



ADAPTATION FUND

ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: **EDA - Regular-sized Project Concept**
LARGE INNOVATION PROJECT

Country/Region: Chile
Project Title: Rainfed farming communities in central Chile develop resilient processes to climate change with the implementation of innovative technological strategies adapted to improve food safety
Thematic Focal Area: Multisector Project
Implementing Entity: AGCID
Executing Entities: Ministry of Agriculture
AF Project ID:
IE Project ID: **Requested Financing from Adaptation Fund (US Dollars): 5,000,000**
Reviewer and contact person: Ishani Debnath **Co-reviewer(s):** Farayi Madziwa
IE Contact Person: Marco Ibarra

Technical Summary

The EDA project “Rainfed farming communities in central Chile develop resilient processes to climate change with the implementation of innovative technological strategies adapted to improve food safety” aims to incorporate technological tools and development of resilience skills to promote adaptation to climate change for the conservation and improvement of local productive resources in farming communities, in order to install a resilient production model that protects and sustains agroecosystems, allowing food security.

Project/Programme Background and Context:

Component 1: Improve the resilience of farming communities to the effects of climate variability and climate change on their production systems to promote food security. (USD 3,920,000.00)

Component 2: Implement an agroclimatic risk information system to promote farmers' adaptation and resilience to climate change. (USD 500,000.00)

Component 3: Community environmental education of local civil society and rural schools for climate change adaptation (USD 80,000.00).

	<p><u>Requested financing overview:</u> Project/Programme Execution Cost: USD 250,000.00 Total Project/Programme Cost: USD 4,750,000.00 Implementing Fee: USD 250,000.00 Financing Requested: USD 5,000,000.00</p> <p>The proposal includes a request for a project formulation grant of USD 50,000.</p> <p>The initial technical review raises a fundamental issue regarding the relevance of the proposal for eligibility under the EDA window and inconsistencies with the EDA approach and requirements make it impossible to review the project following review criteria for EDA projects as is discussed in the Corrective Action Request (CAR) raised in the review.</p>
Date:	3 September 2022

Review Criteria	Questions	Comments
Country Eligibility	1. Is the country party to the Kyoto Protocol?	Yes
	2. Is the country a developing country particularly vulnerable to the adverse effects of climate change?	Yes. The temperate ecosystems of Chile and the population who live in the Northwest part of the Maule region are highly vulnerable to the climate change, particularly to water scarcity and soil erosion, threats to the communities' productive systems linked to agriculture and livestock. (Pages 2-4)
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	Yes , as seen in the LoE signed Aug 1, 2022
	2. Does the length of the proposal amount to no more than Fifty pages for the project/programme concept, including its annexes?	Yes. The proposal is 48 pages.
	3. Does the project / programme support concrete adaptation actions to assist the country in	Not cleared.

	<p>addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?</p>	<p>This project appears to focus on innovation without meeting the criteria for EDA. The main focus of the project is to pilot 4 demonstration fields farming through application of innovative technology and techniques in the farming of legumes, cereals, vegetables, small livestock, and poultry. As such, this proposal cannot be considered under the EDA funding window as it does not in any way address the fundamental criteria for eligibility under EDA.</p> <p>CAR1: Please consider revising and re-submitting the proposal. One option is to consider submitting this proposal for funding under the Large Innovation Projects Funding Window using the relevant proposal template and following the relevant guidelines for the requested grant size.</p> <p>Response CAR1: The Project now is submitted in the character of Large Innovation Projects, changing the application form from EDA to Large Innovation Projects form.</p> <p>Since this is a new application form, a control change document is not attached; however, the information contained in this new form comes from the rejected EDA form. In addition, paragraph numbering has been added to the text for better tracking of the supplemented information and a quicker search of the responses to the CARs and CRs.</p>
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		<p>Furthermore, this proposal contains elements that do not constitute concrete adaptation action and are not currently eligible under any of the Fund's project/programme funding windows. Assessments, feasibility studies and plans, such as those under Output 2.1.1 should be completed in the course of project preparation, not during the implementation.</p> <p>CAR 2: Please modify the proposal so as to remove the ineligible elements.</p> <p>Response CAR2: The strengthening of the network of automatic weather stations (EMAS) considered in Output 2.1.1 represents an important process innovation for the improvement of information management and knowledge of farmers and local technicians, a necessary element for farmers' decision making in the face of the effects of climate variability (page 19, Expected Outcomes column, Output 2.1.1).</p>
	4. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	<p>Not cleared.</p> <p>Although the proposal appears to provide economic, social and environmental benefits, it is not clear that it would be mitigating negative impacts, in compliance with the ESP and GP of the Fund. Please see the CAR 6 below.</p>

		<p>Response: The clarification and additions are contained in the new form on page 34, paragraphs 117 to 124, tables 2 and 3.</p>
	5. Is the project / programme cost effective?	<p>Not cleared.</p> <p>The reasoning provided amounts to using the grant funding as a direct subsidy without actually examining different options for the use of funding. In addition to cost-effectiveness, the reasoning provided raises question regarding sustainability.</p> <p>CAR 3: Please provide a cost effectiveness reasoning with a logical explanation of the selected scope and approach. The cost effectiveness should also be demonstrated from a sustainability point of view.</p> <p>Response CAR3: A new reasoning and rationale on project profitability is added (page 37, new paragraphs 129).</p>
	6. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments?	<p>Not cleared.</p> <p>It is not clear how the proposed project contributes to or is consistent with the national/sub-national strategies, plans, programs of actions etc.</p> <p>CR 1: Please demonstrate clearly and specifically the alignment of the proposed interventions with the key adaptation-relevant policy instruments.</p> <p>Response CR1: The scope of the proposal and consistency with national and international policies</p>

		on environmental sustainability and climate change are added in more detail. The paragraphs of the previous form are replaced by new paragraphs and complemented with new information (page n°38, new paragraphs n°131 al 135, 137, 140 al 143)
	7. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund?	<p>Not cleared.</p> <p>The proposal states that the activities have been designed so that they do not meet the threshold at which technical standards apply. Moreover, the proposal states that there is no risk of any adverse environmental or social impacts and is therefore Category C project. Considering the size of investments in Component 1, these statements have not been adequately supported by justifications.</p> <p>CAR 4: Please revise the proposal, considering also CAR 6 on ESP and GP below, reconsidering the risks and categorization of the project.</p> <p>Response CAR4. It is reaffirmed that this is a Category C Project and will not cause negative impacts according to the AF's Environmental and Social Policy, the design of the proposal has not considered actions that could cause negative impacts to the territory because the principles of the ESP and GP of the AF have been taken into account with great certainty and the Chilean laws in force have also been considered. This statement is justified by complementing the information on page 41 of the new form, supplementary paragraphs 149 and 150).</p>
	8. Is there duplication of project / programme with other funding sources?	Cleared.

		The proposal states that there is no duplication of project/programme with other funding sources on p. 38.
	9. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	<p>Cleared.</p> <p>The learning component will rely heavily on learning by doing and learning by observation, which will include guided visits to demonstration sites by 1,000 farmers. The knowledge management component will include a GIS platform, a regional agrometeorological observatory and a documentary library of technologies developed in previous experiences in this area in neighbouring regions. This is adequate for concept stage, but by fully developed project stage, more details should be provided on how project information will be managed and turned into knowledge and shared.</p> <p>Response: Although this item did not present any comments, it has been complemented with new methodological information (page 42, paragraphs 146 to 157).</p>
	10. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	<p>Not clear.</p> <p>It seems that farmers were not consulted and there is no evidence of gender considerations in the consultations.</p> <p>CR 2: Please clarify on the above. Additional consultations may need to be carried out.</p> <p>Response CR2: In the design of the proposal, no detailed consultation with the population has been carried out; however, these consultation activities</p>

		are considered in the design stage of the complete project, specifically in the Work Plan of the subsidy application to develop the complete project. Information about this was added on page 44, paragraph 166.
	11. Is the requested financing justified on the basis of full cost of adaptation reasoning?	<p>Not clear.</p> <p>CAR 5: Please refer to the guidance on preparing this section.</p> <p>Response CAR 5: For the preparation of the proposal have been considered the guide for the preparation of the section, the reasoning of the profitability of the project is based on the alternative cost of inaction; therefore the project implements concrete actions for adaptation to climate change and climate variability in these 4 communes, for this reason the project is highly profitable and with the implementation arrangements that will be made the project will ensure economic and social sustainability.</p>
	12. Is the project / program aligned with AF's results framework?	<p>Cleared.</p> <p>The project is broadly aligned with AF's results framework.</p>

	<p>13. Has the sustainability of the project/programme outcomes been taken into account when designing the project?</p>	<p>Not cleared.</p> <p>The proposal discusses sustainability. However, the logic is not clear or complete. While the proposal refers to an aim “to generate a social model of ecosystem protection that, through the local articulation of public and private resources plus the active participation of the community population, can establish a technological model with roots in local society” as to ensure sustainability, the proposal does not fully describe how this would be done. For example, which private resources are expected to be made available? What would be the approach to ensuring sustainability of the proposed investments (for example the capital)?</p> <p>CR 3: Please clarify the sustainability rationale for the project.</p> <p>Response CR3: The objective of the statement has been delimited, changing the ecosystem level to the level of productive agroecosystems, with special emphasis on the capacities installed in the inhabitants of the territory to give social and cultural sustainability to the activities that the project will implement. The initial paragraph containing the statement "to generate a social model of ecosystem protection that, through the local articulation of public and private resources plus the active participation of the community population, can establish a technological model with roots in local society" from the original EDA form has been eliminated. The justification of this review question has also been further developed and more justifications have been added (page 46, new paragraph 174).</p>
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	14. Does the project / programme provide an overview of environmental and social impacts / risks identified, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	<p>Not cleared.</p> <p>The proposal includes an incomplete overview of environmental and social impacts and risks considering agricultural activities, and small farm animals and poultry production, which, depending on scale and other factors, can affect land and soil quality and cause pollution. Furthermore, the proposal includes no overview or clarification of potential risks and impacts, i.e. a brief description of the reasoning.</p> <p>CAR 6: This section requires thorough revision.</p> <p>Response CAR6: This section has been further developed to justify the non-conformity of the review by adding complementary information in new paragraphs of the new form (page 48, new paragraphs 185 to 191).</p>
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	<p>Not cleared.</p> <p>At USD 5 million, the amount requested is within the cap of the country. However, please see CAR 1.</p> <p>Response: It has been clarified that the requested funding is within the limits allowed for the country.</p>
	2. Is the Implementing Entity Management Fee at or below 10 per cent of the total project/programme budget before the fee?	<p>Not cleared.</p> <p>The IE fee stands at 5%. However, please see CAR 1.</p> <p>Response: It had been clarified that the requested IE percentage is within the allowable limits for the type of financing requested.</p>

	3. Are the Project/Programme Execution Costs at or below 12 per cent of the total project/programme budget (including the fee)?	<p>Not cleared.</p> <p>The EC stand at 5.26%. However, please see CAR 1.</p> <p>Response: It had been clarified that the requested IE percentage is within the allowable limits for the type of financing requested.</p>
Eligibility of IE	1. Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?	Yes , AGCID is accredited with the Adaptation Fund.
Implementation Arrangements	1. Is there adequate arrangement for project / programme management, in compliance with the Gender Policy of the Fund?	n/a at concept stage
	2. Are there measures for financial and project/programme risk management?	n/a at concept stage
	3. Are there measures in place for the management of for environmental and social risks, in line with the Environmental and Social Policy and Gender Policy of the Fund?	n/a at concept stage
	4. Is a budget on the Implementing Entity Management Fee use included?	n/a at concept stage
	5. Is an explanation and a breakdown of the execution costs included?	n/a at concept stage
	6. Is a detailed budget including budget notes included?	n/a at concept stage
	7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators, in compliance with the Gender Policy of the Fund?	n/a at concept stage
	8. Does the M&E Framework include a breakdown of how implementing entity IE fees will be utilized in the supervision of the M&E function?	n/a at concept stage

	9. Does the project/programme's results framework align with the AF's results framework? Does it include at least one core outcome indicator from the Fund's results framework?	n/a at concept stage
	10. Is a disbursement schedule with time-bound milestones included?	n/a at concept stage

Funding Proposal Template

Application Template for Fully-Developed Proposal and Project Concept Proposal¹



ADAPTATION FUND

PROGRAMME ON INNOVATION: LARGE GRANTS PROJECTS

REQUEST FOR PROJECT FUNDING FROM THE ADAPTATION FUND

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project must be fully prepared when the request is submitted.

Complete documentation should be sent to:

The Adaptation Fund Board Secretariat
1818 H Street NW
MSN N7-700
Washington, D.C., 20433
U.S.A
Fax: +1 (202) 522-3240/5
Email: afbsec@adaptation-fund.org

¹ Single Country and Regional Concept proposals should complete Part I and Part II of the Project Proposal Template.



ADAPTATION FUND

SINGLE COUNTRY/ REGIONAL INNOVATION PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	“Rainfed farming communities in central Chile develop resilient processes to climate change with the implementation of innovative technological strategies adapted to improve food safety”
Country/ Countries:	CHILE
Thematic Focal Area ² :	AGRICULTURE
Type of Implementing Entity:	NIE
Implementing Entity:	MINISTRY OF AGRICULTURE
Executing Entities:	MINISTRY OF AGRICULTURE
Amount of Financing Requested:	5.000.000 (in U.S Dollars Equivalent)

Project / Programme Background and Context:

Provide brief information on the problem the proposed project/programme is aiming to solve, including both the regional and the country perspective. Outline the economic social, development and environmental context in which the project would operate in those countries.

² Thematic areas are: Agriculture, Coastal Zone Management, Disaster risk reduction, Food security, Forests, Human health, Innovative climate finance , Marine and Fisheries, Nature-based solutions and ecosystem based adaptation, Protection and enhancement of cultural heritage, Social innovation, Rural development, Urban adaptation, Water management, Wildfire Management.

General background information about Chile.

1. Climate change is probably the greatest socio-environmental challenge of our time. Although Chile contributes only -0.25% of global greenhouse gas (GHG) emissions, our country has met seven of the nine criteria for vulnerability to climate change. In addition, the forestry and livestock sector are particularly vulnerable to the effects of this new scenario, making it crucial to generate sectoral resilience, but at the same time contribute to mitigating climate change by promoting a low-emissions sector.
2. The agriculture and forestry sector are particularly affected by climate change, having to deal with water scarcity, soil erosion, changing patterns of pests and diseases, changes in crop development and productivity due to variations in temperature and humidity, heat stress in crops and livestock, and extreme weather events, all of which affect the sector's productivity, competitiveness and sustainability.
3. In terms of greenhouse effect gas emissions (GHG), the agricultural sector generates 11% of the emissions at the national level. Of these, 40% correspond to emissions from enteric fermentation of livestock, 38% to emissions from agricultural soils, 17% to manure management, 3% to the application of urea, and the rest is distributed among emissions from rice cultivation, liming and burning of residues. Through changes in production management, several of these emission sources could be reduced and contribute to our country's commitment to carbon neutrality by 2050. It should also be noted that the forestry sector is a carbon sink, capturing about 58% of the country's total emissions, and therefore reducing the national GHG balance.
4. On the other hand, Chile's population grew rapidly in the 20th century, but growth has slowed in the last ten years and is expected to slow further towards the middle of the 21st century. The total registered population is 17.4 million people in 2012 compared to 7.7 million in 1960, varying by 127% over the last 50 years.
5. The country's development has improved the quality of life of its inhabitants, and in 2010 Chile ranked 45th worldwide in the United Nations Human Development Index. Since 1990, Chile has experienced rapid economic growth, diversification and increased dependence on exports. This development can be explained by a country with a stable government, institutions capable of generating and maintaining consensus on key issues, and effective public policies.
6. In general terms, Chile has a temperate climate. Due to some variations caused mainly by differences in latitude and altitude, it gives rise to climates such as desert, tropical, temperate Mediterranean and polar, among others. Ecologically, the presence of biodiversity and specific plant formations in each area depends on the existing climate.
7. Under the UNFCCC criteria (article 4, n ° 8), Chile is considered as a country vulnerable to climate change, with respect to: low-lying coastal areas, arid and semi-arid areas, forested areas and areas exposed to deforestation and fragile ecosystems in the coastal and Andean regions.

Climate change impacts in Chile.

8. In its second national communication to the UNFCCC (2011), the Government of Chile highlighted the vulnerability of a variety of sectors to expected future climate scenarios (Fig. 1). These scenarios (generated with HadCM3 + PRECIS) suggest changes in temperature and precipitation patterns from south to north and from the coast to the Andes:

- Temperature increases between 1 ° C and 3 ° C in a moderate scenario (B2) and between 2 ° C and 4 ° C in a severe scenario (A2) are expected across the country by the end of the century.
- Rainfall patterns will shift from north to south, resulting in water scarcity, especially in the central part of the country, where 70% of the total population lives, and water abundance in the extreme south of Chile.
- Glaciers, which act as strategic water reserves, will continue to retreat.
- The snow storage capacity in mountainous areas will decrease due to the increase in temperature and the shift of the snow line to higher altitudes.

9. The increase in temperature and changes in precipitation, in addition soil erosion due to storms and desertification processes, will strongly impact the productivity of agriculture, forestry and the livestock sector and lead to changes in land use patterns across the country.

10. For most of the country, losses in the productivity of annual crops are expected, especially for rainfed sectors and also in sectors with irrigation restrictions, due to water scarcity. Losses in vineyard productivity are also expected in the current cultivated area, located in the northern and central part of Chile, due to water supply restrictions and the reduction of the fruit development period caused by higher temperatures.

11. As for pastures and livestock, the production season for both sheep and cattle are expected to change, depending on the geographical area. On the other hand, a decrease in the production of *Pinus radiata* forest plantations is expected in the northern and central zones, and their production potential will improve from the Araucanía Region to the southern zones of the country.

Regions and groups of farmers most vulnerable to climate change.

12. It is in the Central Region (29 deg. SL-34 deg. SL), where adaptation measures are needed in order to avoid or minimize negative climate impacts that threaten agricultural productivity and livelihoods at both ends of the socioeconomic scale.

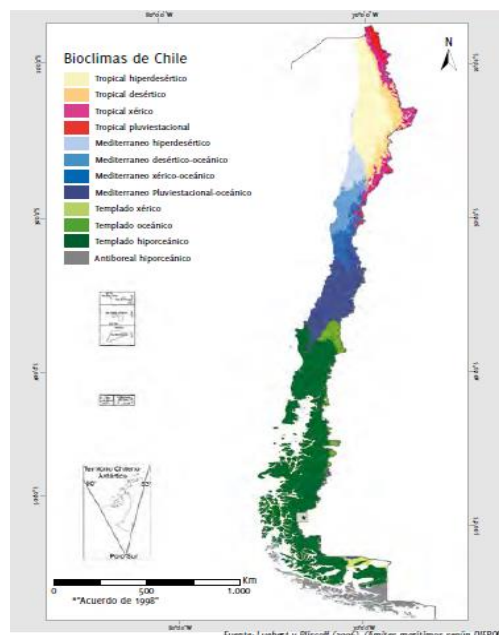


Figure 1: Bioclimates in Chile

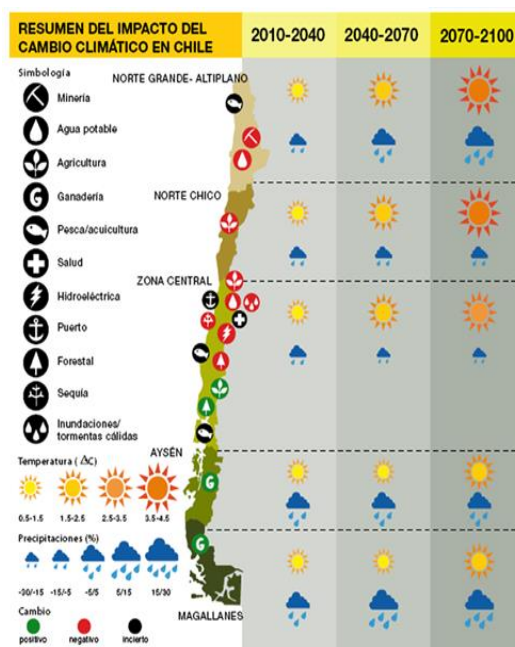


Figure 2: Summary of climate change impacts in Chile for the period 2010-2100. Second National Communication to the United Nations Framework Convention on Climate Change (2011).

Project area.

13. The Maule Region (VII) is located between 34°41' and 36°33' south latitude. It is bordered to the north by the Libertador General Bernardo O'Higgins region, to the south by the Bío-Bío region, to the west by the Pacific Ocean and to the east by the international border of the Republic of Argentina. The region has an area of 30,269.1 km² and a population of 1,044,950 inhabitants according to the 2017 Census. Administratively, it is composed of 4 provinces (Cauquenes, Curicó, Linares and Talca), which are divided into 30 communes. The regional capital is the city of Talca, the region represents 4.0% of the national surface. Figures from the 2017 Census, indicate that the population reaches 1,044,950 inhabitants (511,624 men and 533,326 women).

14. The Project will focus on four communes in the north-western part of the region, including three communes in the province of Curicó corresponding to the communes of Hualañé, Licantén and Vichuquén and one commune in the province of Talca, which corresponds to the commune of Curepto.

Relief.

15. The seventh region has the four-relief unit's characteristic of most of the country: the Andes Mountains, the Intermediate Depression, the Coastal Mountain Range and the Coastal Plains.

Superficie (Km2)	% en la superficie nacional*	Población (hab)	% en la población nacional	Densidad (hab/km2)	Mujeres/Hombres (%)	Ruralidad INE (%)	Ruralidad OCDE (%)
30.296,1	4,0	1.044.950	5,9	34,5	51,0 49,0 M H	26,8	56,0

*The Chilean Antarctic territory is not considered in the calculation. Source: Elaborated by ODEPA with INE's information

Source: prepared by ODEPA with information from INE.

Climate.

16. The condition that characterizes the temperate Mediterranean climate, with north-south differences, is a dry season of six months in the north and four months in the south. On the coast, the coastal temperate Mediterranean climate predominates, with moderate temperatures all year round. In the longitudinal valley there is a warm temperate Mediterranean climate that changes to a temperate Mediterranean climate at altitude in the foothills up to approximately 2,000 m, with a decrease in temperatures and an increase in precipitation.

17. The dominant vegetation registers variations, especially in a west-east direction from the sea to the mountain range. The vegetation is still associated with sclerophyllous forest, although the abundance of exotic plantations and crops has caused the native species to retreat.

18. Towards the Coastal Range on the eastern margin, the steppe of "Acacia Caven" or hawthorn and sclerophyllous scrub (Quillay, Litre, Boldo and Peumo) dominate in the more humid sectors. In the foothills of the Andes, sclerophyllous forest (Maitén, Quila, Quillay, Peumo and Boldo) grows between 400 and 600 meters above sea level.

19. The Maule Region has two main hydrographic systems: the Mataquito River in the north and the Maule River in the center.

20. The Mataquito River has a mixed regime and its tributaries are the Teno and Lontué rivers. Its waters are used to irrigate crops in the valley, covering an irrigated area of 100,000 hectares. The project is located in the hydrographic basin of the Mataquito River, where the communes of Hualañé, Licantén and Curepto are crossed by this natural waterway; however, with respect to the legal situation of the water in relation to their rights to use water from this river, a significant number of farmers are not legal owners of the water and are therefore exposed to a condition of even greater vulnerability, which has increased with the decrease in rainfall and the reduction of the watercourses. A separate chapter for further study is the impact on the ecosystem and the threat to the area's biodiversity.

21. The Maule Region includes both irrigated and rainfed agricultural systems, managed intensively or extensively, either by small farmers or by other export-oriented farmers. The Ministry of Agriculture in this region has a network of services and activities already established, related to capacity development, agrotechnology transfer and climate change and research. Therefore, we can assume that the implementation of the climate change adaptation measures described in the following paragraph covers the same needs of the region and will be carried out in an appropriate environment for management, evaluation and monitoring.

Social background.

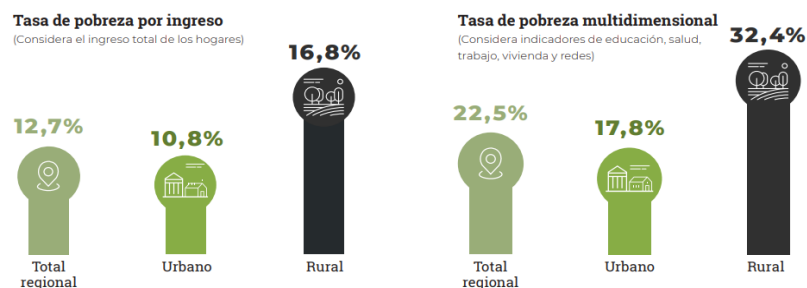


Figure 3. Social background of the region

Source: Elaborated by ODEPA with information from Casen Survey 2017, Ministry of Social Development.

Environmental background of the region.

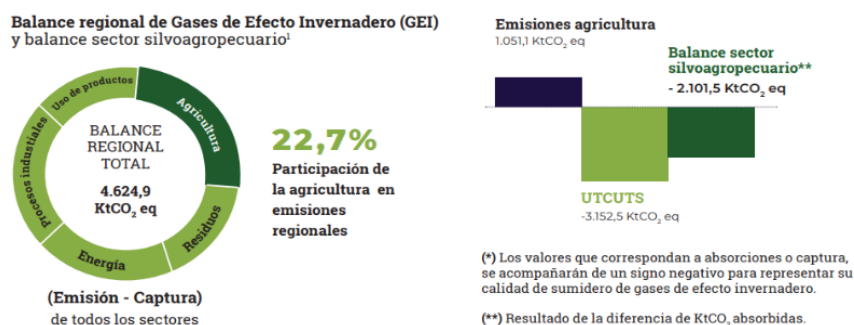


Figure 4. Environmental background of the region

Source: Third Biennial Report MMA,2018 | (2) Source: SNASPE, CONAF, December 2020.

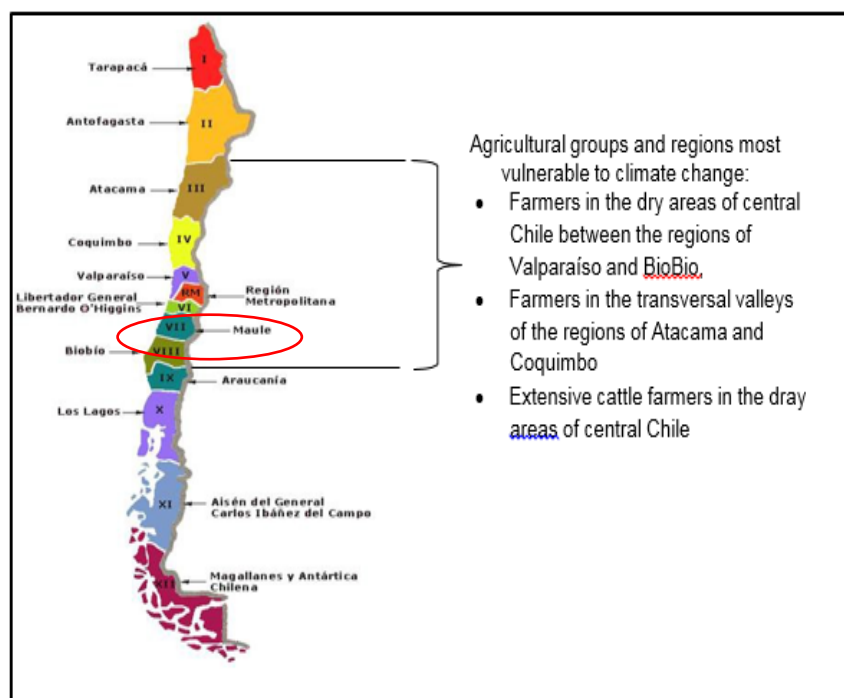


Figure 5: Regions and farmer groups most vulnerable to climate change.

22. In relation to the composition of farms in the region, although farms of less than 20 ha predominate, accounting for 74.0% of the total number of farms, this is equivalent to only 5.88% of the total area farmed. The opposite is the case for farms larger than 100 ha, where the number of farms represents 6.7% of the total number of farms, but inversely explains 81.69% of the total area farmed. Farms with 20 to 50 ha represent 14.0% of the total number of farms and 6.65% of the surface area. Finally, farms with 50 to 100 ha account for 5.4% of the total number of farms and 5.77% of the surface area.

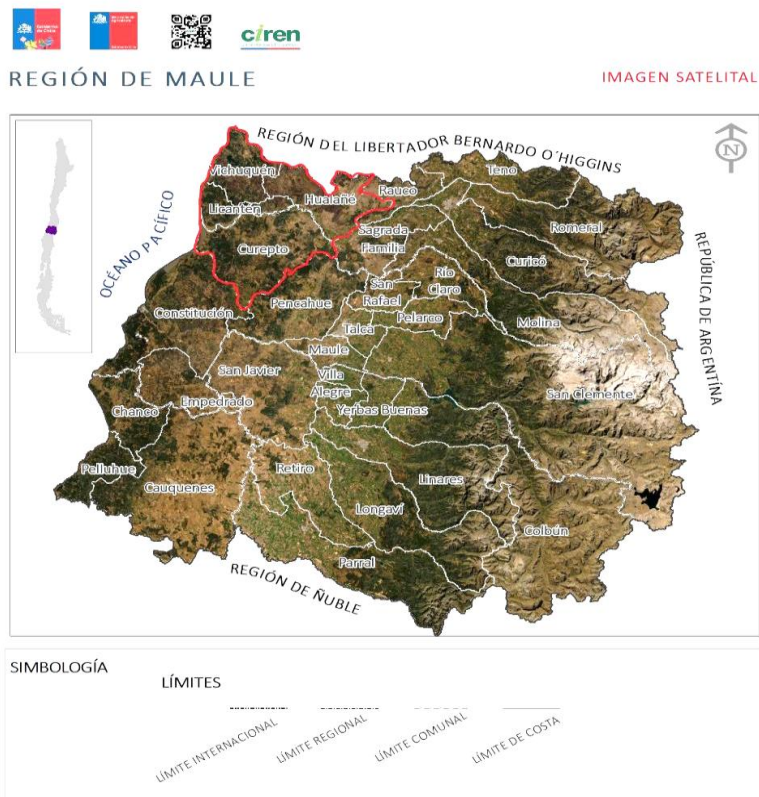


Figure 6. Location map of the Maule region in Chile and the communes of the project.

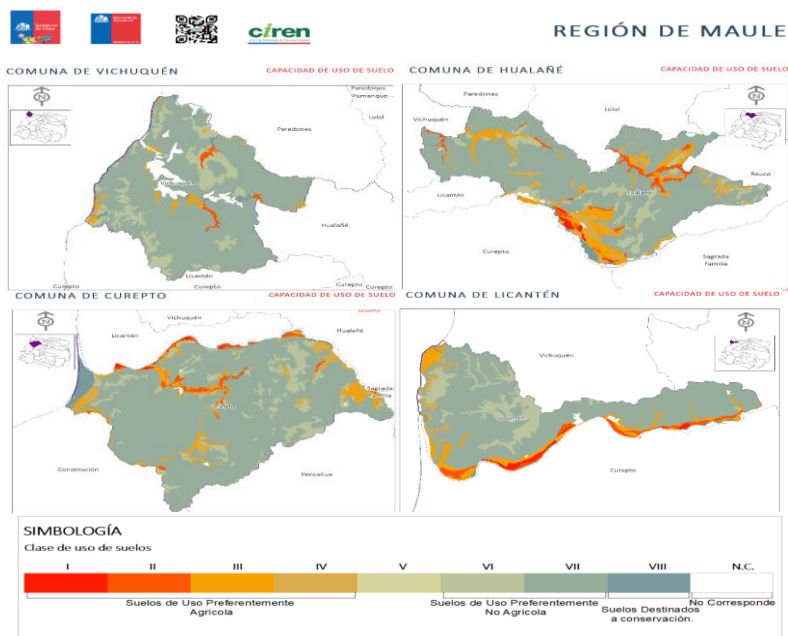


Figure 7. Soil use map in the communes of the project

Región	Estrato de tamaño (ha)	Número de explotaciones	Superficie de las explotaciones (ha)
Maule	0 < 20	30.992	159.246,1
	≥ 20 < 50	5862	179.992,6
	≥ 50 < 100	2257	156.191,2
	100 y más	2.793	2.210.634,3
Total Región		41.904	2.706.054,2

Source: Elaborated by ODEPA based on information from the VII National Agricultural and Forestry Census; ODEPA – INE, 2007.

23. According to the 2007 Census, the Maule Region accounts for 17.2% of the national area devoted to forestry and livestock crops, with the main crops being forestry plantations, followed by cereals, fruit trees, forage plants, and vineyards and grapevines. These crops together account for 93.9% of the crop area in the region.

Superficie regional por rubros silvoagropecuarios

Rubro	Región (ha)	Cultivo/Región	País (ha)	Región/País
Plantaciones forestales	493.526,5	64,8%	2.706.038,8	18,2%
Cereales	74.106,6	9,7%	480.602,6	15,4%
Frutales	54.784,1	7,2%	310.046,5	17,7%
Forrajeras	46.147,6	6,1%	513.190,8	9,0%
Viñas y parronales	46.110,2	6,1%	130.440,8	35,3%
Semilleros y almacigos	13.043,1	1,7%	42.511,1	30,7%
Hortalizas	11.784,4	1,5%	95.953,7	12,3%
Cultivos industriales	11.543,7	1,5%	69.998,0	16,5%
Leguminosas y tubérculos	10.184,9	1,3%	71.389,6	14,3%
Viveros	446,2	0,1%	3.103,1	14,4%
Huertos caseros	266,9	0,0%	16.138,2	1,7%
Flores	37,0	0,0%	2.176,4	1,7%
Total	761.981,2	100,0%	4.441.589,7	17,2%

Source: Elaborated by ODEPA based on information from the VII National Agricultural and Forestry Census; ODEPA – INE, 2007.

24. The high percentage of area devoted to cereals (15.4%) and legumes (14.3%) stand out. These two items are very important for the agricultural economy of the communities chosen for the project.

In this sense, considering the threat of a potential food crisis due to the effects of global economic instability, which can be reflected in the country's inflation increase, rising prices of commodities and raw materials, high prices of sea freight for food and fertilizer imports, among others, in addition to the exacerbated effects of climate variability and climate change, the Ministry of Agriculture has decided to intervene in this territory of the four communes mentioned above. In this area of the region, the production of cereals and legumes is very outstanding and important, representing a very relevant contribution to national food production, as is the case with the small sheep farming present in the project area and sustained mainly on natural pastures.

25. Consequently, the Chilean Ministry of Agriculture has chosen this territory and its farmers as beneficiaries of the project as its response to the threats of the food crisis, to provide beneficiaries with innovative technological tools and, above all, with direct investment in the farms in order to improve the resilience of agricultural production systems in the face of the climate crisis to maintain food production in a sustainable manner.

26. Studies (AGRIMED, 2008) show that for the 2040 climate scenario, in the project area, there will be a 20% to 25% decrease in average annual rainfall and an increase in temperature of around 3°C.

27. The results of this participatory survey (Table 1) show that the most vulnerable groups are the following: (i) farmers in the rainfed areas of central Chile between the Valparaíso and Biobío regions, farmers in the transverse valleys of the Atacama and Coquimbo regions and extensive livestock farmers in the rainfed areas of central Chile (Figure 3). For all these groups, water availability and management has been identified as the key issue related to climate hazards, followed by heat stress in crops and livestock.

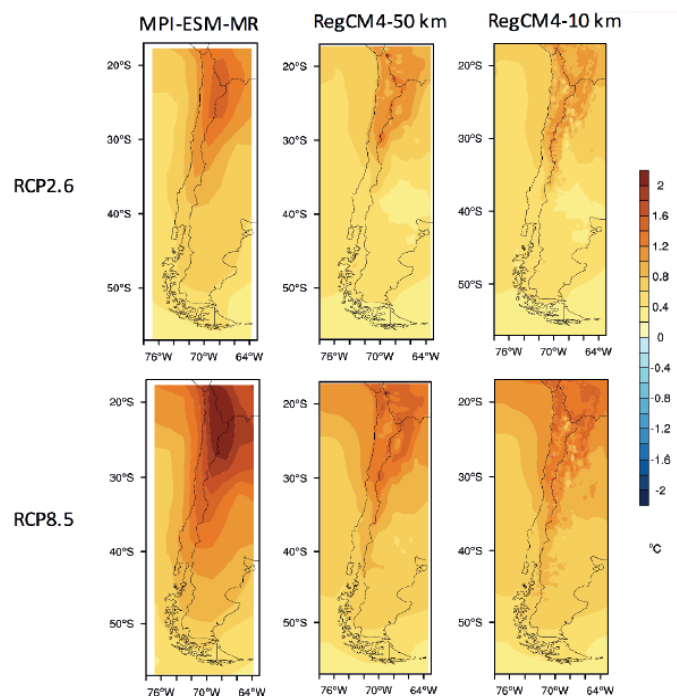


Figure 8: Temperature change maps (C°, annual) for the period 2021-2050, with respect to the period 1976-2005 based on the MPI-ESM-MR model according to RCP2.6 (upper panels) and RCP8.5 (lower panels) scenarios.

28. All the adverse climate effects mentioned in the previous paragraphs are reflected in a decrease in productive capacity of small food-producing farms; problems of loss of the diversity of several species and cultivated varieties, which destiny is mainly local markets and self-consumption production, this situation had been affecting the central zone of Chile for approximately 14 years and its particularly affecting producers in the area where the Project will be implemented; for this reason it is imperative to carry out an intervention in this territory in order to provide the local producers, especially family farmers agriculture, with updated knowledge, it is necessary to strengthen their permanent investments and above all increase their skills to face the challenges of agricultural, livestock and forestry production in an innovative, comprehensive, environmental friendly, and socially sustainable way over time. The Project will address the productive aspects through the generation of competences, the management scientific technical knowledge in harmony with the local knowledge will be also a fundamental pillar of the project's action in the territory and, as a transversal axis that will support all the intervention, there will be

an emphasis on community environmental education for the for the adaptation of climate change and the improvement of the resilience of rural communities, understanding that the process of resilience must be appropriated by society as a whole.

Describe the problem the proposed project/programme is aiming to solve. Write this as a concise problem statement: The current situation, the desired future, and the gap between the two. Provide brief further information on the current situation including both the regional and the country perspective. Outline the economic social, development and environmental context in which the project would operate in those countries. Describe the climate change vulnerabilities impacting the country/region as well clearly explain the problem area that would be the focus of the innovation.

29. Currently, one of the problems faced by the farmers in the Project area is related to the permanent decrease of annual rainfall and the increase in extreme temperatures in the Project's area of influence, which has resulted in greater exposure to agroclimatic risk of agricultural production systems, mainly affecting the agricultural production of smallholder family agriculture (AFC); that is, those farmers who manage or work areas ranging from 0,2 hectares to 12 hectares of land; where they carry out multi-crops agricultural activities, that is a diversification of the production of annual crops, legumes, cereal crops, vegetables, timber production to meet domestic wood energy needs and also the micro production of poultry and sheep, the latter items intended mainly for family self-consumption in order to meet their food needs for proteins. The above-mentioned vulnerability can be seen in Table 1 and Figure N°9.

30. The values in Table 1 refer to a scale from "0" (no threat) to "5" (very high threat) and represent the evaluation of local farmers and experts who participated in the respective workshops.

31. The results of an opinion survey, conducted by the Ministries of Agriculture and Environment in 8 regions of Chile, in the framework of the public consultation process ("Consulta Ciudadana") of the Adaptation Plan for the forestry and agriculture sector in 2012, showed that most of the proposed actions that have been identified by local agricultural groups as the first stage in the implementation of the adaptation plan, is related to water supply and management.

N°	/Agricultural communities or Location	Soil erosion	Water availability in rainfed areas	Irrigation water availability	Pest and diseases	Crop development	Thermal stress	TOTAL
1	Andes's Valley	4	0	2	2	3	4	15
2	Aymara's farmers of Atacama Region	2	0	0	2	1	0	5
3	Desert irrigated valleys	2	0	2	5	4	5	18
4	Andean areas, Limari, Petorca, and Maipo	3	0	5	4	4	5	21
5	Transversal Valleys	3	4	0	1	4	3	15
6	Cattle ranchers. Extensive Dryland, livestock farming.	4	5	4	3	2	3	21
7	Coastal drylands; V to VIII regions**	5	5	0	4	4	2	20
8	Drylands; V to VIII regions**	5	5	0	4	4	5	23
9	Fruit growing; annual crops; V, VII regions**	1	0	4	4	3	5	17
10	Fruit growing; perennials; V to VII regions**	1	0	4	4	3	1	13
11	Grain producers; VI to VIII regions	2	0	4	3	3	4	16
12	/ Horticultural producers; region V and Metropolitan	2	0	3	3	3	3	14
13	Vine growers; VI-VIII regions	1	0	4	4	3	4	16
14	Pre-Andean drylands	0	0	0	0	0	0	0
15	Forestry; VI-X regions	4	3	0	2	0	3	12
16	Non-irrigated areas in coastal sectors; IX-X regions	3	3	0	2	2	1	11
17	Non-irrigated areas IX-X regions	4	4	0	3	2	2	15
18	Chiloe's Island farmers.	4	3	0	2	2	1	12
19	Andean areas X-XI regions.	2	1	3	1	1	1	9
20	Livestock producers in the pampas of Patagonia and Tierra del Fuego.	4	1	0	1	0	0	6
	TOTAL	56	34	35	54	48	52	

Table 1.: Most vulnerable group of farmers.

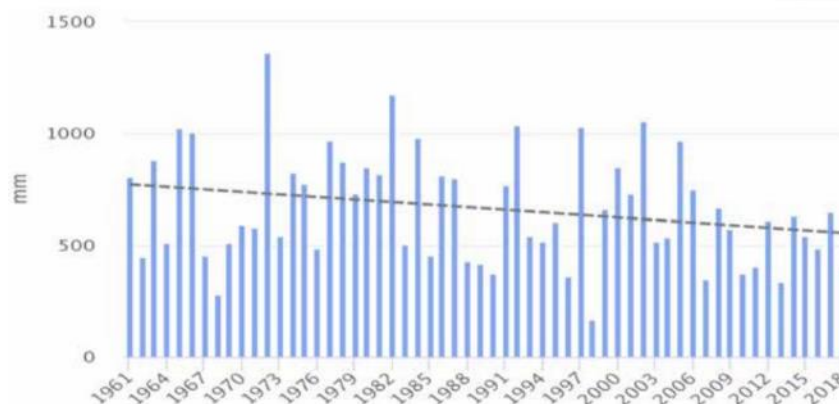


Figure 9: Annual precipitation station DMC, Curicó.

32. According to official information from the Chilean Meteorological Directorate (DMC), the trend in the mean annual rainfall at an official weather station closest to the project area shows a sustained drop over time from 1961 to 2018, as shown in Figure 5, which suggests that the situation is seriously affecting the dryland farming systems in the communities that will benefit from the project

33. The fragility of these dryland production systems depends on annual rainfall, so they are doubly exposed to the lack of rainfall, in this sense, farmers in the project communes are increasingly vulnerable to the effects of climate change, which presents the challenge for national and global authorities to increase efforts to install capacities, transfer knowledge, communicate experiences, benefit with economic resources through investment in appropriate and intelligent technologies, provide technical assistance and above all educate for environmental awareness to the whole society for the purpose of improving the resilience of the communities of the rural inhabitants of these vulnerable areas such as the four communes of this project.

34. Another element that is affected by the climate change and the poor agricultural practices of farmers it is the agricultural soil because farmers do not have sufficient and updated knowledge, nor do they have adequate technical tools and machinery to properly develop their productive activity; this is due the high investing cost in adequate machinery, which does not help with the growing rate of soil degradation and consequent soil erosion, which significantly deteriorate the productive systems by leaving the crop soils bare of vegetative covers, making the small farmers in this part of the country increasingly vulnerable.

35. The problem of degradation and erosion of soil will be addressed through the project by training farmers and implementing demonstration units that will promote the use of innovative soil tillage practices, the use of specialized machinery for the soil cultivation, the use of organics amendments and other cultural conservation practices, in order to halt the loss of these resources.

36. The correct use of soil cultivation with sustainable and innovative practices will significantly improve water storage in the soil profile, in order to generate another technical strategy to address the main problem that small farmers currently have, the lack of water for the proper development of crops.

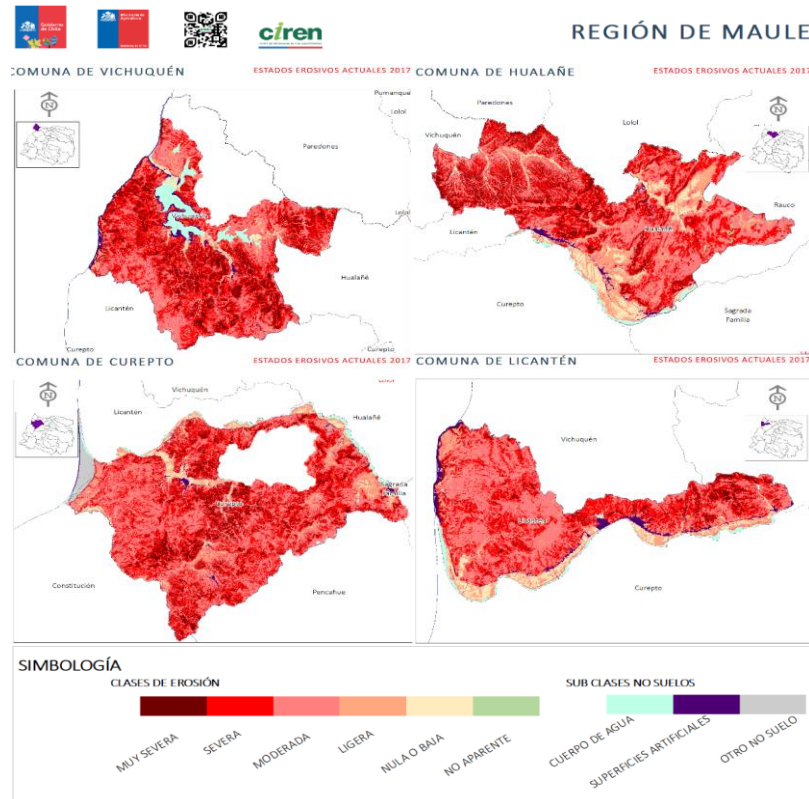


Figura 10. Map of soil erosion by commune.

37. A change of this magnitude in the communities affected by climate change will not be possible without adequate training, timely training and sustained education of the communities, to generate the necessary and urgent processes of change in the face of adaptation in a responsible, democratic and participatory manner and above all seeking innovation, both in the processes of governance of the territory and its organizations and in the search for innovations in production processes.

Project / Programme Objectives:

List the main objectives of the project/programme.

38. The project is an initiative based on a territorial approach that acts from the local scenario through multidimensional strategies, characterized by technological innovation and social innovation from the perspective of territorial development acting directly in the productive agroecosystems of small farmers.

The initiative aims to improve resilience to climate change adaptation, and considers **four main areas or areas of action** that interact with each other and are developed simultaneously with different emphases:

1- Public sphere. Coordinated and conscious actions by the public sector are required to address the processes of adaptation to climate change.

2- Technological field. Incorporating innovative technologies that are sustainable and adapted to the characteristics of small-scale agriculture.

3-Territorial approach. A broad approach is required to improve local governance and the real impact of such an initiative on the territory.

4- Cultural change. Cross-cutting axis that is proposed as the highest goal to improve the resilience of rural communities to climate change.

39. The project will promote an intervention in the productive area, encouraging the protection of agroecosystems through the local articulation of public resources and resources of the small farmers themselves, in addition to the active participation of the community population, thus achieving the establishment of a "way of doing" agriculture that is innovative and sustainable, rooted in local society and different from what has historically been done. In the design, dissemination and implementation, the educational communities present will be incorporated, which will have a central role in the implementation and dissemination of this proposal; which through the Education curriculum, will give body to its cross-cutting environmental objectives.

Main Objective.

40. Incorporate technological tools and development of resilience skills to promote adaptation to climate change for the conservation and improvement of local productive resources in farming communities, in order to install a resilient production model that protects and sustains agroecosystems, allowing food security 3.5.1 of the four communes of the Project area; Licantén, Hualañe, Vichuquen y Curepto.

Purpose.

41. The sustainability of forestry and livestock systems is sought under a technological and cultural model that adapts to the threats of climate change and climate variability, involving local actors as protagonists in the development of rural communities in central Chile to improve the food security of rural inhabitants and strengthen food production for the nation.

Specific Objectives.

- 42. Develop and implement a system of innovative technological measures to improve the resilience of farming communities to climate change.
- Implement a set of measures and technologies appropriate to the conditions of local farmers to address the threats that negatively affect the availability of water resources in production systems.
- Implement a set of techniques for soil improvement and restoration to favor sustainable production.
- Implement a cross-cutting climate change education strategy for the inhabitants of the project's territory to improve their skills and abilities to increase the impact of the set

of measures to be developed with the intervention.

- Develop and implement an Environmental Education Program for climate change adaptation in the rural community through rural schools.
- Implement an agroclimatic risk information management system to promote adaptation and resilience of farmers to climate change.

Project / Programme Components and Financing:

Fill in the table presenting the relationships among project components, outcomes, outputs, and countries in which activities would be executed, and the corresponding budgets.

For the case of a programme, individual components are likely to refer to specific sub-sets of stakeholders, regions and/or sectors that can be addressed through a set of well-defined interventions / projects.

Project/Program Components	Expected Concrete Outputs	Expected Outcomes	Countries	Amount (US\$)
Component 1. Improve the resilience of farming communities to the effects of climate variability and climate change on their production systems to promote food security.			CHILE, Maule region.	3.920.000
Outcome 1.1 Implement a set of innovative technological measures to improve the resilience of farming communities to climate change in production systems.	Outputs 1.1.1: Implementation of 4 demonstration farms (one per commune) to transfer innovative and sustainable agricultural and livestock technical skills to farmers and advisory teams in the territory. The implementation will include infrastructure, equipment and financing necessary for the proper functioning of the demonstration units.	<p>Farmers in the territory under the influence of the project improve their resilience skills to face the threats of climate variability and change through:</p> <p>Broadening of theoretical and conceptual knowledge on sustainable food production.</p> <p>b. Availability of specialized advice and community demonstration units to replicate the supply of techniques and technologies, innovating in agroecologically based crop production, small livestock and poultry production.</p> <p>c. Increase the availability of water to produce crops for self-consumption through rainwater harvesting infrastructure.</p> <p>d. Innovate in soil management techniques to recover productivity in a sustainable manner and promote food production.</p> <p>e. Improving the availability of quality and safe food, produced on an agroecological basis.</p>		200.000
	Outputs 1.1.2: Training of farmers and technical advisory teams in sustainable agroecologically based production techniques, rescuing local production systems and appropriate technologies for each type of producer.			120.000
	Outputs 1.1.3: Farmers and technical advisory teams are trained in the management of legumes, cereals, vegetables and quinoa crops to strengthen local food security and sovereignty within the framework of adaptation to climate variability and climate change; the production of crops tolerant to water deficit and degraded soil conditions will be validated.			180.000
	Outputs 1.1.4: Training of farmers and technical advisory teams, in sustainable productive techniques with agroecological basis rescuing local productive systems and appropriate technologies for each producer typology.			130.000
	Outputs 1.1.5: To promote the use of land planning as a tool for the environmental sustainability of the properties, for which land designs will be generated for the families benefiting from the project.			50.000
	Outputs 1.1.6.: Propose improvements to the current animal production systems, in order to enhance production for self-consumption as well as for the sale of surpluses. Special attention will be given to small livestock and poultry production as the main source of protein for families.			140.000

<p>1.2 Implement a set of measures and technologies appropriate to the conditions of local farmers to address the threats that negatively affect the availability of water resources in production systems.</p>	<p>Output 1.2.1. Implementation of 140 rainwater harvesting and water source management systems. Including equipment for the use of stored water, integrated with greenhouses for vegetable production and photovoltaic energy drive systems (15% of users with photovoltaic energy).</p>			1.000.000
	<p>Output 1.2.2. Implementation of 12 demonstrative technified irrigation systems (3 per commune including 1 in each demonstration unit) for high efficiency irrigation to produce vegetables, cereals, legumes, quinoa and prairies, innovating in the traditional production methods of the farmers of the territory.</p>			140.000
	<p>Output 1.2.3. Implementation of 140 biofilter systems with plants for the reuse of household gray water for the eventual irrigation of native honey plants, fruit trees or self-consumption meadows and/or live fences with fodder plants.</p>			210.000
<p>Outcome 1.3 To put into practice the set of techniques for soil improvement and restoration to favor agricultural production in a sustainable manner in the project territory.</p>	<p>Output 1.3.1. Training for sustainable soil management, promoting more sustainable tillage practices, including zero tillage, incorporation of crop residues, organic amendments and crop rotation systems for holistic soil recovery and management.</p>			150.000
	<p>Output 1.3.2. Implementation of 4 parks to facilitate farmers' access to top quality specialized machinery in a timely manner with "zero cost" for the user and thus, encourage the correct use of machinery in production processes. Agricultural tractors with a power of at least 115 hp will be implemented, with their respective equipment of seeders, grassland regenerators, zero-tillage seeders, scarifying plows, subsoilers and other machinery. Machinery adapted to the conditions of small-scale rain-fed agriculture will be purchased for those localities where agriculture is carried out in areas with special conditions that are difficult to perform and on small plots of land.</p>			1.600.000

Component 2. Implement an agroclimatic risk information system to promote farmers' adaptation and resilience to climate change.			CHILE, Maule region.	500.000
Outcome 2.1. Improve decision making by supporting agroclimatic information management for current climate and future climate changes for local MINAGRI professionals and farming communities.	Output 2.1.1. Strengthening of the existing network of automatic meteorological stations (EMAS) and groundwater monitoring stations in the project area: -Consultancy (1°) to evaluate the relevance of implementing up to 4 EMAS in the Agromet Network, in the project development area. -Consultancy (1°) Evaluate the feasibility of a groundwater monitoring and reporting system, surface water telemetry and soil moisture measurement pilots with the beneficiaries in the project development communes. Implementation proposal. -Consultancy (1°) for the development of a Regional agroclimatic observatory of Maule, which allows the integration of the EMAS, groundwater monitoring stations, surface water telemetry network stations, citizen science initiatives, soil moisture pilots and other indicators that are considered relevant in the network, automatic data processing, continuously and generation of weather reports and their dissemination to local farming communities.	Improved capacities of farmers, students, technical teachers, professionals and MINAGRI staff in the Maule region in agrometeorological data collection, management and climate risk assessment. Farmers, students, technicians and professionals from the four communes implement process innovation for agricultural decision making using agro-meteorological information. Improving the capacity of farming communities in the Maule Region to adapt to climate change through agroclimatic information for agricultural decision-making.		175.000
	Output 2.1.2. Development skills and monitoring the implementation of the participatory agroclimatic roundtable methodology for project technicians; with the objective of enabling access and knowledge transference to project farmers regarding agroclimatic information, climate change trends, developed in product 2.1.1 and guiding technical management based on the development of this knowledge to promote adaptation and generation of resilience to climate change in the Maule Region, analyzing data and its integration into meaningful decision-making for agricultural management, during the development and implementation of the project.	The development of the Information System for Agroclimatic Risk Management and Climate Change Adaptation will serve as a model for other regions.		
Component 3. Community environmental education of local civil society and rural schools for climate change adaptation.			CHILE, Maule regio	80.000

			n.	
Outcome 3.1. Local civil society environmentally trained through Environmental Civic Education Plans, improves its resilience expressed in the response to climate change adaptation.	Output 3.1.1. Workshops with local stakeholders and young students to foster responsibility for natural resource management and promote the development of critical thinking, collective problem solving and decision-making skills. The objective is to achieve and maintain a natural balance between the quality of life and the environment. There will be 8 sessions per commune each calendar year on average. For this purpose, it will be convened through territorial organizations and in the activities of public services with actions in the territory to intervene.	Implement capacities that allow the Literacy for climate change adaptation to possess knowledge about the subject capable of continuing the environmental learning self-directed to the generation of adaptation actions. Its members will be leaders or local leaders of recognized prominence who are sensitized about Climate Change. All activities will be coordinated by the technical team and in agreement with local leaders.		30.000
	Output 3.1.2. Implementation of an environmental civic education plan (8 topics) aimed at high school students and second cycle of primary education (young people from 11 to 18 years old approximately). This activity will be carried out in the community school, and they will participate in the classroom and in the demonstration, units established by the project.	The school community and local civil society have environmental civic education plans that allow them to optimize cultural mechanisms for adapting to climate change. The document containing the implementation plan for Environmental Education Workshops is aimed at young people and adults participating in ecological groups. It will use activities with a playful and dialogic methodology that stimulates critical analysis of the topics addressed.		30.000
	Output 3.1.3 Civil society in the commune has improved its personal competencies and social skills and expands it broadens advocacy actions on the management of the	Contact networks are generated among the several community stakeholders. The communal municipality is aware of the details of the		20.000

	climate change adaptation and resilience mode.	climate change adaptation and resilience program, collaborates in its diffusion and incorporates officials from the environmental department in the activities. Technical teams of public programs have access to contents and technical matters promoted by the project. Local civil society formulates proposals for adaptation to climate change and presents them to local authorities for consideration in local policies.		
6. Project/Program Execution cost				250.000
7. Total Project/Program Cost				4.750.000
8. Project/Program Cycle Management Fee charged by the Implementing Entity (if applicable)				250.000
Amount of Financing Requested				5.000.000

Projected Calendar:

Indicate the dates of the following milestones for the proposed project/programme

Milestones	Expected Dates
Start of Project/Programme Implementation	2023 (1 ^a semester)
Mid-term Review (if planned)	2025 (1 ^a semester)
Project/Programme Closing	2026
Terminal Evaluation	2026

PART II: PROJECT / PROGRAMME JUSTIFICATION

- A. Describe the project / programme components, particularly focusing on the concrete adaptation activities, how these activities would contribute to climate resilience. For regional projects describe also how they would build added value through the regional approach, compared to implementing similar activities in each country individually. For the case of a programme, show how the combination of individual projects would contribute to the overall increase in resilience.

43. **Component 1. Improve the resilience of farming communities to the effects of climate variability and climate change on their production systems to promote food security.**

44. Through component 1, rural farming communities are expected to increase their resilience capacity to negative impacts of climate variability and climate change by improving skills in sustainable soil management, improving production conditions for small livestock and poultry, generate capacities to capture rainwater and adequately manage the water resources available on each farm targeted by the project and, above all, through adequate crop management; access to a fleet of agricultural machinery for soil management; and an increase in water availability and crop productivity on 140 farms in the project area.

Component 1 provides answers to the specific objectives of the project with innovative and sustainable technologies and techniques in the project territory, to focus efforts on food production to improve food security for family self-consumption and sale to the domestic market, which is even more relevant given the potential food crisis to which we are exposed as a country.

Detailed baseline.

45. In order to formulate improvement indicators for the pilot farms or demonstration units, a baseline will be determined to establish a follow-up and control plan for the expected improvements in each of the demonstration units. For this purpose, topographic surveys will be carried out as basic inputs for land planning using photogrammetry tools.

The main characteristics of this baseline are:

- An initial agricultural diagnosis of the project area and demonstration units;

parameters to validate in field work with calibrations and elevation models, runoff profiles and electromagnetic soil moisture models.

46. This complete aerial photographic mapping, repeated at least once at the end of the project, provides a complete agronomic impact assessment.

Demonstration fields for the transfer of technical knowledge.

47. The project establishes 4 demonstration fields, including their infrastructure and equipment (fences, water troughs, electrical infrastructure, renewable energy sources, etc.) that demonstrate the corresponding agricultural management for climate adaptation and resilience generation. A demonstration field will be implemented in each of the project's communes (Hualañe, Licantén, Vichuquen and Curepto). Each demonstration field will cover an area of approximately 4 to 5 hectares and will be located in a place accessible to small farmers. A contract will be signed between the project and the owner of the agricultural land to detail the responsibilities of both parties. This facility considers different soil and climatic conditions to be considered for the practices that will be demonstrated and transferred to the local demonstration fields.

48. In the demonstration fields, different agricultural species and/or varieties are tested for production under micro-local conditions:

- Wheat, Quinoa, Beans, Chickpeas and Lentils.

49. In the case of farms that include pastures for animal production, forage combinations of legumes and grasses will also be included as sources of forage.

50. Adapted species are combined with different practice options:

- Zero tillage for cereals.
- Subsoiler Scarify.
- Grassland regeneration.
- Stubble management.
- Crop rotation.
- Organic amendments.

51. In addition, pilots of technified irrigation systems for crop and pasture irrigation will be installed when appropriate.

52. Rainwater harvesting, storage and utilization systems, together with greenhouses and renewable energy systems are installed in the demonstration units, in order to have a direct link with the beneficiaries and to test, refine and monitor promoted technologies in the same micro-local conditions. A 40 m² greenhouse is also installed for the demonstration of vegetable production, along with the installation and promotion of an efficient (technified) irrigation system.

53. Finally, the demonstration units also contain small livestock (sheep) and poultry for demonstration of adapted livestock management options and semi-confined poultry production.

54. Smallholder farmers benefit through: (i) the installation of the demonstration unit on their farms, (ii) the provision of relevant infrastructure, machinery, livestock, crop seeds and plants, (iii) the supervised implementation of climate adaptation-oriented farming techniques and practices, and (iv) continued assistance, training and monitoring through local training and project advisory teams.

55. All the practices developed in the demonstration units will be designed and carried out considering the principles of agroecological production to become "beacons of sustainable communal production", in this way the demonstration farms will serve to inspire farmers in the project area.

Monitoring systems.

56. The demonstration units are monitored through a follow-up plan focused on plant nutrition. The aim is to show the response of plants to fertilizers, organic amendments and liquid and solid bio-fertilizers. Soil sustainability indicators will be established to monitor progress and improve the practices used, which are selected because they are accessible to beneficiaries and eligible for SIRSD grant funding. In addition to the plant, the monitoring system of the demonstration units' measures:

- Physical, chemical and biological properties of the soil;
- Results for each technique applied in soil, water and yield management;
- Parameters related to carbon fixation in crop soils.

Machinery.

57. As described in expected output 1.3.2. the project also considers the acquisition (including maintenance and operational costs) of agricultural machinery for the 4 demonstration fields. This equipment will be used for work in demonstration fields and also as a pool of machinery available to eligible small farmers in each municipality, in order to cover at least 3,000 ha in total, with different types of tillage.

58. The technical and administrative team of the project will determine the most recommended procedure to establish the mechanism for the use of each of the communal machinery parks.

59. The main types of machinery and the justification for their use is to increase the adaptive capacity to climate change are the following:

- Subsoiler scarify plow: this implement is appropriate for plowing soils in non-irrigated and rainfed areas. The tool works between 40 to 55 centimeters deep, which allows the breaking of compacted soil layers or hardpan soils. This action helps reduce runoff or erosion processes due to sediment dragging, increases oxygenation by improving porosity. Improves water accumulation in the soil profile through increased infiltration, improving root growth and vegetation cover, such as pastures for animal feed and other species. Progressively improves the physical and biological conditions of soils, increasing the amounts of organic matter.
- Moldboard plow: similar to the subsoil plow, this plow works at a depth of between 20 and 35 centimeters. Crucially, both plows do not disturb the soil profile.
- Stubble incorporating harrow: the implement is used for incorporating stubble into the soil.
- Offset disc harrow: the implement is used for fertilizing and to incorporate organic stubble correctives to the soil.
- No-till seeder: These machines allow direct seeding. The no-tillage method aims to improve and sustain agricultural production, conserving and improving soil, water and biological resources. The crops considered for no-tillage are wheat and oats. The use of these machines allows sowing under stubble from previous seasons. This action reduces erosion and damage to soil structure, promoting natural fertility and improving physical, chemical and biological

characteristics over time. Finally, with this method, production and yields improve. Zero tillage also contributes to conserving carbon and moisture within the soil profile, reducing CO2 emissions and preserving water accumulation.

- Grassland regenerator: allows direct seeding of pastures, with minimal impact on the soil similar to the no-till seeding machine: it reduces erosion and damage to the soil structure, promoting natural fertility, improving physical, chemical and biological characteristics over time and contributing to conserve carbon and moisture within the soil, reducing CO2 emissions and preserving water accumulation.
- Guano application machine: this equipment is used for organic correctives.
- Boom sprayer: this implement allows the application of organic correctives and the removal of invasive plants.
- Wheat/Quinoa seeder: specific equipment that allows efficient and optimal seeding of promoted fields. It allows optimal cultivation saving seed saving, weed control and optimization in the use of liquid and solid fertilizers.
- Stubble chipper: facilitates the incorporation of organic material into the soil by shredding the stubble or vegetable waste, increasing the contact surface with the decomposer biota in the soil.
- Backhoe: allows the efficient performance of small conditioning works.
- Tractor: with a minimum power of 115 hp (86 Kw).
- Small truck: allows the displacement of machinery parks (transport over average distances).
- Dragging cart: allows the displacement of machinery parks (transport over short distances).
- Oil tank and manual fuel pump.
- Manual hay baler: proven technology but not yet economically accessible in the project area to be incorporated into the machinery parks. It is required for baling fodder.
- Honey extractor: extracts honey from combs without damaging the cells, thus allowing them to be reused. Honey extractors are available within the machinery parks but are not moved out of the demonstration unit.
- Backhoe boom: Attachment for backhoe attached to the tractor, which allows excavation.
- Threshing machine: self-propelled machinery that performs grain harvesting.

Work on beneficiaries' farms.

60.Expected output 1.2.1. refers to the installation of rainwater harvesting systems and control of farm flows in 140 farms, including the installation of materials and equipment (materials for roofs, gutters, mobile cisterns, irrigation system, greenhouse installation) and training provided by the advisory teams in the use and maintenance of these facilities. This material clearly enhances

climate adaptation and resilience generation with respect to increased water scarcity and climate uncertainty and improves agricultural productivity on the 140 most vulnerable smallholder farms in the project area. The useful life of the water harvesting systems and irrigation materials is at least 15 years, according to their technical specifications. Each farmer will be responsible for his infrastructure. They will receive adequate technical support and training in water source collection, storage capacity management, cleaning processes and preservation of pipes, seals and other parts.

61. On the other hand, regarding the use of solar energy for irrigation systems, this alternative has been very successful in rural areas because it has no costs associated with energy consumption. Solar powered pumps are used in the country with very good results. The power generated by solar energy is sufficient to lift water for irrigation systems such as those planned for the project. Other alternatives, for example, electricity and oil, have higher consumption costs. Moreover, electricity is not always available for some rural areas due to lack of infrastructure and oil is not a sustainable alternative and promoting its use will be in contradiction to climate change mitigation. The challenge regarding solar energy systems is their high initial investment costs. The project helps to further improve conditions for smallholder farmers by providing the necessary funds for this initial investment in 44 cases, those who stand to benefit the most in terms of resilience.

62. As a result of the above activities, the availability of water for efficient consumption is assured for the 558 smallholder farmers, their families, and their agricultural requirements, for a long period of time, thus increasing their resilience in uncertain, but certainly worse, climatic conditions.

Training.

63. The agrotechnology transfer concept of the Project focuses on facilitating farmers to achieve the training objectives described in the results matrix, to achieve this objective a detailed Skills Generation Plan will be developed. This plan will mainly consider the activities included in components 1 and 2. However, for component 3, a comprehensive and cross-cutting approach to training for adaptation in civil society is proposed, with special emphasis on primary and secondary school students.

64. The importance of preparing to improve the communities' resilience to climate variability and climate change is not only the responsibility of agricultural, livestock and forestry producers and products, which is why "climate change literacy" is a fundamental pillar to face the known threats. Hence the relevance of incorporating children and young people in this approach.

65. Training activities are organized based on the identification of two different target groups: project beneficiaries (farmers) and technical staff directly linked to the project and its beneficiaries and area. The project establishes an orderly, systematic and adaptive communication system to ensure compliance with the following objectives:

- Enable and ensure efficient and effective communication between different institutional actors;
- Provide flexibility while keeping the communication plan capable of being monitored; and
- Establish channels that account for both the dissemination of new practices and useful information and feedback of information and perception from users.

66. For the implementation of the training activities there will be local training and specialized advisory teams for agrotechnology transfer for each of the 4 communes in the project area. These

teams will be composed of local technical assistance providers from different institutions of the Ministry of Agriculture plus the project's technical team.

67. The technical team will be coordinated by the project administration unit, specifically the Project Director, and will be assisted by a specialist from institutions of the Ministry of Agriculture, such as Agricultural Research Institute (INIA) and Agricultural Development Institute (INDAP).

68. The training activities of these advisory teams will focus on the following three main topics:

1-Training in sustainable soil management, plowing practices, fertilization practices, soil fertility recovery practices, holistic soil management.

2-Training in use of crops, livestock forage tolerant crops to climate variability and climate change.

3-Training in efficient use of water and water harvesting and storage in the 4 demonstration fields and smallholder farms in the project area.

69. Direct training activities will be provided to at least 1,000 smallholder farmers in the project area. Since the target population also includes rural schools and smallholder families, and considering the characteristics of these rural communities, about 10,000 people will benefit from the above-mentioned activities. The training activities will be supported through the preparation and dissemination of didactic materials, including manuals that adequately describe methods and techniques for farm management, and the holding of the respective workshops and events.

70. Beneficiaries direct training includes:

- Soil and water conservation techniques.
- Harvesting, storage and efficient use of water.
- Adapted crop production on rainfed areas.
- Adapted technical irrigation systems.
- Technical visit: legumes production system using recirculation in semi-arid conditions.
- Adapted sheep farming systems.
- Adapted pastures management.
- Poultry rearing.

71. Component 1 includes outreach activities with farming communities in other regions of Chile with similar agroclimatic characteristics and needs to improve farm management skills, as well as knowledge sharing and demonstrations of best practices by leading agricultural experts and institutions. In this context, the Project will organize "field days" for the demonstration sites. These organized visits will promote a participatory process of "learning by observation" with a view to replicating results and best practices on a larger geographical scale.

72. The agrotechnology transfer and skill generation activities of Component 1 will also provide synergies with three ongoing programs of the Ministry of Agriculture in the region: PRODESAL (Local Action Development Program), SAT (Technical Advisory Service Program) and SIRDS (Incentive System for Agri-environmental Sustainability of Agricultural Soils), the Self-consumption Program of the Solidarity and Social Investment Fund (FOSIS) of the Ministry of Social Development, and the Municipal Education Directorates (DAEM) of the Ministry of Education.

73. In order to archive the desired synergies between Project`s programs and those of MINAGRI and reinforce their joint impacts on skill generation and adaptation to rural climate change, a cooperation agreement will be signed between the services.

74. It is expected that through the transfer of knowledge and agrotechnology (including the provision of crops and animal breeds adapted to climate change) small farmers will build capacity and develop best practices to: increase agricultural production, improve soil moisture, and reduce soil vulnerability to erosion and degradation along with learning to efficiently manage water resources through technified irrigation, water harvesting, water recirculation, and greenhouse cultivation techniques.

75. As a direct result of the project, the areas under technical irrigation and in greenhouses should increase. In addition, small farmers will be able to grow new crops, which were previously not possible due to lack of water or poor management of it. INIA will provide seed varieties resistant to water or thermal stress, which will be made available to users through the project.

76. Component 2. Implement an agroclimatic risk information management system to promote adaptation and resilience of farmers to climate change.

77. This important component of the project seeks to be implemented an agroclimatic risk information management system to promote adaptation and resilience of farmers to climate change.

78. The following specifics objectives have been identified:

i. Strengthening of the agroclimatic systems, through the evaluation and relevant installation of weather stations, groundwater monitoring and citizen science initiatives to strengthen our farmers` access to local agroclimatic information. The network of meteorological stations in the territory will be increased in order to improve the climatic network and thus obtain better information with a higher level of precision.

ii. Develop a Regional Agroclimatic Observatory to allow farmers permanent access to forecast, indicators and local agroclimatic information, to enhance their resilience to climate change.

iii. Implement participatory agroclimatic roundtables for farmers benefiting from the project. Knowledge transfer instances, through mutual feedback of professional knowledge with the traditional knowledge of our agriculture, in order to favor agroclimatic risk management, as well as adaptation and resilience to climate change.

79. In order to achieve the expected results in this component of the Project, specialized consultancies will be used, with study centers and professionals with a high technical level. At least two consultancies will be carried out:

80. The first consultancy will be aimed at strengthening agroclimatic information systems and implementing an agroclimatic observatory in the Maule region, which will allow access to and management of agroclimatic indicators that favor access by farmers and their technical advisory services to local agroclimatic information, for the purpose of supporting decision-making processes in local forestry and livestock activities.

81. For the second consultancy, the focus will be on training and monitoring the implementation of the participatory agroclimatic roundtable methodology for project technicians. The objective is to enable access and knowledge transfer to project farmers regarding agroclimatic information,

climate change trends and guide technical management based on the development of this knowledge to promote adaptation and build resilience to climate change in the Maule Region.

82. The methodology of agroclimatic roundtables, as a broadcasting means, knowledge transfer and training in agroclimatology and climate change, is expected to be developed starting in year 2 of the project, once the Maule Regional Agroclimatic Observatory, developed during the first year, is functionally implemented.

83. This component includes the preparation of dissemination materials for project beneficiaries, farmers, rural inhabitants, high school and agricultural college students, and technicians in the communities where the project will be implemented.

84. Work will be coordinated with technicians and professionals from MINAGRI institutions to strengthen the focus on risk management, increased resilience, adaptation and mitigation of climate change in their daily work, and to ensure that the knowledge developed and transmitted in the component's forums, platforms and training sessions is used to develop agriculture in the Maule Region in a sustainable and sustainable manner.

85. The media and communication strategies consider the special needs of small farmers, their families and communities, and are integrated into the training plan and/or skill generation plan. Training in the use of agroclimatic information is incorporated into all direct training and training of trainer's activities as soon as it becomes available during year 2.

86. The component also includes the development of dissemination materials for the target population: small farmers (women and men), adolescents, agricultural school, etc., as well the training of professionals and technicians in the interpretation and use of the agroclimatic information provided, so that they can provide appropriate support to the implementation of the agroclimatic information system. The issuance of bulletins, forecasts and climate alerts are established with the investment of the project and are maintained thereafter.

87. It is expected that through Component 2, local institutions of the Ministry of Agriculture will strengthen and improve their technological and methodological capacity in sampling, analysis and processing of climatological data, and rural farming communities will increase their resilience to the negative impacts of climate variability and climate change through wise decision making based on climate information, breaking with the habit of not using information for decision making, in this way informed and properly trained farmers will make a great innovation in their production systems.

88. Due to its innovative character, it is assumed that the implementation of Component 2 will serve as a model for a better agricultural management oriented to climate change adaptation in other territories.

89. Component 3. Community environmental education of local civil society and rural schools for adaptation to climate change.

90. Component 3 has been included as a cross-cutting objective for the Project, with the purpose of elaborating and implementing an Environmental Education Program to encourage the installation of social resilience capacities for climate change adaptation in the rural community, intervening in civil society as a whole and specifically through collaboration with formal primary and secondary school education in rural educational establishments in the Project area.

91. For this component of the project some minimum expected objectives have been defined which are translated to the following specific objectives:

- i. Environmental training for climate change to young students in the communes of the project.
- ii. Civil society organizations and their leaders are prepared and informed, committed and aware citizens of the climate variability and climate change.
- iii. The civil society of the commune improves its competencies and skills, which allows the implementation of actions for adaptation and resilience to climate change through advocacy actions in local management.

Methodology.

92. The Environmental Education Program considers two target groups, on the one hand the school community and on the other hand the civil society, where the Project's beneficiary farmers are included directly and indirectly.

93. This program will be implemented during the second semester of the first year with long-term replicability in mind. In the case of the school community, it will be implemented in rural educational establishments, considering classroom and field activities (outdoor education), and incorporating into the subject the understanding of the natural environment ideally through support material. In the case of civil society, it should consider the members of the associated territorial organizations and beneficiaries of the project implementation.

94. The activities described distinguish between classroom and field activities, as well as the methodological different work to be applied with the civil society organizations and educational establishment.

95. A single plan will be formulated to account for civic and environmental education, theoretical and practical training activities, methodologies, evaluations, etc. This will make the Environmental Education Program more robust and more user-friendly for replication in other educational institutions and civil organizations.

96. The strategy designed to stimulate the participation of potential beneficiaries in the activities consulted in the project rests on the conceptual basis of understanding the participants as protagonists of their destiny, capable of assuming behaviors that allow adaptation to climate change. In this sense, the project executing team is endowed with a theoretical, methodological and principled conception in which the participant of the process is conceived as a central actor, bearer of knowledge and life projects in a contained and necessary way to be activated and catapulted on the basis of their capacities and knowledge. In other words, active participation is reflected in the beneficiaries' ability to activate their capacities, to think and act for their future and to recognize the obstacles and/or possibilities offered by their immediate environment.

97. In this way, the methodological principle of "reflection-action" is conceived as the reflection of a way of understanding and doing the practice of the Project, as part of the thought process with a strategic projection that transcends the circumstantial of each activity.

98. To materialize the principle of active participation of the Organizations and members of the communities in this process, at least three ways are identified:

99. 1) On the other hand, in the conviction of the professionals in charge of executing the program, that this initiative goes far beyond a mere circumstantial view of the action carried out (inscribing it in the "professionalization" of the activity; defending the practice at the level of "work", as a labor activity independent of its specificity). At this level, the executing team is positioned as "subject agent of development", that is to say, a subject with a conception of what is desired (therefore, bearer and transmitter of a "must be").

100. 2) In order to achieve such purposes, the Professional Team is provided with a "methodology", which guides the interpretation and action of the phenomena in which it intervenes, understanding the strongly educational character that implies the essence of its interventions, as its search to enhance the "Social Capital" in the beneficiaries of the intervened territories and,

101. 3) At the strictly operational level, through which practical conditions are generated that allow the participation of the subject-beneficiaries. Participation that is expressed in "being an active part" of the process, in terms of its construction and the scope it seeks. In this sense, the dialogue internalization achieved in individual and group contacts by the professional team is of vital importance. In the latter, it is considered, for example, to provide the following conditions - in general terms - to facilitate participation:

102. Make an attractive, clear dissemination with convening effects towards the beneficiaries participating in the initiative.

103. i) In the execution of group activities, participatory methodologies will be developed that give meaning and increase importance to the participating beneficiaries themselves, according to pedagogical criteria that facilitate significance learning and their interaction in the activities to be developed.

104. ii) On the other hand, the work methodology basically involves a highly interactive work and a permanent face-to-face meeting with the beneficiaries, which contributes significantly to break the ice and create bonds of trust that allow establishing communicating vessels conducive to maintaining the participation of the beneficiaries during the process. In summary, the incentive for beneficiary participation will be based on personalized meetings with each beneficiary and on a fluid delivery of information related to the program accompanied by motivation regarding the project's themes.

105. iii) Establish work schedules for the workshops that allow the maximum number of beneficiaries to attend. Schedules that will be duly agreed with the respective group or organizations;

106. iv) Organize and carry out the activities in places –as far as possible- geographically equidistant for the participants. If this condition is not applicable, count with transportation available for the participants.

107. v) The experience of the executing team: The executing team has sufficient experience in climate change issues and participatory methodologies to achieve a high level of participation of the communities and people involved. This experience is an important input to ensure the participation of the beneficiaries and the impact of the project's actions.

108. vi) The certain perspective of the materialization of the training, support and follow-up processes in their development and productive strengthening process, as well as the establishment of support networks for the beneficiaries. It implies a "hook" to attract beneficiaries so that they become involved in the project's actions.

109. vii) In turn, it implies that the beneficiary assumes more protagonist and growing, in a permanent way.

110. Creation of a local participation committee for the project, whose functions will include representing the participants, analyzing progress and coordinating with other organizations in the locality.

B. Describe how the project /programme would promote new and innovative solutions to climate change adaptation, such as new approaches, technologies, and mechanisms.

111. There is a traditional way of farming in the area of influence of the Project. This traditional sustainable way mainly based on rainfall and with low updated technical knowledge, is now being affected by the consequences of climate variability and climate change, affecting the agricultural, livestock and forestry production of small farmers, in such a way that their family economy is also being affected. In previous decades there was an abundance of rainfall and therefore abundance of water in natural watercourses and subway aquifers, the latter largely supported the supply of water for drinking and exceptionally for small-scale crops. Thus, there were no major restrictions to maintain life in the countryside and to keep the systems in operation. On the other hand, the soils maintained important water reserves in the soil profile, sustaining also the production of crops, especially rainfed cereals, the marked seasons of the year gave account of productive systems quite stable over time.

112. The current scenario of low rainfall, soils devoid of vegetation and loss of their productive capacity, small farmers must face it with new updated knowledge, incorporating new techniques of cultivation and breeding, which are innovative and based on agro-environmental sustainability. With all this, the project through the demonstration units will include a portfolio of practices of minimally invasive soil management, incorporation of organic amendments, farm planning, efficient use of water, the use of resistant to water deficit crop varieties, regenerative livestock production, poultry production for self-consumption; among others. All this set of practices and technical knowledge will be made available a plan for the generation of competencies and will be demonstrated to farmers and civil society to teach in the demonstrated units more innovative and sustainable ways of production.

C. Describe how the project/programme aims to roll out successful innovative adaptation practices, tools, and technologies and/or describe how the project aims to scale up viable innovative adaptation practices, tools, and technologies.

113. The traditional farming methods in the project territory have been also part of the problem of ecosystem degradation, a situation that has been intensified and accelerated by the effects of climate change. The project will promote the inclusion of innovative practices and technology, both in the demonstration farms and also in the farms of the small producers that will benefit with the project. The mentioned investments consider innovative and proven systems for capture of rainwater harvesters, construction of greenhouses for self-consumption, small high efficiency irrigation systems, micro photovoltaic energy systems, and reuse of gray water through biofilters, among other practices.

These innovative actions for adaptation will be promoted and implemented for local farming families directly and for the general approve indirectly, thinking about the cultural change that the inhabitants

of this territory must adopt to improve resilience to climate change and maintain food production system.

114. At the same time, the project will also encourage the use of zero-tillage or vertical plowing machines to avoid unnecessary soil movement and thus stop erosion processes. It will also include the promotion of organic amendments, green manure and the incorporation of stubble, among others; this is the major change in the way of farming, as opposed to what farmers currently do with soil inversion plowing, 100% chemical fertilization and burning of harvest stubble. For this reason, the project promotes process innovation in local production systems with techniques, tools and technologies that have been validated in other parts of the country and widely used in other countries in the region.

D. Describe how the project / programme would provide economic, social, and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme would avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

115. According to the Environmental, Social and Gender Policy of the Adaptation Fund, this Project does not have a negative impact on environmental, social and economic aspects, otherwise this project aims to raise awareness in society about the importance of environmental care and the relevance of strengthening social actions, that influence the productive practices currently used in the countryside, which have generated negative impacts over time, for this reason this projects is very necessary in the territory because it aims to educate the rural inhabits to cope the climate change and avoid the adverse environmental, economic and social impacts.

116. The focus of this Project is precisely those communities of the most vulnerable farmers in the communes of the area with direct influence, that is those communities lacking material resources and with insufficient knowledge to improve resilience to climate change, to whom the project will provide innovative solutions that promote the care and conservation of productive resources, especially care of soil and water; essential elements to maintain the agricultural production in a sustainable manner.

117. . Although the economic benefits have not been measured in detail at this stage of the project, it is possible to determine clear benefits for the family economy of the project's beneficiary producers, the most important elements are shown in the following table:

	Benefits		
	Economics	Socials	Environmental
Small farmer (in general)	Increased productivity results in higher revenues and generates competitive market advantages.	Improved quality of life due to higher incomes and better water supply. Prevention of rural exodus due to better opportunities for younger generations and strengthened family ties resulting from the family integration of the "active learning" approach	Reduction of soil loss and desertification processes due to greater availability of water resources and improved irrigation techniques. Prevention of ecosystem degradation through sustainable management of agricultural land with an agroecological approach.

		of the agrotechnology transfer process.	
Women	Additional income from greenhouse production and small animal production due to increased availability of water resources resulting from rainwater harvesting and storage systems.	Increased economic benefits through greater participation of women in agricultural production will reinforce their role and participation in farm management decision-making.	Women are more likely to adopt sound ecosystem-friendly decision making. Women's enhanced position in farm management will have positive implications in the process of creating environmental awareness at the household level and will result in more environmentally friendly farming practices.

118. Considering the AF's environmental and social Policy, this project could be classified as Category C project, given that no negative impacts are identified with the implementation of this initiative.

From the point of view of the economic impacts, it can be mentioned that there are no adverse effects on the local economy or negative effects on family economies; in contrast, it can be stated that there will be a significant injection of resources in the project territory that will be reflected in direct investment in the properties of the beneficiary farmers and a dynamization of the local economies will be observed.

119. The investments in the farms include rainwater harvesting, small greenhouses for vegetable production, improvements of corals for micro production of poultry for family consumption, grey water purification systems with biofilters, installation of automated irrigation systems for efficient use of water, among other direct investments.

120. The Project considers each of the Environmental and Social principles expressed in the AF's Environmental and Social Policy, with special emphasis on those principles that are directly related with the project, in order to safeguard and promote these same principles during the implementation of the Project in the territory.

121. Regarding the Gender Policy, must be mentioned the Project indirectly seek the empowerment of women in the field, highlighting the important role they play in each family and the fundamental pillar they represent in maintaining the social fabric of the territories, where they occupy and important leadership positions in different territorial, productive and social organizations, such as neighborhood units, cooperatives, school parents 'centers, among others.

It is worth to be mentioning that Chile is a leading country in this area in South American region, promoting that women occupy their rightful place in society, examples of this actions in the State are the creation of the Ministry of Women and Gender Equity, gender parity in the system of parliamentary elections and public office. It can be also observed that some productive development instruments of the Ministry of Agriculture are focused on women, assigning them special contest. These concrete initiatives show that the State of Chile and particularly the Ministry of Agriculture, which will be the executing entity of the Project, is committed to deepening actions and commitments to highlight the role of women in the society.

122. The gender perspective is the approach chosen by the United Nations and the international community as a strategy to implement greater equality for women in relation to men in any action

planned in all the areas and at all levels (UNICEF, UNFRA, PNUD, ONU Women). Therefore, within the different phases of implementation and execution of this project, initiatives that comply with the gender policy of the Adaptation Fund will be contemplated.

Withing the initiatives contemplated in the gender perspective is contemplated to carry out, through the construction of guidelines established in a Gender Plan:

Gender Analysis: Which aims the objective to understand the social, economic and political factors underlying climate change that exacerbate gender inequality and the potential contribution of women and men to social changes to generate resilience and address to climate change.

Gender Actions: Methods and tools to promote gender equality and reduce gender disparities in climate action.

Gender-sensitive monitoring and evaluation: Measures the outcomes and impacts of project activities on women´s and men´s resilience to climate change through a gender perspective.

123. In the complete project design stage indicator measures will be set up to establish the impacts that the project will have on the AF´s Environmental and social policy and Gender Policy, in order to adequately assess the results archived in this area.

124. In order to development of this project is very important to highlight the role of women and strengthen their social and productive action; especially in the communes of the area of influence, given that the reality of the Maule Region is that close to 40% of the small farmer beneficiaries of the Institute for Agricultural Development (INDAP) are women, in particular in the communes of the project, women outnumber men in INDAP´s productive technical assistance programs, as is the participation of women beneficiaries of INDAP are shown in the following tables:

Gender	INDAP user farmers	Percentage (%)	Older than 18 up to 35 years old	Older than 35 years old
Female	7.380	40,38	260	7.120
Male	10.897	59,62	441	10.456
General Total	18.277	100	701	17.576

Table 2, Regional coverage of INDAP beneficiaries by gender and age
Source: Prepared with data from the Maule INDAP Regional Directorate, 2022.

Communes	INDAP user farmers	Percentage (%)	Older than 18 up to 35 years old	Older than 35 years old
CUREPTO	906	100,0	43	863
Female	362	40,0	14	348
Male	544	60,0	29	515
HUALAÑE	610	100,0	28	582
Female	242	39,7	6	236
Male	368	60,3	22	346
LICANTEN	218	100,0	6	212
Female	72	33,0	5	67
Male	146	67,0	1	145
VICHUQUEN	485	100,0	18	467
Female	261	53,8	11	250
Male	224	46,2	7	217
General Total	2.219		95	2.124

Table 3, Communal coverage of INDAP beneficiaries by gender and age.
Source: Prepared with data from the Regional Directorate of Maule INDAP, 2022.

125. The following table n°4 shown a comparison of the expected situation with the implementation of the project versus the situation without the project.

Current Situation	Expected Project Benefits
<p>Small farmers suffer water shortages from November to April.</p> <p>Small farmers and their families receive water in ponds from the local municipality. However, the amount of water distributed during the dry season is barely sufficient to meet basic needs and insufficient to sustain water-dependent agricultural activities.</p> <p>The younger generation migrates from family farms to cities in search of better economic and working conditions and quality of life. The average age of small farmers in the project area is 52 years old, and they are not very open to changing conservative farming practices and applying new and targeted innovative options.</p> <p>Smallholders have limited connections with agribusiness and very low participation in farmer organizations.</p> <p>Increasing degradation and loss of soil fertility due to erosion and overexploitation.</p> <p>Limited production of traditional crops such as legumes and due to low soil moisture and water storage capacity of topsoil.</p> <p>Low climate adaptation of small farmers because they do not have access to crop varieties and livestock species that are better adapted to climate change and extreme weather conditions.</p>	<p>Smallholder farmers are better prepared for dry seasons due to support and skills building in the use of rainwater harvesting and storage facilities and more efficient irrigation techniques.</p> <p>The installation of rainwater harvesting and storage structures on 140 farms will increase water availability for these families and allow them to maintain water-dependent agricultural activities even during dry seasons, improving vegetable production for family consumption.</p> <p>The installation of rainwater harvesting and storage structures on 140 farms will increase water availability for these families and allow them to maintain water-dependent agricultural activities even during dry seasons, improving vegetable production for family consumption.</p> <p>The Project's participatory education and training approach, which includes guided visits by 1,000 farmers to the demonstration sites, will increase communication among farmers and their readiness to join existing farmer organizations or to build their connection to the agribusiness sector.</p> <p>Soil degradation will decrease due to the application of soil recovery and conservation methods and proper land and pasture management incorporating agroecological and regenerative techniques.</p> <p>Increased soil moisture and greater water storage capacity as a result of better soil management with physical and biological tillage methods. Increased crop and pasture production as a result of proper land management and the use of appropriate equipment (e.g., seed drill for no-tillage soil).</p>

Table n°4. Comparative table of situation with and without project.

E. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme and explain how the regional approach would support cost-effectiveness.

126. The objective of the implementation of this project is directly related to improve the productive

capacities of farmers with a main focus on sustainable practices that generate productive conditions and capacities to improve resilience to climate change. Improvements that are reflected for example in healthy soil for food production, it is a direct economic benefit for the family economy and, incidentally, offers substantial improvements to agroecosystems in terms of soil restoration and recovery of local productive capacities.

127. A minimum of 3,000 hectares will be intervened with agricultural machinery, this will be a direct contribution of the Project to local producers, thus reducing the cost of this item in local food producing farms, especially in those cereal and legume farmers who have seen their income reduced by the threat of imports, today in the post-pandemic world scenario, the production of cereals and legumes is presented as an opportunity to recover the position of producers to supply the domestic market. The intervention with machinery to finance 3,000 hectares of work with resources from the Project directly injects \$414,000 USD in the territory of the 4 communes.

128. On the other hand, the investment with machinery for a value of US\$1,600,000 represents a strong investment in the territory, which responds to a need of local producers who are exposed to sowing outside the recommended term or to crop losses due to lack of sufficient and adequate machinery at the right time to meet their requirements. For this reason, the availability of the Project's machinery will avoid these alternative costs for farmers and improve the profitability of the agricultural business.

129. Promoting innovations in the way farms are cultivated is in itself an important step for the territory, is also much greater contribution to environmental sustainability. The project, together with the technician team will accompany the farmers in this process of innovation and cultural change to encourage and address the actions to ensure the sustainability of the actions over time, in this sense the farmers themselves with the help of the municipalities and the social and productive organizations of the territory will provide future operational and economical support when the project ends, so that the actions that the project will implement can be continued.

The project proposes a cultural change in the local communities, the challenge is a change in the way of doing things, which is not easily to measure previously so that in the design stage of the complete project will be possible to establish the metrics of the results with a greater degree of certainty.

F. Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist. If applicable, please refer to relevant regional plans and strategies where they exist.

130. Climate variations and their effects have become one of the most critical challenges for the world , also for forestry and agricultural production. The international cooperation framework known as the United Nations Framework Convention on Climate Change (UNFCCC), which was signed at the Earth Summit in 1992 and entered into force in 1994, was adopted to find solutions to this global challenge. Its objective is to stabilize greenhouse gas concentrations at a level that limits the increase in global mean temperature and climate change resulting from human action on the atmosphere, and address its impacts.

131. To strengthen the adopted proposal, negotiations began between the "Parties" (countries that are signatories to the Convention) known as COPs (Conference of the Parties), which meet every two years to assess the climate change situation and the effectiveness of the treaty. The COPs set the roadmap for developing low-carbon economies and thus the countries' development paths. As

a result, the Kyoto Protocol was signed in 1997, which expires in 2020, and in 2015 the Paris Agreement was signed, which will enter into force in 2020. The Paris Agreement seeks to accelerate and intensify actions to strengthen the global response to climate change, keeping the increase in the global mean temperature below 2°C compared to pre-industrial levels and strengthening the capacity of countries to address climate change in accordance with their own national objectives, achieving a sustainable future with low carbon emissions.

132. On May 30, 2022, Chile enacted Law 21.455, Framework Law on Climate Change, which establishes a legal framework to address the challenges posed by climate change, in order to achieve and maintain greenhouse gas emissions neutrality by 2050.

This law presents various ministries, including the Ministry of Agriculture, with the challenge of preparing a Sectoral Climate Change Mitigation Plan for the Forestry and Livestock Sector. In this regard, the following are the initiatives under development related to climate change in the Ministry, as well as their main challenges:

133.. Sectoral goals for the Long Term Climate Strategic (LTCS).

134. This strategy defines the general long-term guidelines that the country will follow in a cross-cutting and integrated manner, considering a 30 years horizon, to face the challenges posed by climate change; move towards a low greenhouse gas emissions development, until reaching and maintaining greenhouse gas emission neutrality; reduce vulnerability and increase resilience to adverse effects of climate change; and comply with the international commitments assumed by the State of Chile in this area.

135. This final sectoral objectives and goals are aligned with the components of the NDC; adaptation, mitigation, integration and means of implementation (development and transfer of technologies and capacity building and strengthening), and are in line with the objective and line with the objective and lines of action of the Climate Change area of the Agrifood Sustainable Strategy.

The Ministry of Agriculture is committed to 9 objectives and 63 goals related to capacity building, research, development and rural extension in the area of climate action, measures for the adaptation and mitigation of Climate Change, institutional strengthening, reducing the deforestation, reducing the occurrence and risk of forest fires, increasing the recovery of native forest and promoting the participation of local communities and indigenous people in mitigation actions and policies in the forestry sector, also incorporating a gender perspective.

136. Upating the Nationally Determined Contribution (DC)

In its Adaptation Component, the NDC establishes that the climate change adaptation plan for the forestry and agriculture sector will be updated by 2021. This plan will establish the actions that the sector must comply with, in accordance with the long-term objectives established in the LCA.

In 2020, the commitments of Chile's forestry NDC for 2030 were updated, increasing the ambition in terms of native forest recovery, afforestation, and having a National Landscape Scale Restoration Plan. The main challenge is to obtain financing to achieve these goals.

137.. Updating of the National Plan for Adaptation to Climate Change in Forestry and Livestock Sector (PANCC SAP)

The Ministry of Agriculture through ODEPA and with the support from the Green Climate Fund and FAO as Implementing Agency, is updating the National Plan for Adaptation to Climate Change in the Forestry and Livestock Sector (PANCC SAP). In the context, participatory processes were carried

out by marco-zones that have made it possible to identify problems, adaptation measures and implementation actions.

The update will be completed 2022, and from 2023 to 2027 the established measures must be implemented.

138. Inventory and prospecting system for the forestry and livestock

Inventory and Prospective System for the Forestry and Livestock Sector

Three institutions of the Ministry of Agriculture, the Agricultural Research Institute (INIA) and the Forestry Institute (INFOR), coordinated by the Agricultural Planning and Policy Office (ODEPA), are preparing the sectoral greenhouse gas inventory, which is key to defining climate change mitigation policies.

139. National Strategy for Climate Change and Vegetation Resources (ENCCRV) 2017-2025.

Climate change poses challenges for forests and the communities that depend on them, and it is vital that states make efforts to ensure the protection, restoration, sustainable use and conservation of these resources. This was reflected in the climate summit held in Glasgow in 2021, where Chile, together with more than 120 countries, committed to put an end to deforestation by 2030.

In the forestry sector, mitigation strategies include reducing emissions from deforestation and degradation, sustainable management, increasing permanent forest cover with afforestation and restoration actions, among other activities known as REDD+ approach. Adaptation measures include actions aimed at reducing the vulnerability of forests and the populations that depend on them.

140. In order to comply with these climate commitments, CONAF, as focal point of the REDD+ approach of the United Nations Framework Convention on Climate Change, has developed the National Strategy for Climate Change and Vegetation Resources (ENCCRV), which corresponds to a public policy that follows both national and international guidelines regarding forests, considering from the basis the gender approach, interculturalism and in accordance with the vision of the communities in the territory.

141. Within this framework, Chile has advanced to phase 3 of this Strategy by leveraging US\$63.6 million from the Green Climate Fund (GCF) for the reduction of emissions from forests in the regions of Maule to Los Lagos. For the application and execution of this financing, MINAGRI has the support of FAO as executing agency and accredited to the GCF.

As a result of its actions, the project expects to achieve the reduction and/or capture of 256,000 tons of CO₂ per year, starting in 2030, contributing to the achievement of Chile's climate commitments in its NDC.

142. From 2020 and over a period of 6 years, environmental, social and economic benefits will be generated for around 23,000 people directly, while another 68,500 will benefit indirectly. Of these, at least 30% must be women and another 30% must belong to indigenous peoples.

At present, there are direct action pilot activities in 360 hectares between Maule and Los Lagos, including actions to restore terrestrial ecosystems altered and/or affected by fires, afforestation of land that is not currently forest, sustainable management of native forests, vegetation management to prevent fires, and support for the sustainable production of woody biofuels.

143. Escazú Agreement

It is a Regional Agreement about the Access to Information, Public Participation and Access to Justice in Environmental Matters in Latin America and the Caribbean, which is adopted in Escazú (Costa Rica) on March 4th, 2018 and entered into force on April 22nd, 2021. Its objective is to ensure the full and effective implementation to access rights through capacity strengthening and

cooperation, contributing to people's right to a healthy environment and sustainable development. This international instrument promotes a process of transformation of environmental institutions to adapt them to the current situation of water scarcity and climate crisis, and to the social, cultural, economic and environmental dynamics and conditions of each territory. On March 18th, 2022, Chile signed the Draft Agreement that allows it to become part of the Escazú Agreement.

G. G. Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

144. The implementation of this proposal involves the active participation of government institutions, with the Ministry of Agriculture playing a leading role; the Ministry of the Environment and the Ministry of Education will be incorporated in later stages, and it is in full compliance with the existing legal framework and procedures, including direct and outsourced operations through bids.

145. The actions and tasks considered in the implementation of small and medium-scale investments have technical standards, accredited by the National Institute of Standardization (INN), which are not directly legally binding, but are considered as prerequisites in the terms of reference and/or in the accreditation of consultants and certified technical services for the execution of works financed with state resources. In this case, the only relevant standards are those related to the quality of water for irrigation and human consumption (NCh 1333, NCh 409).

146. Considering the current legislation in Chile (Law 19300, modified by Law 20417 that established the basis for environmental issues) and also considering the scale of the project and nature of the activities involved in the proposal, this project does not have to submit an environmental impact assessment or environmental impact statement.

147. In order to optimize the implementation of the project, the detailed design phase has developed technical solutions for each product that ensure the non-requirement of authorizations such as municipal construction permits. The only procedures on which the project depends are, therefore, its own coordination, procurement and contracting processes, which are incorporated into both the intervention design and adequately enabled in terms of time, and dedicated personnel

148. The proposal is classified as Category C, considering that there is no environmental or social impact. The project follows the environmental and social principles described in the Adaptation Fund's Environmental and Social Policy.

149. As mentioned above, the project will be implemented on farms belonging to beneficiaries in the family farming segment, this means that the farms targeted for intervention range from 0.2 hectares to 12 hectares and therefore qualify as small-scale producers. In this context, no large-scale civil works or large-scale constructions will be carried out. The investments that will be made on the properties include small rainwater collection system, the construction of micro greenhouses of approximately 48 m², small biofilters systems, among other minor improvements, all of which qualify as very small works that do not require special permits from the public authorities. Likewise, the interventions with machinery for tilling the soil for cultivation will be carried out promoting conservationist principles, not considering earth movements from one place to other nor will they affect the community because the actions will be exclusively on agricultural lands, in

this sense, the actions of the project consider at all the times the regulations in force to safeguard the care of the environment and legal compliance.

In the case of the use of organics amendments to crop soil, these will be carried out under the technical and legal guidelines of Agricultural and Livestock Service (SAG), public organization of the Chilean Ministry of Agriculture.

150. There will no large-scale interventions in the territory, no actions or works will be carried out in natural waterways, and the project will not affect ancestral uses and customs of water sources or riverbanks or estuaries. In summary, none of the current environmental protection regulations will be violated, nor will the rights of the inhabitants of the territory be violated in any way.

H. Describe if there is duplication of project / programme with other funding sources, if any.

141. There is no evidence of other sources of financing that could be duplicating the same activities and investments with the proposed measures to be implemented by this project in the same territory.

I. Describe the learning and knowledge management component to capture and disseminate lessons learned.

142. The agrotechnology transfer model consists of a combination of "learning-by-doing" and "learning-by-observation" methods. In this context, farmers, local experts from the Ministry of Agriculture and local advisory teams work together to understand and implement appropriate land use practices and farm management practices that are adapted to climate change and climate variability and that, in general, improve and secure agricultural productivity and water resource management.

143. The "learning by observation" component refers to guided visits to the demonstration fields by farmers from the project area and from outside the project area, totaling 1,000 farmers. This combined approach of learning and knowledge exchange will be enriched by learning from the best practical experiences of leading agricultural institutions in countries with similar conditions to rainfed through different activities (training of professionals, technical visits of farmers, and others).

144. The project implements a monitoring system to evaluate the results of agrotechnology transfer activities and the effectiveness of agroclimatic information dissemination in the broader context of climate change adaptation and resilience building. This monitoring and evaluation system allows an estimation of the degree of achievement of project objectives and, if necessary, the application of corrective measures during project implementation.

145. The project provides users with state-of-the-art information and knowledge on climate change adaptation and resilience, a comprehensive dissemination and training strategy and material conditions for the knowledge acquired to be applied at scale. In addition, resources have been planned and allocated for specific knowledge management tools designed for objectives within and outside the direct and indirect beneficiaries, such as, for example: a GIS platform, a regional agrometeorological observatory and a documentary library of technologies developed in previous experiences in this area in neighboring regions.

146. The actions and activities will be executed with a methodology that is divided into three components or areas to approach the execution.

147. **The First** is the methodology of intervention in the territory ,which is composed by two sub categories such as the intervention in a territorial unit and also a specific intervention with producers/users of the project's services, as described above.

148. **The Second** is the methodology applied to training activities. These trainings will be of a face-to-face nature. They take place in spaces that offer the appropriate conditions to stimulate the acquisition of knowledge by the attendees.

Some elements that constitute the training methodology.

149. This area is defined as a problematizing educational practice where, through reflection and praxis, participants can transform themselves and their reality, which is essential to stimulate resilient and adaptive processes to climate change.

150. The methodology to be applied operates on the basis of a horizontal teacher-student relationship, where dialogic communication allows participation, exchange of experiences and growth of each other mediated by the environment. This methodological approach rescues the experiences of the participants and merges them with the contents addressed. It is a methodology that contemplates elements that, systematically integrated, allow the understanding and apprehension of a phenomenon such as climate change.

The methodology constantly seeks to recognize the mastery of something that each person has created or is part of and the relationship with the culture in which it is inserted. In the execution of the training sessions, we will appeal to the participants' psycho-behavioral elements and to the realization of the purpose of this initiative, namely:

151. Critical-reflective thinking; logical thinking in adults has logical and dialectical awareness. He knows why he studies and can easily appreciate inductively or deductively the consequences of the educational act. The adult promotes his education, plans it and carries it out according to immediate needs and interests and with a view to consolidating his future (adaptive projection). Therefore, actions are stimulated to strengthen this rationing and incorporate it into daily praxis (generation of resilient behaviors).

152. Integrative training; Seeks that the participants not only know what they do, but that they re-know in depth, the personal characteristics as adults that enable them to make attitudinal changes regarding the subjects, technologies and processes treated, making a personal questioning that allows them to discover their weaknesses and/or deficits, and that this process allows them to approach these areas and try to complete them through a continuous rational progression.

153. This achievement is pursued by delivering the contents that allow; Update, Orient and renew the knowledge to continue learning, researching, reforming concepts and enriching their scientific and techno-logical cultural life, as part of a projection that interprets the variables of what we were, are and will be. All this within the theoretical framework that seeks resilience and adaptation of people to the new conditions of the environment.

154. The didactic support of the workshops contemplates audiovisual presentations that allow the appropriate delivery of the conceptual and descriptive aspects, including times of analysis and discussion of what has been treated.

155. In the execution of group activities, participatory methodologies will be developed to give meaning and increasing protagonism to the participating beneficiaries themselves, according to

pedagogical criteria that facilitate significant learning and their interaction in the activities to be developed.

156. On the other hand, the work Methodology basically involves a highly interactive work and a permanent face-to-face meeting with the beneficiaries, which contributes significantly to break the ice and build bonds of trust that allow establishing communicating vessels conducive to maintaining the participation of the beneficiaries during the process. In short, the incentive to beneficiary participation will be based on personalized meetings with each beneficiary and on a fluid delivery of information related to the program accompanied by a motivation regarding the project's themes.

157. The Thrid component is the technical visit methodology; technical visits are a stage and an integral part of the analysis process carried out by the technical team, within the framework of the climate change project, of the implementation of the activities of the advisory plan approved by the management and administration unit for the respective phase.

It is also the purpose of the on-site visits not to leave any information out of the systematization and therefore findings that had not been foreseen should be incorporated. This helps to reinforce actions for the benefit of the community.

J. Describe the consultative process, including the list of stakeholders consulted, undertaken during project / programme preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.

158.. For the elaboration of this proposal and considering it as a first stage of formulation, only local actors of the communes to be intervened were consulted, those who have technical competences as well as knowledge about the socio-cultural aspects of the communities where they work. In the same way, national authorities of the Ministry of Agriculture were consulted, in this sense we can mention for example the following:

159. -Vice Minister of Agriculture, José Guajardo Reyes. He expressed his particular interest in implementing this initiative in the territory described as Maule Costa Norte because this territory is currently being strongly affected by the effects of climate variability and climate change. Therefore, the authority requested that full attention be given to the formulation of the complete project at a later stage, including local stakeholders.

160. National Director of the Instituto de Desarrollo Agropecuario (INDAP), Santiago Rojas Alessandri. The authority agreed with the initiative and expressed his commitment to integrate the regional teams of the institution to support both the formulation of the complete project and its implementation. This opinion is very important given that INDAP is the institution in charge of technology transfer in a large part of the national territory and, of course, is very present with its technical teams in the communes targeted by the project.

161. At the local level, the mayors of the Commune of Curepto, Mr. René Concha González, and the Mayor of the Commune of Vichuquén, Mr. Roberto Rivero Pino, were interviewed. Both mayors agreed on the need to urgently help the farmers of their communes with innovative initiatives to meet the challenges of adapting to climate change and the need for food production to strengthen national food security.

162The representatives of the technical teams of the Local Development Program (PRODESAL) of INDAP, from the communes of Hualañe, Licanten and Vichuquén were also consulted, as for

the commune of Curepto, the person in charge of the office of Productive Development and the person in charge of the Environment of the same commune of Curepto were consulted.

163. In all consultations there was an immediate acceptance and availability to contribute with information and experiences for the formulation of the proposal. In all cases, the professionals reported the difficulties that farmers in their respective communities are facing the negative effects of climate change and expressed that the postponement of their territories increases the inequality gaps with farmers in the rest of the region.

164. These interviews served as inputs to prepare a proposal consistent with the needs of farmers in the face of the problems of vulnerability to the negative effects of climate change.

165. At this stage, no other massive consultations were carried out with farmers or organizations present in the territory; however, at a later stage of the project, consultation and work will be carried out with local farmers, professional teams from the municipalities and institutions of the Ministry of Agriculture to detail other elements of the proposal and refine the details of what has been built so far.

166. The problem addressed with respect to the vulnerability of the productive agricultural systems of small farmers is repeated in a large part of the national territory, being strongly affected by the water deficit, which compromises food production, this affectation is visible, but it is not fully quantified and qualified by the state; however, it is a reality detected. In this sense, in this stage of the project there is no more detail about the considerations of the farmers and organizations of the territory; however, the vision from the state with some data and a general vision of what happens in the 4 communes involved plus the consultations made to the mentioned local and national actors, allow configuring the proposal that points to problems faced by the inhabitants of the 4 communes. The participation of the direct and indirect beneficiaries of the project will be addressed with greater precision, detail and coverage in the complete project design stage.

K. Describe how the project/programme draws on multiple perspectives on innovation from e.g., communities that are vulnerable to climate change, research organizations, or other partners in the innovation space, in the context in which the project/programme would take place.

167. It had been mentioned that the way of doing agriculture, the way of raising livestock for self-consumption or small-scale timber production of small farmers in the 4 communes of the project, obeys a set of very traditional and ancestral techniques, which can sometimes be in conflict with more sustainable cultural practices, the same happens with the management of water resources at the farm level, in the same way traditional agriculture does not use modern information management tools, nor does it use technologies adapted to the production conditions. For this reason, in the face of climate uncertainty scenarios, it is necessary for farmers to support local and national food sovereignty and security, and for this reason the project will promote that both farmers and other members of local society are able to manage the available information and participate in the construction of the information, an example of this is the case of component 2 of the project, which will generate information based on the participation of the rural inhabitants themselves in the collection of agro-climatic data and its management in the community.

168. These new ways of doing are based on innovation, particularly on "process innovation", which proposes different ways of doing what is usually done. In this process of cultural change, farmers and local organizations will be accompanied by the Chilean Ministry of Agriculture and its public

institutions such as the Institute of Agricultural Research (INIA), the Foundation for Agricultural Innovation (FIA) and the Institute for Agricultural Development (INDAP). Private research and development centers, regional universities, regional governments, and others will also be involved in the development of this initiative.

L. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

169. The Chilean government recognizes the urgent need to adapt to climate change within the context of sustainable development and has prepared the **"Plan for adaptation to climate change in the forestry and livestock sector"**. Its implementation, however, is aggravated by budgetary constraints. There is, therefore, a great need for external support to enable the implementation of pilot projects in the project area to solve medium and long-term preventive actions related to water supply for human consumption, agriculture and livestock management. These pilot projects, which are understood as a first step towards the implementation of the national adaptation plan, it will also contribute to strengthening the capacities and expertise of the Ministry of Agriculture and its local institutions to create examples of best practices and promote their application at the national level.

170. On the other hand, the installation of theoretical and conceptual capacities in farmers on issues related to the sustainable management of productive resources adapted to climate change is not enough on its own, it also requires investment and technical and economic support, it requires a process of progressive and voluntary transition, so, the State of Chile is not able to provide these answers to the community alone. Therefore, the State of Chile needs financial support from sources outside the national treasury to promote this process in a progressive and fair manner, supporting initiatives in each lagging territory, generating scaling up of the good lessons learned in terms of adaptation to climate change.

171. The priorities of the Chilean government and those of the communal governments respond to the urgency of satisfying the most basic needs of the population, such as water for human consumption or bonuses to offset the rise in food prices, and therefore longer-term initiatives, such as teaching the population about climate change adaptation measures, are postponed by the urgencies, while the negative effects of climate change further degrade the ecosystems without being able to respond as a state to it and the farmers and rural inhabitants who have been neglected become increasingly vulnerable.

172. On the other hand, all investments, training activities, the introduction of innovation as a transversal axis of the project's work, the linkage with other entities of the Chilean government, as well as the actions of the stakeholders themselves, will be carried out by INDAP; as well as the actions of the local stakeholders that have been described in greater mean in the paragraphs above, are aimed at improving the resilience of vulnerable communities so that the investments that the project will make in the territory, will be exclusively in favor of the farming communities themselves and in favor of the care and respect for local ecosystems, with the sole purpose of helping to contribute to maintaining agricultural production systems in operation in a sustainable manner to improve local and national food security and sovereignty.

M. Describe how the sustainability of the project / programme outcomes has been taken into account when designing the project / programme.

173. The Project has been designed in such a way that it manages to combine a strong investment in many of the beneficiaries farms, direct investment in demonstration farms, including crop machinery parks, accompanied by a strong training plan for adaptation and innovation, in this sense

the Project is not only a transfer of resources to improve the living conditions of families, it also includes a very Deep cross-cutting axis which is the installation of capacities and trainings of the population to develop skills for adaptation to climate change.

174. In the design of this Project, it has been established that the public institution that executing the Project is the Ministry of Agriculture itself, together with other fiscal entities which have a permanent presence and a professional staff trained to maintain the coherence of public actions with the objectives of the Project, an example of this is the Local Development Program (PRODESAL) implemented jointly by each municipality and the Institute of Agricultural Development (INDAP), whose scope includes the development of agriculture in fragile ecosystems, aggravated by the climate change, particularly for the water deficit, limiting the productive potential of their production units. It also contribute to a more inclusive, democratic and fair territorial development process.

175. According to the local organization with which it is linked in the execution, they are permanent institutions, that in their mission are committed to the protection, conservation and improvement of the environment.

176..This contributes to the sustainability of the project's actions as it guarantees the follow-up and control of the actions undertaken. On the other hand, the actors involved and the actions implemented as result of the project's actions seek to install a "way to do" for the local development.

177. This approach to local action allows the installation of cultural forms that guarantee the good development of the proposal, particularly the role played by school communities, functional and territorial organizations, which guarantee that the tasks addressed will be a continuum in the work of each one of them by incorporating the activities and contents in their work plans.

178. The basic strategy will be to permanently incorporate the objectives, methodologies and actions generated in the project into the work plans of the associated organizations and simultaneously generate instances that will allow public awareness of the significance of the role of citizens in adapting to climate change.

179. The main actor of this intervention is the local civil society that assumes an active participation in the execution of the project activities, beyond being a passive participant and recipient of services and/or goods. Its prominence will be induced through the application of participatory methodologies in the promotion and awareness-raising of local stakeholders. In particular, work will be based on social and ecological mapping, carried out by the community through local self-diagnosis activities, also seeking to generate a perspective from those affected by climate change.

180. In this aspect, the projection of this work towards the community is fundamental, a task in which the actions of the commune's school community and the inclusion of these activities in its curricular plan, as far as possible in the Annual Municipal Education Development Plan (PADEM), is key.

181..Together with local organizations, the local school, technical organizations and the executing team, a property typology will be elaborated to define in concrete terms the variables to be considered in the selection of the properties and the technologies to be implemented (Adapted and Resilient Premises Designs).

182. In order to implement this initiative, alliances are formed between the community population, through territorial organizations (Community Union of JJ. VV, Citizen Health Council, Civil Society Council, etc.), the inhabitants, farmers, and local public services that support health and environmental protection initiatives and technical-productive advisory services at the local level (CESFAM, INDAP, PRODESAL program, INDAP-Municipality agreement).

183. In order to ensure the coherence of public action with the objectives of this project, the Ministry of Agriculture will focus its activities and regional resources to on sustaining the project with the pack of programs or financing instruments available, in order to maintain over time both the investment and the knowledge generated by the project.

184. In the case of the machinery, an organization of municipalities of the territory that have among their farmers producers of legumes and that will be part of this project will be strengthened; this organization will be strengthened in its structure and operation so that at the end of this project they will be able to self-manage the investments that will remain in the territory; This type of agreements that will be made later have already been presented to some of the mayors of the municipalities involved in the project, finding immediate acceptance and assuming the commitments that this means for the permanence and sustainability of the actions to promote resilience to climate change.

N. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.

185. To provide a general context of the current situation in the project's area of influence, it is possible to identify some risks that are mainly due to the situation faced by the inhabitants of the 4 communes of the project, which are related to the general degradation of the ecosystems present in the territory as a result of the effects of climate change.

186. The major risk that gives rise to ecological degradation corresponds to the lack or deficit of water in the watersheds and therefore a degradation of the biota and consequently an alteration in the vital circles presents in the ecosystem. This situation puts under risk the current life systems, conditions the survival of living beings and the communities that inhabit the territory. Clearly, it is faced with a violent change in the conditions, so anticipating these processes allow these communities to adapt to new conditions.

187. The farmers communities and rural inhabits of the territory face transformations that alter their current living conditions. This generate a risk in their life patterns that modify their economy, their coexistence and in general the local culture with its uses and customs is altered.

188. The great pressure exerted by the environmental evolution, circumscribe in the climate change, alter the patterns of community life, pressuring the development of migratory processes, aging of the population and depopulation of these territories. Therefore, there is a rapid deterioration of local culture, leading to its degradation and probable disappearance in the medium term.

189. A very relevant aspect is the deterioration of food production, a situation that gives identity to this territory, with the loss of genetic heritage and the ecological erosion of these ecosystems. This is reflected in the simplification of the traditional food diet, which is gradually being replaced by simple food imported from other regions. Thus, there is a serious risk that the population of the territory will be affected by processes of malnutrition and face the risk of increasing metabolic or deficiency diseases.

190. The implementation of this project reduce potential risk and generate positive impacts since it aims to intervene with technologies and social practices for adaptation to climate change, focusing the solutions to water capture in such a way as to allow the vital processes of the biota, especially soil, protect the ancestral cultural practices of agroecological approach and also provide the communities with technical, cultural and scientific tools that allows them to act preventively to the effects and negative impacts of climate change. This chain of activities, executed under a holistic approach, allows for the reduction of the risk to which the communities living in the territory would be exposed.

191. In the following table No. 6 you can see the principles of environmental and social sustainability that the project will manage to address, in the same way the potential impacts that it will have on the territory are also identified:

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
<i>Compliance with the Law</i>		✓
<i>Access and Equity</i>	✓	
<i>Marginalized and Vulnerable Groups</i>	✓	
<i>Human Rights</i>	✓	
<i>Gender Equity and Women's Empowerment</i>	✓	
<i>Core Labour Rights</i>	✓	
<i>Indigenous Peoples</i>	✓	
<i>Involuntary Resettlement</i>	✓	
<i>Protection of Natural Habitats</i>	✓	
<i>Conservation of Biological Diversity</i>	✓	
<i>Climate Change</i>	✓	
<i>Pollution Prevention and Resource Efficiency</i>	✓	
<i>Public Health</i>	✓	
<i>Physical and Cultural Heritage</i>	✓	
<i>Lands and Soil Conservation</i>	✓	

Table n° 6. Checklist of environmental and social principles

PART III: IMPLEMENTATION ARRANGEMENTS

- A. Describe the arrangements for project / programme management at the regional and national level, including coordination arrangements within countries and among them. Describe how the potential to partner with national institutions, and when possible, national implementing entities (NIEs), has been considered, and included in the management arrangements.
- B. Describe the measures for financial and project / programme risk management.
- C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund.
- D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.
- E. Include a results framework for the project / programme proposal, including milestones, targets, and indicators.
- F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

Project Objective(s) ³	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)

³ The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	Grant Amount (USD)

G. Include a detailed budget with budget notes, broken down by country as applicable, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

H. Include a disbursement schedule with time-bound milestones.

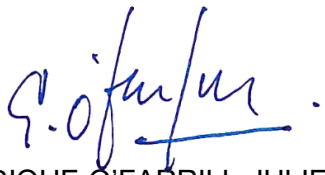
PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government² *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/program, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

Jenny Mager Santos Head of Climate Change Office, Designated Authority, Ministry of Environment	Date: August, 01, 2022.
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B. Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans in accordance with Chile's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by Climate Change and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.



ENRIQUE O'FARRILL-JULIEN

Acting Executive Director

Chilean International Cooperation Agency for Development (AGCID)

Implementing Entity Coordinator

Date: September , 14, 2022

Tel. and email: +56228275754 /

eofarrill@agci.gob.cl

Project Contact Person: Marco Ibarra, Policy Analyst.

Tel. And Email: +56228275759 / mibarra@agci.gob.cl



Letter of Endorsement by Government

September 14th, 2022

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Endorsement for the project entitled, "Rainfed farming communities in central Chile develop resilient processes to climate change with the implementation of innovative technological strategies adapted to improve food safety."

In my capacity as designated authority for the Adaptation Fund in Chile, I confirm that the above national project/programme proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the Chile.

Accordingly, I am pleased to endorse the above project/programme proposal with support from the Adaptation Fund. If approved, the project/programme will be implemented by the Ministry of Agriculture and executed by the Secretaría Regional Ministerial (SEREMI) of Agriculture.

Sincerely,

Jenny Mager Santos
Head of Climate Change Division
Ministry of Environment



Project Formulation Grant (PFG)

Submission Date: August 5, 2022

Adaptation Fund Project ID:

Country/ies: CHILE

Title of Project/Programme: Rainfed farming communities in central Chile develop resilient processes to climate change with the implementation of innovative technological strategies adapted to improve food safety.

Type of IE (NIE/MIE): NIE

Implementing Entity: AGCID

Executing Entity/ies: MINISTRY OF AGRICULTURE

A. Project Preparation Timeframe

Start date of PFG	September 2022
Completion date of PFG	March 2023

B. Proposed Project Preparation Activities (\$)

Describe the PFG activities and justifications:


List of Proposed Project Preparation Activities	Output of the PFG Activities	USD Amount
Literature review	<p>Review of existing literature about policies, plans, programs or projects in the territory that complement with the proposal submitted.</p> <p>-Detailed review of agrometeorological information.</p> <p>-Report of the systematization of information.</p>	\$4.000
Workshop with stakeholders of the territory.	<p>-Workshop with farmers from the 4 communes in the project.</p> <p>-Workshop with public agencies and local authorities.</p> <p>-Analysis and systematization of obtained information.</p>	\$10.000

	-Systematized report of the workshops.	
Fields visits to know the territory.	<ul style="list-style-type: none"> -Field visits to meet farmers in the four communities involved in the project. -Report of activities carried out. 	\$4.000
Detailed analysis of the project components.	<ul style="list-style-type: none"> -Detailed analysis of each project components and proposal of improvements. -Validation of the improvements with the regional and local teams. 	\$6.000
Study on gender policy of the project.	-Detailed analysis of the gender policy of the project and report with proposal for improvements.	\$2.000
Diagnosis on the governance situation of the territory and the project.	<ul style="list-style-type: none"> -Elaboration of maps of actors. -Report on organizations present in the territory. -Report on the Project's governance proposal and proposal improvements for organizations in the territory. 	\$5.000
Elaboration of the compliance and impact indicators of the project.	<ul style="list-style-type: none"> -Determine potential impacts of the project: <ul style="list-style-type: none"> +Economic analysis. +Social analysis. +Environmental analysis. -Impact indicator proposal report. 	\$5.000
Project governance validation workshop.	-Validation workshop with project stakeholders.	\$2.000
Elaboration of detailed budget project.	-Detailed budget report by components, outcomes and outputs.	\$4.000
Formulation of the complete project.	-Preparation of final project document.	\$8.000

	-Translation of final project document. -Delivery of the complete project.	
Total Project Formulation Grant US\$ 50,000		US\$ 50,000

C. Implementing Entity

This request has been prepared in accordance with the Adaptation Fund Board's procedures and meets the Adaptation Fund's criteria for project identification and formulation

Implementing Entity Coordinator, IE Name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
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