animal productivity by adopting efficient techniques, reducing the need to acquire more animals.
Productivity	Low small producer competitiveness	<i>High-quality milk produced at 6.0 Lt/cow/day</i>	Strengthen livestock productivity to increase milk production and quality while reducing GHG intensity.
Protection	Inefficient land use	<i>Land suitable for cattle raising sustainably exploited under best practices</i>	Implement sustainable soil management practices for better land use.
Inclusion	Lack of access to markets	<i>High-quality zero-deforestation milk sold to Alquería and Nestlé</i>	Execute a capacity building and technical assistance plan.
Inclusion	Lack of access to land regularization instruments	<i>A plan to legalize land in the place</i>	Conduct a baseline evaluation on land status and structure a land legalization plan.
Protection	High GHG emission	<i>Average GHG emission reduced, and absorption increased</i>	Increasing carbon sinks by improving soil forage and reforestation results in an increase in GHG absorption in production processes. Additionally, the

			implementation of monitoring systems.
--	--	--	---------------------------------------

3.4 Concept or approach

Describe and explain the overall concept or approach underpinning the project. Describe the main ideas, models, or assumptions involved.

This project seeks to increase the competitiveness of tropical milk cattle raisers in Cesar by prototyping a sustainable and productive reconversion model. This model will improve cattle productivity and product quality while promoting resilient agricultural practices that mitigate the excessive pressure exerted on natural resources and the TdF ecosystem. To promote the sustainable development of cattle raising activity in the Cesar region through a **Production, Protection, and Inclusion** approach:

- **Production pillar** - Aim to achieve 2,700 ha of tropical milk production (2,250 ha Alquería and 450 ha Nestlé) by scaling a sustainable silvopastoral model that will increase current 2.5 Lt/cow/day productivity to 6.0 Lt/cow/day within the next three years. Yara will support Alquería and Nestlé with knowledge, diagnostic tools, and a diverse portfolio to improve small cattle raisers' productivity and quality. Yara mostly experienced in fertilizers, which is why they are in charge of overseeing how to use them, what are the appropriate amounts, and how often to use them, that is to say, a fertilization plan. All things considered, Yara will ensure product quality, consistency, and productivity, as it is the leading provider for nutritional solutions for crops, with over 100 years in the industry.
- **Protection pillar** - Aim to reforest 300 ha (250 ha Alquería and 50 ha Nestlé) and conserve additional 3,000 ha of tropical dry forest and natural ecosystems surrounding the project (2,500 ha Alquería and 500 ha Nestlé).
- **Inclusion pillar** - Aim to organize 60 families of agriculture farmers (50 families Alquería and 10 families Nestlé) through productive associations by providing them with technical assistance, knowledge transfer, a blended-finance flexible credit line, and a land regularization plan to carry out. These associations will be cooperatives, and all costs regarding education and training of the project, are considered within the budget under the heading of technical assistance.

These are the specific objectives and activities to achieve these goals:

PRODUCTION PILLAR

1. Specific Objective 1: Strengthen livestock productivity to increase milk production and quality while reducing the GHG intensity
 - 1.1. The first product aims to identify the small cattle raisers linked to the project:
 - 1.1.1. Project socialization and selection of beneficiaries
 - 1.1.2. Sustainable production model design
 - 1.1.3. Define on-farm registry application, information capture process, and systematization (baseline survey)
 - 1.1.4. Define an action plan designed for each small cattle raiser
 - 1.1.5. Build a business model for TA and monitoring
 - 1.2. The second product tends to improve production efficiency and sustainability through the following activities:
 - 1.2.1. Establish efficient grazing systems
 - 1.2.2. Install pre-processing milk equipment
 - 1.2.3. Improve rotational grasslands systems

- 1.2.4. Purchase cattle with productive improvements
- 1.3. The third product is to improve cattle feeding:
 - 1.3.1. Include supplements in ruminant diets
 - 1.3.2. Adapt pens and feeding areas
 - 1.3.3. Precise the feeding system

INCLUSION PILLAR

- 2. Specific Objective 2: Improve systems for small cattle raisers to access financial knowledge, economic markets, and land legalization.
 - 2.1. The first product seeks to negotiate flexible lending credit terms with a commercial bank for small producers:
 - 2.1.1. Sign credit agreements with a financial institution
 - 2.1.2. Structure custom credits for the producer
 - 2.2. The second product seeks to apply signed long-term purchasing agreements. This will be done through the following activities:
 - 2.2.1. Communicate purchase prices according to product quality
 - 2.2.2. Select producers who meet minimum requirements
 - 2.3. The third product will strengthen small cattle raiser technical, credit management, and social capacities through the following activities:
 - 2.3.1. Execute a capacity building and technical assistance plan
 - 2.3.2. Accompany cattle raisers in the application of best practices
 - 2.4. The fourth product seeks to address the land legalization problem
 - 2.4.1. Execute a land tenure status baseline measurement
 - 2.4.2. Structure of a land legalization plan

PROTECTION PILLAR

- 3. Specific Objective 3: Carry out systems and methodologies for monitoring greenhouse gas (GHG) emissions and sustainable land-use.
 - 3.1. The first product dates from implementing the Global Livestock Environmental Assessment Model (GLEAM methodology) through the following activities:
 - 3.1.1. Define GHG monitoring methodology (GLEAM)
 - 3.1.2. Calculate the GHG absorption baseline on farms
 - 3.2. The second product consists of applying conservation and GPS monitoring systems through the following activities:
 - 3.2.1. Promote GPS forest monitoring systems
 - 3.2.2. Track GHG emissions and land use improvement

PRODUCTION PILLAR

- 4. Specific Objective 4: Improve the efficient use of resources and waste from livestock farming.
 - 4.1. The product aims to improve manure management through the following activities:
 - 4.1.1. Improve recycling and manure management processes
 - 4.1.2. Build composting zones
 - 4.1.3. Improve biodigesters packages
 - 4.1.4. Improve water provision and regulation ecosystem services

PROTECTION PILLAR

- 5. Specific Objective 5: Improve sustainable soil management practices for better land use and GHG capture.
 - 5.1. The product seeks to carry out carbon sinks through the following activities:

- 5.1.1. Reforest farms and plant live fences (500 ha of new forest)
- 5.1.2. Build a nursery to grow reforestation tree seedlings
- 5.1.3. Improve the forage quality of farms

Technical Feasibility

To achieve productive goals and ensure the project's sustainability, the application will be guided by several technical principles to reach productivity, conservation, and inclusion goals:

- **Rotational grazing system:** necessary to divide the grazing area of the ruminants into smaller sections to optimize the use of the forage resource through shorter and intensive occupation times, compensated by more extended rest periods and, therefore, recovery of the meadow.
- **Livestock water system:** the rotational grazing system has an adjacent component that is: the water supply system since each division of the rotational system must include this vital component for animal welfare.
- **Milking area:** this area is a vital component for animal welfare, as well as a determining factor for the hygienic quality of milk. A covered area should be ideal, with a concrete floor and water availability for cleaning routines, and a quiet environment that contributes to productivity.
- **Animals:** they are the axis of the milking operation. Due to the productive ecosystem of Cesar, animals must have a zebu component in their genetics.
- **Soil and forage:** the ruminant characteristic of bovines determines that the basis of their feeding is forage, understood as grasses and legumes for consumption. Agricultural practices that aim to improve the quality and quantity of biomass offered to animals via forages translate into higher productivity and wellbeing.

Team and execution

Each applicant partner (Alquería and Nestlé) will execute the project resources. For this purpose, each applicant partner will choose a professional team composed of local professionals. The management structure of each, Alquería and Nestlé, will be divided into four areas:

- Project management - Responsible for budget execution and monitoring. They will select and contract the necessary suppliers for the application of the activities. They will also present performance reports to funders and donors (1 Project manager and 1 analyst).
- Technical Support - Responsible for the technical support of the project, including on-farm registry application. They will also be accountable for producing audiovisual and printed material for small producers in group training days (1 technical director and 5 technical trainers).
- Environmental team - Responsible for measuring and updating the baseline of GHG emissions, follow-up on farms, and preparing reports for investors and donors (1 environmental director and 1 environmental specialist).
- Social team - Responsible for financial support to small cattle raisers on personal finance and household finance (credit management, savings, and payment of fees) (1 social director and 1 social worker).

The knowledge management of the project is based on three pillars:

- Technology systems: The field team will use real-time monitoring systems to capture farms' productivity. It will estimate the reduction of GHG emissions by evaluating the evolution of the most critical variables.
- Cohesive community: Social workers and field technicians will have ongoing communication with beneficiaries and define continuous contact points to ensure early identification of risks to scale them up to the management team and fulfill project goals.

- Defined processes: We have defined a 5-step process with control points, and accurate information flows to achieve adequate communication and knowledge management to identify best practices, document them, and improve the project's later stages. These steps are based on the team's and producers' cohesion and the support of technological tools.
 - Prepare: The field team will define the information review points with each producer, and it will characterize the beneficiaries and the baseline through interviews.
 - Capture: The field team will capture information on productivity and activities carried out with real-time monitoring technology support.
 - Analyze: The field team will generate monthly reports fulfilling the project's economic, social, and environmental goals and present them to stakeholders.
 - Share: In previously defined monthly periodic meetings, the PMO team will share the most important findings with Nestlé, Alquería, Yara, and the small cattle raisers.
 - Improve: The PMO team will document best practices and communicate corrections to project application and follow-up processes to their entire team.

Finally, project monitoring will be done in four dimensions:

- Technical monitoring: Together with his team, the technological leader will make periodic visits (at least once a week) to the producers' farms to ensure they are executing correctly.
- Budget monitoring: The PMO analyst and the project leader will be responsible for monitoring budget execution and cash-flow status (monthly).
- Environmental monitoring: Together with his team, the environmental leader will be responsible for monitoring greenhouse gas emissions (monthly) and applying the GLEAM methodology.
- Social monitoring: The social leader will visit the farms once a month and identify small producers' gaps and need, including tracking of credit payments. Additionally, this team will follow closely all expenses and will require invoices to make the follow up of the credit management.

3.5 Work Plan

Develop your project work plan based on the table below. Add the different work packages, the activities that are part of each work package, and the key deliverables or milestones related to the activities in the work package. Show on the timeline when the activities will be implemented and when the deliverables will be delivered. Add or merge rows if needed, for example: add rows for more activities per work package or merge rows in case the deliverable is a result of the combination of 2 or more activities.

Work packages	Activities that are part of the work package	Key deliverables or milestones	Implementation timeline											
			2020	2021				2022				2023		
			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Identify the small cattle raisers linked to the project	Project socialization and selection of beneficiaries	List of beneficiaries	X											
	Sustainable production model design	Production model design	X											

	On-farm registry application - information capture and systematization	Baseline information	X												
	Action plan design for each small cattle raiser	Action plan for project cattle raisers	X												
Improve production efficiency and sustainability	Establish efficient grazing systems	Quality of grazing covers		X	X										
	Install pre-processing milk equipment	Number of installed equipment		X											
	Carry out rotational grasslands systems	Number of implemented rotational grasslands systems		X	X										
	Buy cattle with productive improvements	Milk production (lt/month)		X											
Improve cattle feeding	Include supplements in ruminant diets	Amount of provided supplements		X	X	X	X								
	Adapt pens and feeding areas	Number of pens and feeding areas		X	X										
	Apply a precision feeding system	Number precision feeding systems		X											
Negotiate flexible lending credit terms with a commercial bank	Sign credit agreements with a financial institution	Number of disbursed credits	X												
	Structure custom credits for the producer	Estimated cash-flow for each small cattle raiser	X												
Carry out signed long-term milk purchasing agreements	Communicate purchase prices according to product quality	Price index according to milk quality	X	X	X	X	X	X	X	X	X	X	X	X	X
	Select producers who meet minimum requirements	Number of producers with the minimum requirements	X	X											

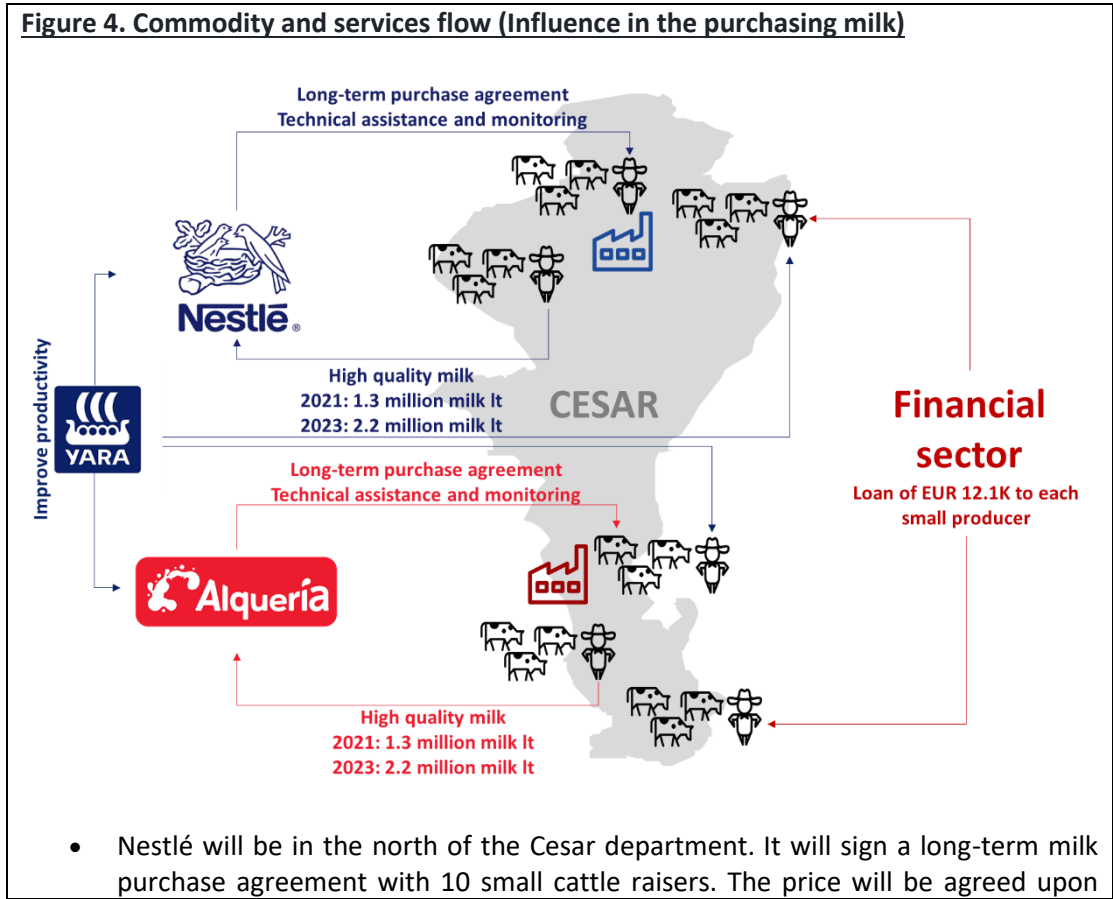
		checked (# jobs)															
Strengthen small cattle raiser technical, credit management, and social capacities	Execute a capacity building and technical assistance plan	Number of provided technical training			X	X	X	X	X	X	X	X	X	X	X	X	X
	Accompany cattle raisers in the application of best practices	Number of trained small cattle raisers			X	X	X	X	X	X	X	X	X	X	X	X	X
Size the land legalization problem	Execute a land tenure status baseline measurement	Land status database	X														
	Structure of a land legalization plan	Land legalization plan				X	X										
Application of the Global Livestock Environmental Assessment Model (GLEAM methodology)	Define GHG monitoring methodology (GLEAM)	Number of farms with GLEAM methodology implemented					X	X									
	Calculate the GHG absorption baseline on farms	An established baseline of GHG absorption				X											
Applying conservation and GPS monitoring systems	Implement GPS forest monitoring systems	Number and location of installed GPS					X	X									
	Track GHG emissions and land use improvement	Absorbed tons of carbon						X	X	X	X	X	X	X	X	X	X
Improve manure management	Implement recycling and manure management processes	Amount of manure (ton)				X	X										
	Build composting zones	Number of composting zones				X											
	Improvement of biodigesters packages	The energy produced by biofertilizer (kW)				X	X										

	Implement water provision and regulation ecosystem services	Number of provision and regulation ecosystem services					X	X						
Carry out carbon sinks	Reforest farms and plant live fences	Number of recovered hectares					X	X						
	Build a nursery to grow reforestation tree seedlings	Number of reforested hectares				X								
	Improve the forage quality of farms	Forage quality: biomass produced and plant cover					X	X						

3.6 Business model and scalability

3.6.1 Commodity and service flows

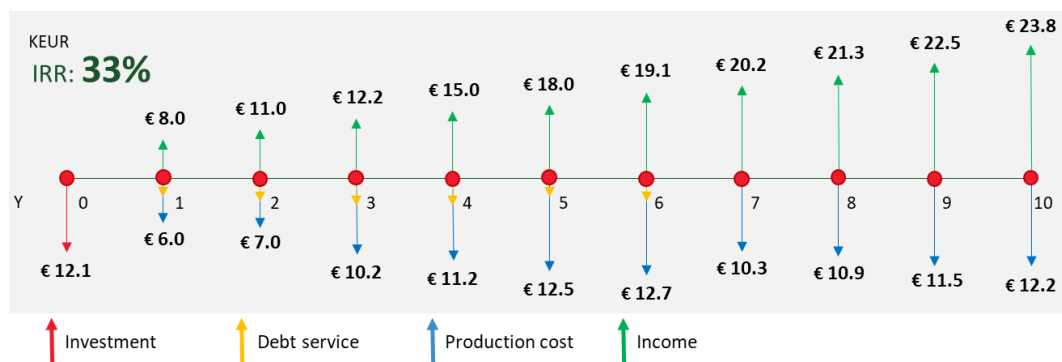
If applicable to the project, draw a diagram of the commodity and service flows in the supply chain related to this project. If possible, also indicate volumes and locations of the different actors in the supply chain. You may add a short description in writing.



depending on milk quality and properties. Nestlé will oversee technical training and project monitoring, and they will contribute with € 92,976 in kind.

- Nestlé's small cattle raisers will provide their labor to apply the productive system in their farms. They will make sure to provide high-quality milk. In 2021 they will achieve a total of 0.26 million milk liters (10 producers * 16 cows * 4.5 lt/cow/day * 365 days). In 2023 they will provide a total production of 0.43 million milk litters (10 producers * 20 cows * 6 lt/cow/day * 365 days). Each of them will pay a loan of € 12,100 to the financial sector under determined fund conditions.
- Alquería will be in the south of the Cesar department. It will sign a long-term milk purchase agreement with 50 small cattle raisers. The price will be agreed upon depending on milk quality and properties. Alquería will oversee technical training and project monitoring, and they will contribute with € 125,000 in kind.
- Alquería's small cattle raisers will provide their labor to apply the productive system in their farms. They will make sure to provide high-quality milk. In 2021 they will achieve a total production of 1.3 million liters (50 produces * 16 cows * 4.5 lt/cow/day * 365 days). In 2023 they will provide a total production of 2.2 million milk litters (50 producers * 20 cows * 6 lt/cow/day * 365 days). Each of them will pay a loan of € 12,100 to the financial sector under determined fund conditions.
- Yara: they will support Alquería, Nestlé, and small producers with knowledge, diagnostic tools, and a diverse portfolio of fertilizers to improve milk productivity and quality. They will contribute with € 19,400 in kind.
- The financial sector (commercial bank) will provide each small cattle rancher with a € 12,100 loan to carry out the productive system in their farms. Without this funding, it would not be possible to carry out the whole project.

Figure 5. Project sustainability



The project sustainability is measured with the small cattle raiser economic performance in profitability and debt payment capacity. To figure this out, we estimate the cash-flow after each small producer's debt payment considering the following:

- Total investment in their farms to carry out the production system corresponds to a commercial credit of € 12,100 under the following conditions: 8 years of amortization, two grace periods, and an interest rate of 12% annually.
- The expenses associated with milk production, the breeding, and raising of males and females' calves.
- The financial charges (amortization and interest).
- Income corresponding to the sale of milk and male calves.

Small producers will increase the family cash-flow by increasing their average income to € 1,000/month in year three through long-term purchase contracts, and a productive system proved to improve productivity by 200%. From year three on, the small producers will increase their average income up to € 2,000/month (year 10) and a net income (after farm costs) of € 900/month. This income improvement allows each producer to fulfill his/her financial commitment.

With this cash-flow, a producer would achieve an IRR of 33.5% after credit payments.

3.6.2 Innovation and Scaling strategy

IDH aims to contribute to scalable interventions/business models. This means an efficient increase of socioeconomic or environmental impact from a small to a large scale of coverage (in terms of people and areas). Describe here the scaling vision and strategy of this project, making use of the guiding questions provided below.

Vision and target

- *What is the appropriate ultimate scale target of the intervention? I.e., how many farmers, workers, areas, hectares, factories, etc. could and should ultimately be reached, not merely by this intervention, but also by follow-on interventions?*

This project is divided into three phases:

1. **Pilot:** Project partners are currently executing a pilot with 65 small cattle raisers in the department of Cesar (Alquería with 15 small cattle raisers and Nestlé with 50 small cattle raisers). This pilot is being carried out with the same work plan except for the production hectares of the small cattle raisers; this project will work with farmers who have an average of 50 productive hectares, while those of this pilot have 15 productive hectares. This pilot seeks to evaluate several of the conditions of the specific context to introduce a technical package of a silvopastoral solution adapted to the department's particular requirements. In this way, the aim is to improve grazing techniques through an evaluation that allows pasture recommendations to be made.
2. **The second phase** This is the phase related to this proposal in which we are scaling the model with 60 (possible 20 more) additional small cattle raisers in 5,000 ha of land (protecting an additional 5,000 ha of TdF) over a 24-month timeframe, and achieve an annual production of 2.9 million liters each year (4.5 Lt/cow/day * 18 milking cows * 100 producers * 365 days).
3. **Third and final phase:** the end goal of project partners is to reach 800 small cattle raisers (Alquería with 600 small cattle raisers and Nestlé with 200 small cattle raisers) in 40,000 ha of land to produce 54.7 million liters each year (7.5 Lt/cow/day * 25 milking cows * 800 producers * 365 days). Nestlé and Alquería will actively seek new credit sources and look for additional blended finance opportunities (flexible and patient capital). Once financial sustainability is proven with this project, other banks will participate as we expect interesting returns.

The idea/innovation/model

- *What is the intervention that is to be scaled up? Is it a new idea(s) or adopted and adapted from prior practice elsewhere?*

This project proposes the creation of new business models from the innovative implementation of methodologies, products, and services that provide long-term solutions in GHG reduction and the effectiveness and competitiveness small producers' livestock businesses. This solution is innovative because it seeks to provide competitiveness, efficiency, and sustainability to the long term in the

livestock processes of the most vulnerable people in the sector. This project is not only focused on providing benefits to small producers, but it is also framed within a strategy that tends to guarantee the access of small producers to financial markets.

This project has four specific methodologies that allow filling gaps present within the livestock practices of small producers:

- **Novel partnerships:** Nestlé and Alquería have formed a private and public partnership working in conjunction with local cattle raiser associations in Cesar (beneficiaries), the Ministry of Agriculture (that has given its endorsement of the project), Yara that guarantees high-quality inputs, commercial banks (e.g., Bancolombia and Banco Agrario) and FAO that has supported with knowledge transfer, methodology, and training. By acting as a liaison and articulator, Alquería and Nestlé encourage the articulation and cooperation between actors for interdisciplinary success.
- **Novel Finance Mechanism:** Scaling the proposed schemes require novel financial mechanisms that are not only tailored to the progressive increase in productivities and thus small producers' income but encourage producers to conserve natural ecosystems and execute best practices. The innovation of the financial mechanism is twofold:
 - Small producers are granted flexible long-term credits composed of commercial sources (given by banks and repaid at relatively low rates).
 - Small producers' cash-flow is improved if conservation goals are met through pay-for-results schemes.
- **Modified technical reconversion:** Alquería and Nestlé will work closely with small producers to transfer knowledge on-site with a general training package adapted to the specific conditions of the Cesar Department's context, but tailored for every small paddock based on soil and specific weather conditions.
- **Novel monitoring system:** Nestlé and Alquería work closely with FAO to adopt their proprietary novel GHG monitoring system (GLEAM method). This methodology provides a framework that encourages conservation by allowing traceability of GHG emissions and monitoring project activity execution. This is the first time in Colombia that this model will be used for cattle raising with small producers.

Altogether, they aim to fill essential gaps in rurality and small producers in Colombia because it manages to provide financial sustainability focused on the environment that benefits small long-term producers.

Project partners experience:

Applicant partners are currently executing a pilot with 65 small cattle raisers in the department of Cesar (Alquería with 15 small cattle raisers and Nestlé with 50 small cattle raisers). This pilot is being carried out with the same work plan.

Before this pilot, applicant partners have been working on other reconversion projects to improve the productivity, competitiveness, and sustainability of small milk producers in other country areas. This experience comes from:

- **Miraka (Alquería):** Productivity, competitiveness, and sustainability for the Colombian dairy industry. It is a private (Alquería led, proprietary land) productive reconversion project in 2,300 ha in Puerto Gaitan, to improve land usage, GHG emissions, and cattle productivities. It started in 2012, and the milking process began in 2016. With this project, Alquería aims to achieve in 2025:
 - Food: +30 ton/ha/year

- Burden: +6 cows/ha
- Production: 25k lt/ha/year
- Livestock reconversion for the sustainability of Caquetá milk producers (Nestlé): it is an initiative supported by the Interamerican Development Bank that aims to improve the social and economic prosperity of 100 milk producers in Caquetá through the application of a model that allows them to have more and better milk. The project has had the following results:
 - One hundred livestock farms have implemented silvopastoral models of production, according to tailor-made action plans.
 - 2,000 hectares intervened with environmental, economic, and social positive results:
 - Environmental: 130,000 planted trees; 824 protected water sources; 2,000 ha of protected forest; 125,000 mt of water network; 102,000 mt of roads for cows; 572 renovated hectares; 71 hectares with mixed forage banks.
 - Economical: a 24.7% increase in milk production per cow, an increase of 107% in burden, a 29% improvement of lt/ha/year, and a decrease of 1.31% in production cost.
 - Social: Improvement in living conditions, generational replacement, 124 direct jobs, and use of technology in the field.

Additionally, the project partner Yara is the leading provider of nutritional solutions for crops, with over 100 years in the industry, supporting farmers' profitability through knowledge, diagnostic tools, and a diverse fertilizers portfolio. Its local and global agronomists' network connects the expertise from more than 60 countries, where the company has its operations to improve crop productivity and quality. In Colombia, Yara has already been working with Nestlé to enhance small milk producers' competitiveness: the Agripreneurship project – Colombia. Up to December 2019, the project achieved:

- Link with current actions in the Fenix Green project
- The creation of KPI's for benchmarking and monitoring the progress of change
- Financial analysis of 6 farms
- The creation of an inventory from pilot farms of feed quantities and qualities
- Workshops on soil, fertilizers, and pasture management
- The best feed diets definition based on needs and forage availability

The enabling conditions

- *What or who are the drivers that are expected to push the scaling-up process ahead?*

The following enabling conditions drive the sustainability of this project.

- **Financial sustainability:** This project is the escalation of a proven productive reconversion model, which project partners have already applied in other areas in the country. Expected productivity improvements in milk production yields coupled with long-term contracts between project partners and small cattle raisers will ensure beneficiaries to earn a sustainable and significant improvement in their cash-flow (expected monthly income of € 1,000 after year 3).
- **Market growth:** As consumers become more conscious of what they are eating, not only they demand products that are nutritious but products that are sustainably sourced. In this project, 100% of the milk will be sustainably sourced under the restoration and zero-deforestation model. This will ensure that the value-added products will be part of an ever-growing market and global trend.

- **Continuous technical assistance:** Lack of technical support is one of the main obstacles to scale productive reconversions. Project partners have devised a full-time social, technological, and environment team that will accompany small cattle raisers to adopt best practices.
- *What barriers must be removed or what spaces must be created to allow the intervention to achieve the desired scale?*
- Technical barrier: the association among banks, the private sector, and livestock sector companies is disruptive. Achieving these sectors to improve sustainability in livestock farming for small producers is a great challenge for the project. Nestlé and Alquería project team members will articulate the multiple actors in the project, making sure there is a unified vision for project execution to foster cooperation among stakeholders to ensure that knowledge reaches the small cattle raiser.
- Social barrier: it is crucial to keep in mind that producers have more or fewer options and knowledge to face the climate change's adverse effects depending on their vulnerability. For example, precarious houses, scarce economic resources, lack of association and technical assistance, climate dependence for production, low educational level, and informal land ownership are conditions in daily life that increase the vulnerability. The more vulnerable producers are, generally, those in rural areas with less access, with few animals and land, less access to financing, and knowledge of sustainable practices to apply efficient but friendly systems to the environment.
- Credit access: a commercial bank chose the first 65 small cattle raisers from the pilot (Alquería with 15 small cattle raisers and Nestlé with 50 small cattle raisers) according to their credit and risk profile. The 100 small cattle raisers' credit risk profile can be different if they do not have a credit history. Thus, they might be rejected after a credit assessment. For this, Nestlé and Alquería will actively seek new sources of credit and look for additional blended finance opportunities (flexible and patient capital). Once financial sustainability is proven with this project, other banks will participate as we expect interesting returns.

3.7 Exit strategy

How will you ensure the achievement of or progress towards the project's outcomes and impact will continue when IDH and other sponsors end their support to the project (at the end of the project timeframe)? Will the project be phased out or phased over (definitions below)? Explain which strategy is chosen and why?

This project will be phased out. It will be self-sustainable once funding face is over:

- Financial sustainability: small producers will increase the family cash-flow by increasing their average income to € 1,000/month in year three through long-term purchase contracts, and a productive system proved to improve productivity by 200%. From year three on, the small producers will increase their average income until € 2,000/month (year 10) and a net income (after farm costs) of € 900/month.

Figure 6. Producer's cash-flow

Producers' cash-flow	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Sales	€ 0.0	€ 8.0	€ 11.0	€ 12.2	€ 15.0	€ 18.0	€ 19.1	€ 20.2	€ 21.3	€ 22.5	€ 23.8
Costs	€ 0.0	€ 4.5	€ 5.5	€ 6.1	€ 7.5	€ 9.1	€ 9.7	€ 10.3	€ 10.9	€ 11.5	€ 12.2

Investments	€ 12.1	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 0.0
=FCF	-€ 12.1	€ 3.5	€ 5.5	€ 6.0	€ 7.6	€ 8.9	€ 9.4	€ 9.9	€ 10.5	€ 11.0	€ 11.6
Debt amortization	€ -	€ -	€ -	-€ 3.0	-€ 3.0	-€ 3.0	-€ 3.0	€ -	€ -	€ -	€ -
Interests	€ -	€ 1.5	€ 1.5	€ 1.1	€ 0.7	€ 0.4	€ -	€ -	€ -	€ -	€ -
= Debt CF	-€ 12.1	€ 2.1	€ 4.1	€ 1.9	€ 3.8	€ 5.5	€ 6.4	€ 9.9	€ 10.5	€ 11.0	€ 11.6

- Institutional sustainability: this project has excellent allies at the national level that allow managing a significant strengthening of efficient practices by small producers, both economically and environmentally.
 - The first phase of this project includes funds for developing TA material scaled to additional producers once this first phase of the project is over.
- Social sustainability: small producers have low productivity and sustainability in their livestock practices, which affects their income and requires constant expansion at the cost of deforestation and loss of strategic ecosystems. Thus, the project tends to guarantee their access to a mixed financing scheme and help them adopt sustainable practices. The project sustainability is evidenced through:
 - Increased trust between public and private actors that participate in the project by establishing purchase contracts between the producer and Alquería and Nestlé (guaranteeing the purchase of the production) and credit agreements between a bank and selected small producers.
 - Increase the income of small producers because of the rise in productivity and efficiency in milk production.
 - Growth in the food security of small producers where they will not only decrease their vulnerability to undetermined prices, but they will also be able to support sustainable, productive agriculture systems complementary to their livestock activities.
- Environmental sustainability: small producers will show that practices that generate higher productivity are implemented under sustainable guidelines that promote the care and protection of the environment. The traceability and measurement system proposed by the project will allow all stakeholders involved to initiate a process aimed at reducing emissions of GHG by understanding the practices that generate higher productivity:
 - Increased motivation of small producers to face livestock production's adverse effects through access to better salary opportunities, financial markets, and training in sustainable practices to reduce GHG production.
 - An increase in animal productivity, improving its efficiency and feeding, reducing the need to acquire large proportions of livestock, and generating lower methane emissions due cattle's enteric fermentation process.
 - Strengthen the efficient use of resources and waste from livestock activity, promote forage quality, silvopastoral models, reforestation, and take advantage of waste organic. These will support a circular economy, contributing to the absorption and reduction of GHG emissions.
- All the above create the conditions to scale the sustainable model to 800 farmers. Three main reasons support the latter and explained why the project is phased out:
 - Invest in the initial TA plan: This initial investment of IDH will create a TA plan that can be replicated with other small producers. Once this plan is developed, the strategies will be ready to be executed with other 800 farmers, the coaches trained, and the entire TA approach established. No further resources will be necessary.

- Invest in traceability information management: The business model will invest in critical projects that are a one-time investment and can be further scaled with little or minimum investment (e.g., traceability software, processes, information management, and more).
- Show the model is feasible: Once this first phase is thriving, and it shows positive economic returns, financial institutions will trust the profitability of the business model and crowd in to support the additional stages.

3.8 Value for money and cost benchmark

Explain how the project is cost efficient in its implementation and fill in the table with key cost metrics of the project.

To make a cost-efficiency analysis of the project, we calculated the producer's cash-flow's internal rate of return (IRR). To figure out this, we considered the following:

- Total investment in farms is to carry out the productive system, corresponding to a commercial credit of € 12,100 under the following conditions: eight years of amortization, two grace periods, and an interest rate of 12% annually.
- The expenses associated with milk production, the breeding, and raising of males and females' calves.
- The financial charges (amortization and interest).
- Income corresponding to the sale of milk and male calves.

Figure 6. Detail producer's cash-flow

Producers' cash-flow	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Sales	€ 0.0	€ 8.0	€ 11.0	€ 12.2	€ 15.0	€ 18.0	€ 19.1	€ 20.2	€ 21.3	€ 22.5	€ 23.8
Milk	€ 0.0	€ 5.7	€ 8.6	€ 9.5	€ 12.2	€ 14.9	€ 15.9	€ 16.9	€ 18.0	€ 19.1	€ 20.3
Male calves	€ 0.0	€ 2.3	€ 2.5	€ 2.6	€ 2.8	€ 3.1	€ 3.1	€ 3.2	€ 3.3	€ 3.4	€ 3.5
Costs	€ 0.0	€ 4.5	€ 5.5	€ 6.1	€ 7.5	€ 9.1	€ 9.7	€ 10.3	€ 10.9	€ 11.5	€ 12.2
Production cost	€ 0.0	€ 3.2	€ 4.1	€ 4.7	€ 5.9	€ 7.4	€ 7.9	€ 8.4	€ 9.0	€ 9.6	€ 10.2
Male breeding cost	€ 0.0	€ 0.6	€ 0.6	€ 0.7	€ 0.7	€ 0.8	€ 0.8	€ 0.8	€ 0.8	€ 0.9	€ 0.9
Female breeding cost	€ 0.0	€ 0.7	€ 0.8	€ 0.8	€ 0.9	€ 0.9	€ 1.0	€ 1.0	€ 1.0	€ 1.0	€ 1.1
Investments	€ 12.1	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 0.0
=FCF	-€ 12.1	€ 3.5	€ 5.5	€ 6.0	€ 7.6	€ 8.9	€ 9.4	€ 9.9	€ 10.5	€ 11.0	€ 11.6
Debt amortization	€ -	€ -	€ -	-€ 3.0	-€ 3.0	-€ 3.0	-€ 3.0	€ -	€ -	€ -	€ -
Interests	€ -	€ 1.5	€ 1.5	€ 1.1	€ 0.7	€ 0.4	€ -	€ -	€ -	€ -	€ -
= DCF	-€ 12.1	€ 2.1	€ 4.1	€ 1.9	€ 3.8	€ 5.5	€ 6.4	€ 9.9	€ 10.5	€ 11.0	€ 11.6

With this cash-flow, a producer would achieve an IRR of 33.5% after credit payments.

Indicator	Amount in euros (€)
Cost of production activities per farmer	€ 12,100
Cost of production activities per hectare	€ 242
Cost of forest (peat) protection activities per hectare	€ 54.68 (monitoring and technical assistance)
Cost of restoration per hectare	€ 41.61 (trees and water resource management)

3.9 Gender

Explain how your project addresses gender by answering the following questions:

- Describe current gender dynamics in the project area/project target group. Think for example about the division of roles, labor, jobs, asset ownerships among groups of farmers, communities, workers.
- What are the risks or unintended consequences of the project activities if the gender dynamics are not addressed by the project?
- What is your strategy to ensure “do no harm” (existing gender relations and dynamics within the scope of the program/project are not negatively influenced or affected) OR “gender transformation” (interventions aimed at transforming the gender dynamics)?

In many cases, women exercise leadership as head and axis of the family, the ownership model that prevails is of a family type. For the development of the productive system's tasks, in general, the whole family's competition is given, without distinction between women and men.

Gender roles are partial and favor certain social groups at the expense of others. For example, rural women face serious obstacles more frequently than men, since traditional structures and perceptions tend to prevent them from obtaining the tools necessary to reach their full potential in the agricultural sector. In fact, despite their high participation and contribution to livestock management, women tend to have limited access to resources, extension services, and less involvement in decision-making compared to their male counterparts (FAO, 2011).

Women and men experience different challenges in accessing, managing and controlling livestock assets. Despite their significant contribution, and role in livestock management, women often face more significant limitations than men. These limitations often prevent women from reaching their full potential within the agricultural sector, including livestock, and therefore compromise the achievement of household food security and overall nutrition.

Thus, this project has the challenge of involving women who can be considered small producers in the livestock business in the department of Cesar. The main jobs performed include milking, fence maintenance, livestock care, and cultivation work.

To generate sustainability with a gender focus, the project will emphasize the empowerment of women in inclusive small production models. This will be achieved by promoting and intervening productive associations to ensure women's participation. Additionally, the project aims to ensure that within families, the credit receivers are also women, allowing financial independence and access to credit. Specifically, the following actions will be taken during each of the activities proposed in the intervention model:

- Producer selection - Nestlé and Alquería will include gender criteria (such as family dynamics) during its selection process to make sure those families that are part of the project respect the equality of gender.
- Credits – Along with credit institutions, Nestlé and Alquería will ensure that not only credit approval and disbursements will be done to both women and men equally, but that all members of the family receive financial training.
- Purchasing agreements – Nestlé and Alquería will ensure that all members of the beneficiary families get to know and understand the long-term purchasing agreements (including rights and benefits). Furthermore, deals will include a clause in which beneficiaries will lose their benefits if gender violence is detected.
- Technical assistance – Nestlé and Alquería on-site team will be reporting not only the achievement of productivity and GHG emission objectives but will be saying if gender violence or discrimination occurs to project leaders and committees.

4. Key performance indicators & monitoring

By filling in the tables below, describe how you will measure achievement of your objectives and results of your activities with key performance indicators.

- Select the relevant KPIs from IDH's Result Measurement Framework (see Annex 1 for an overview) and add additional KPIs that are needed to measure success of the project.
- Please ensure that the KPIs selected are aligned with the objectives (3.3) and deliverables (3.5) describe in section 3 of the proposal.
- Multiple KPIs per objective are possible. Add rows if needed.
- Indicate the data collection method (e.g. survey, field observation, database with training information, etc.) the frequency of data collection (e.g. monthly, quarterly, annually).
- Indicate what means of verification (evidence) will be documented and where possible shared with IDH (e.g. training participant list, surveys, documentation of policy changes, etc.).

ALQUERÍA

Reference to objectives (3.3) or deliverables (3.5)	Key Performance Indicator	Unit of measurement	Project baseline value at the start of the project	Project target value at the end of the project	Data collection method & frequency	Means of verification/evidence
Outcomes						
Strengthen livestock productivity to increase milk production and quality while reducing the GHG intensity	The volume of sustainably produced production	milk lt/day	2.5	6.0	Farms database with information about milk production (monthly)	Milk purchase (bills)
	Gross familiar income	EUR/month	€ 218	€ 502	Alquería and Nestlé milk purchase database, and surveys (quarterly)	Milk purchase (bills)
	Farm income (COP/year)	EUR/year	TBD	TBD	Alquería and Nestlé milk purchase database, and surveys (annually)	Milk purchase (bills)
Improve systems for small cattle raisers to access to financial,	Disbursed credits	EUR/customer	0	€ 12,100	Survey (one time)	Commercial bank database
	Credit customers	# customers	0	50	Survey (one time)	Commercial bank database

knowledge, and economic markets	Financial training	# trained producers	0	50	Database with training information (quarterly)	Training participant list
Carry out systems and methodologies for monitoring greenhouse gas (GHG) emissions and sustainable land-use.	Hectares where sustainable production interventions are implemented	Ha	0	2,250	Field observation (quarterly)	GLEAM methodology documents
	Co2 ton eq.	Ton	TBD	TBD	Field observation (quarterly)	GLEAM methodology documents
Promote the efficient use of resources and waste from livestock farming.	Rehabilitated area	Ha	0	2,250	Field observation (quarterly)	
Carry out sustainable soil management practices for better land use and GHG capture	Reforested area	Ha	0	250	Field observation (quarterly)	Inventory of planted trees
Output						
Identify the small cattle raisers linked to the project	Production model design	# of implementation plans	0	50	Database with implementation plans	Design of implementation plan for each producer
Improve production efficiency and sustainability	# of producers trained on critical subjects for sustainable production, environmental and social sustainability (male/female)	# producers (M/F)	0	30 men 20 women	Surveys (one time)	Surveys
Improve cattle feeding	Number of pens and feeding areas	# of pens and feeding areas	0	50	Field observation (one time)	Photos and surveys
Negotiate flexible lending credit terms with a commercial bank	Estimated cash-flow for each small cattle raiser	# of cash-flows	0	50	Financial planning consulting (one time)	Bank database with estimated cash-flow

Structure signed long-term milk purchasing agreements	Number of signed long-term agreements	# agreements	0	50	Alquería suppliers' database (one time)	List of suppliers with signed contracts
Strengthen small cattle raiser technical, credit management, and social capacities	Business cases developed within the IDH program to show the potential of sustainable practices	# narrative (M/F)	0	30 men 20 women	Field interviews (quarterly)	Videos
Size the land legalization problem	Land legalization status (% with a deed/public instrument)	% of total intervened ha	TBD	TBD	Field observation (one time)	Land status database
Apply the Global Livestock Environmental Assessment Model (GLEAM methodology)	Co2 ton eq.	ton	TBD	TBD	Field observation (quarterly)	GLEAM methodology documents
Apply conservation and gas monitoring systems	Number of producers under the monitoring systems	# of producers	0	50	Field observation (one time)	GPS inventory (graphic material)
Improve manure management	Number of composting zones	# composting zones	0	50	Field observation (one time)	Photos and surveys
Carry out carbon sinks	Biomass produced and plant cover	ton	0	TBD	Compost zones production (monthly)	Compost zones production reports

NESTLÉ

Reference to objectives (3.3) or deliverables (3.5)	Key Performance Indicator	Unit of measurement	Project baseline value at the start of the project	Project target value at the end of the project	Data collection method & frequency	Means of verification/evidence
Outcomes						
Strengthen livestock productivity to increase milk production and	The volume of sustainably produced production	milk lt/day	2.5	6.0	Farms database with information about milk production (monthly)	Milk purchase (bills)
	Gross familiar income	EUR/month	€ 218	€ 502	Alquería and Nestlé milk purchase database, and surveys (quarterly)	Milk purchase (bills)

quality while reducing the GHG intensity	Farm income (COP/year)	EUR/year	TBD	TBD	Alquería and Nestlé milk purchase database, and surveys (annually)	Milk purchase (bills)
Improve systems for small cattle raisers to access to financial, knowledge, and economic markets	Disbursed credits	EUR/customer	0	€ 12,100	Survey (one time)	Commercial bank database
	Credit customers	# customers	0	10	Survey (one time)	Commercial bank database
	Financial training	# trained producers	0	10	Database with training information (quarterly)	Training participant list
Carry out systems and methodologies for monitoring greenhouse gas (GHG) emissions and sustainable land-use.	Hectares where sustainable production interventions are implemented	Ha	0	450	Field observation (quarterly)	GLEAM methodology documents
	Co2 ton eq.	Ton	TBD	TBD	Field observation (quarterly)	GLEAM methodology documents
Promote the efficient use of resources and waste from livestock farming.	Rehabilitated area	Ha	0	450	Field observation (quarterly)	
Carry out sustainable soil management practices for better land use and GHG capture	Reforested area	Ha	0	50	Field observation (quarterly)	Inventory of planted trees
Output						
Identify the small cattle raisers linked to the project	Production model design	# of implementation plans	0	10	Database with implementation plans	Design of implementation plan for each producer
Improve production efficiency and sustainability	# of producers trained on critical subjects for sustainable production, environmental and social sustainability (male/female)	# producers (M/F)	0	7 men 3 women	Surveys (one time)	Surveys

Improve cattle feeding	Number of pens and feeding areas	# of pens and feeding areas	0	10	Field observation (one time)	Photos and surveys
Negotiate flexible lending credit terms with a commercial bank	Estimated cash-flow for each small cattle raiser	# of cash-flows	0	10	Financial planning consulting (one time)	Bank database with estimated cash-flow
Structure signed long-term milk purchasing agreements	Number of signed long-term agreements	# agreements	0	10	Nestlé suppliers' database (one time)	List of suppliers with signed contracts
Strengthen small cattle raiser technical, credit management, and social capacities	Business cases developed within the IDH program to show the potential of sustainable practices	# narrative (M/F)	0	7 men 3 women	Field interviews (quarterly)	Videos
Size the land legalization problem	Land legalization status (% with a deed/public instrument)	% of total intervened ha	TBD	TBD	Field observation (one time)	Land status database
Apply the Global Livestock Environmental Assessment Model (GLEAM methodology)	Co2 ton eq.	ton	TBD	TBD	Field observation (quarterly)	GLEAM methodology documents
Apply conservation and gas monitoring systems	Number of producers under the monitoring systems	# of producers	0	10	Field observation (one time)	GPS inventory (graphic material)
Improve manure management	Number of composting zones	# composting zones	0	10	Field observation (one time)	Photos and surveys
Carry out carbon sinks	Biomass produced and plant cover	ton	0	TBD	Compost zones production (monthly)	Compost zones production reports

*TBD = To be defined. This will be defined in the baseline survey.

5. Project budget and contributions

5.1 Project budget

Develop a project budget by filling in the “Project Budget template” provided and attach it to the proposal.

Annex1 ProjectBudget IDH

Summary

Total Budget						
IDH	Alquería	Nestlé	Yara	Credit	Cattle raisers investment - Direct Costs of Production	Total
\$ 270.620	\$ 147.469	\$ 92.976	\$ 13.197	\$ 726.773	\$ 236.962	\$ 1.487.997

Alquería’s budget:

No	Activities	Total Budget					
		IDH	Alquería	Yara	Credit	Small cattle raisers	Total
1	Identify the small cattle raisers linked to the project	€ 9,632	€ 17,835	€ 6,652	€ -	€ -	€ 34,119
2	Improve production efficiency and sustainability	€ 2,375	€ 1,599	€ 605	€ 190,902	€ 34,469	€ 229,711
3	Improve cattle feeding	€ 62,849	€ 1,599	€ -	€ 110,305	€ 34,229	€ 208,982
4	Negotiate flexible lending credit terms with a commercial bank	€ 2,375	€ 1,465	€ -	€ -	€ -	€ 3,840
5	Structure signed long-term milk purchasing agreements	€ 2,375	€ 1,465	€ -	€ -	€ -	€ 3,840
6	Strengthen small cattle raiser technical, credit management, and social capacities	€ 43,497	€ 86,665	€ 2,419	€ -	€ -	€ 132,581
7	Size the land legalization problem	€ 2,375	€ 1,465	€ -	€ -	€ -	€ 3,840

8	Apply the Global Livestock Environmental Assessment Model	€ 2,375	€ 1,599	€ -	€ -	€ 34,229	€ 38,203
9	Apply conservation and GPS monitoring systems	€ 2,375	€ 14,904	€ -	€ -	€ 34,229	€ 51,507
10	Improve manure management	€ 2,375	€ 1,599	€ -	€ 52,830	€ 34,229	€ 91,033
11	Carry out carbon sinks	€ 45,916	€ 1,599	€ -	€ 250,943	€ 34,229	€ 332,688
12	Overheads	€ 15,225	€ 15,675	€ -	€ -	€ -	€ 30,900
Total		€ 193,745	€ 147,469	€ 9,676	€ 604,981	€ 205,612	€ 1,161,482

Nestlé's budget:

No	Activities	Total Budget					
		IDH €	Nestlé €	Yara €	Credit €	Small cattle raisers €	Total €
1	Identify the small cattle raisers linked to the project	8.642	43.606	2.130			54.379
2	Improve production efficiency and sustainability	1.385	2.969	121	32.155	5.225	41.855
3	Improve cattle feeding	40.573	2.969		28.108	5.225	76.875
4	Negotiate flexible lending credit terms with a commercial bank	1.385	2.969				4.354
5	Structure signed long-term milk purchasing agreements	1.385	2.969				4.354
6	Strengthen small cattle raiser technical, credit management, and social capacities	1.998	6.009	1.270			9.277

7	Size the land legalization problem	1.385	2.969				4.354
8	Apply the Global Livestock Environmental Assessment Model	1.385	2.969			5.225	9.579
9	Apply conservation and GPS monitoring systems	1.385	3.936			5.225	10.547
10	Improve manure management	1.385	2.969		13.856	5.225	23.435
11	Carry out carbon sinks	5.740	2.969		47.673	5.225	61.606
12	Overheads	10.225	15.675				30.900
Total		76.876	92.976	3.521	121.792	31.350	331.515

5.2 Fixed assets

In principle, IDH does not co-fund fixed assets. The only exceptions are fixed assets that are (part of) infrastructure for environmental protection, when these are an integral part of the project (e.g. fences, water-saving irrigation equipment, waste collection containers).

If your project budget includes investments in these types of fixed assets, please add the following information:

- *Describe how the ownership of the assets will be legally arranged for the economic lifetime of the assets.*

Each small cattle raiser will be the owner of the assets applied in their farms, as they will be financed with a commercial credit that each producer will have to pay.

- *Describe the operation and maintenance requirements of the assets during their economic lifetime (activities, timing), quantify the costs required to perform operation and maintenance, and indicate how these costs will be financed (only applicable to assets with an economic lifetime longer than the project duration).*

The investment in fixed assets will be financed with agricultural credits from the financial sector. In the case of each farm, the investment needs will be determined according to their development.

- *Quantify the cash flow generated during the economic lifetime of the asset (if applicable).*

The cash-flow generated during the lifetime of the assets is defined in section 3.8. It is essential to highlight that this cash-flow is not only caused by the assets but also by the whole project implementation. Investments are crucial to achieving the project objectives.

- Describe what national and international rules apply to the investment in the fixed assets. For example, whether an Environmental and Social Impact Assessment is required, what specific permits need to be obtained for installing the assets (if applicable).

They do not apply; each producer can decide whether they want to invest in their farm; there are no restrictions regarding the acquisition or use of the program's assets. What will be controlled is that there is no additional damage to each farm ecosystem.

6. Risk and risk mitigation

Fill in the table below for the main risks or challenges to the successful implementation of the project. Also indicate what you will do to mitigate the risks.

Risk <u>cause</u> (what might happen) and risk <u>consequence</u> (what would be the result)	Risk probability	Potential impact	Mitigation measures
Preventable Risks (arising from within)			
Despite the benefits, small producers default on their credit, which may decrease the project's sustainability.	Medium	Medium	Technical assistance and financial education. Long-term milk purchase agreements (15 years) with small producers to buy 100% of the volume of milk produced on their farms.
Demotivation of small producers because they perceive poor communication on the part of project allies.	Medium	Medium	Communication activities, constant workshops.
Rural women face serious obstacles more often than men since traditional structures and perceptions tend to prevent them from obtaining the tools necessary to reach their full potential in the agricultural sector. It is a risk not to make them visible as contributors on issues of household income.	Medium	Medium	Financial education.
Strategy Risks (taken for innovative and strategic returns)			

Producers do not adhere to the project because no perceive benefits or due to a lack of constancy.	Medium	High	Project socialization. Long-term purchase agreements.
External Risks (uncontrollable)			
Intense climatic events that may undermine the ecosystem security.	Low	Medium	Parametric Insurance.
Producers do not get their commercial credit after a credit assessment.	Medium	High	Find producers with credit history, with clear land tenure. Long-term purchase agreements.

Annex 2: IDH Result Measurement Framework – Key Performance Indicators

Key Performance Indicator	Unit of measurement	Gender segregation
Output Indicators		
Market share by program (project) partners	%	
Business cases developed within the IDH program to show the potential of sustainable practices	# + narrative	
# of producers/ workers/ community members trained on crucial subjects for sustainable production, environmental and social sustainability (male/female)	#	M/F
# of producers/ workers/ community enterprises reached by service delivery (male/female)	#	M/F
Input services (planting material, fertilizer, crop protection products and more)	#	
Financial services (inputs on credit, cash advances, pre-harvest finance)	#	
Value-adding services (e.g., mechanization, processing, storage)	#	
# of smallholder producers organized/aggregated by the program (male/female)	#	M/F
# of trainers, auditors, and/or government staff trained in the program (male/female)	#	M/F

Volume of sustainably produced production	MT	
# of developed infrastructure facilities	#	
Protection and conservation infrastructure <name>	#	
Water infrastructure and devices <name>	#	
Waste management infrastructure <name>	#	
Production and/or restoration infrastructure <name>	#	
Outcome Indicators		
Sustainability embedded at the corporate level	narrative	
Uptake rate of sustainable production by program partners	%	
Development of and compliance with voluntary and legal standards on sustainable commodity production	narrative + %	
Landscape plans developed and operationalized	# + narrative	
Changes at policy and regulatory level contributing to increased sustainability of commodity production and improved management of natural resources	narrative	
Adoption rate by producers/ workers/community members of improved practices	%	M/F
Farmland area where trained practices are applied	ha	
# of hectares where protection and restoration interventions are implemented	ha	
Protection	ha	
Conservation	ha	
Rehabilitation	ha	
Restoration	ha	
Avoided deforestation	ha	
(Illegal) deforestation rate <change to definition>	%	
# of hectares where sustainable production/ farm rehabilitation/ sustainable intensification interventions are implemented	ha	
Area (ha) under improved land tenure arrangements (smallholders or communities with a better owner or user rights OR official protection status for forest/peatland)	#	

