APPLICATION FOR PROJECT/PROGRAMME FUNDING TO THE ADAPTATION FUND

The attached form must be completed and sent to the Secretariat of the Adaptation Fund Board by e-mail or fax.

Write the answers using the template provided. The instructions attached to the form provide guidance for completing the template.

Please note that a project must be fully prepared (i.e., fully evaluated for feasibility) when the application is submitted. The final project/document resulting from the evaluation process must be attached to this funding application.

Complete documentation should be sent to:

Secretariat of the Adaptation Fund Board
Washington, DC, 20433 USA
Fax: +1 (202) 522-3240/5
Email: afbsec@adaptation-fund.org

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ADAPTATION FUND

PROJECT PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT INFORMATION

Project Category: National

Country: Peru

Project title: Implementing Protection Technologies to Foster the Resilience of Aquaculture in the Regions of Huanuco, Junin, and Puno to Strengthen Food Security in the Context of Extreme Events Associated with Climate Change.

Type of implementing entity: Regional Implementing Entity (EIR)

Implementing Entity: CAF, Development Bank of Latin America

Executing Entity: Ministry of Production of Peru (PRODUCE)

Requested funding amount: US$ 5,361,666.

Term: 4 years

Background and Context of the Project

A. Climate Change Context

1.1. Peru, the third largest country in South America, has a diverse landscape. It is crossed by the Andes Mountains, which serves as a geographical division, separating the nation into three distinct regions: the coast, the mountain range (Sierra), and the jungle (Selva). Its presence, together with the influence of the Peruvian coastal current (Humboldt), have a fundamental role in the configuration of Peru's ecologic and climatic conditions. As a result, Peru has a large spectrum of climates and rainfalls in regions and seasons, (SENAMHI, 2007; Avalos, 2005)[1].

1.2. Climate change has intensified the vulnerability of Peru's aquaculture sector. Ocean warming, the stratification of the surface layer of the water column, rising sea levels, acidification, deoxygenation, extreme rainfall, and flooding are some of the projected climate threats likely to affect the aquaculture sector. The increased frequency and intensity of extreme weather events associated with climate change has affected both natural and human systems. In the last 37 years, Peru has recorded 10 episodes of moderate to severe drought[2].

1.3. Heavy rains are among the most important causes of disasters and emergencies[3]. In 2014, 64% of

[1] This diversity includes the arid coastal climate, the cold semi-dry climate of the mountain range, the temperate climate of the inter-Andean valleys, the warm climate with heavy rains in the tropical jungle and the northern part of the country, and the cold and dry climate typical of the Andean mountains SENAMHI, 2008).

[2] SENAMHI. (2019). Spatiotemporal characterization of drought in the high Andean departments of Peru: (1981-2018). Retrieved from: https://www.senamhi.gob.pe/load/file/01401SENA-78.pdf

[3] Disaster Victims: An individual or family whose health or property has been partially or totally affected by an emergency or disaster, and who temporarily lacks the socioeconomic capacity to recover.

recorded emergencies were related to extreme weather events which left around 20,000 victims and 190,000 people affected. In 2017 alone there were 3,543 weather-related emergencies (INEI, 2018). Extreme weather-related events cause significant losses for the Peruvian economy and are considered an enduring threat to the country henceforth. Between January and March of this year (2023), alone, as a result of such weather-related events, 1,521 homes were destroyed, 2,148 homes were made uninhabitable, and 27,843 homes were significantly damaged, affecting more than 65, 000 people. The human toll has also significant: so far in 2023 65 deaths have been recorded, 128 injured, 5 missing[4].

1.4. With more than 3,000 kilometers of coastline and ecosystems that are particularly vulnerable to the effects of climate change, Peru is one of the countries in the world where natural events and human mobility are strongly correlated[5]. Between 2008 and 2019, around 656,000 of Peru's 33 million inhabitants were forced to move because of natural disasters, according to the Internal Displacement Monitoring Centre (IDMC)[6]. It is estimated that by 2100, these movements could reach unprecedented levels, as the frequency and intensity of environmental hazards are expected to skyrocket.

Table 1. Emergencies at the national level according to type of phenomenon, period 2010-2021.
Source: Adapted from "Peru: Yearbook of Environmental Statistics 2022", by the National Institute of Statistics and Informatics (INEI), 2022.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total / Phenomenon	1678	2133	2451	1661	1434	1774	1885	5010	2070	5572	4244	4942
Rainfall	1245	1606	1768	1287	1011	1130	757	3644	1263	3710	2659	3500
Slide	90	140	147	127	185	227	64	321	226	794	469	851
Flood	259	325	426	190	156	283	125	407	168	551	598	382
Landslide	59	45	90	47	51	96	83	570	55	492	255	203
Drought	12	11	12	4	27	28	848	54	355	20	263	5
Avalanche	13	6	8	6	4	10	8	14	3	5	1	1

1.5. The principal climate threats include the increase in average temperature, the loss of glacier surface, the increase in sea level and the erosion of the coast, the number of droughts, the increase in frequency of intense rainfall, floods, slides, acidification and contamination of oceans, rivers and lakes[7]. It is projected that between 2036 and 2065 Peru's precipitation will increase by between 10% and 20% on average. Its maximum air temperature will increase between 2 °C and 3 °C, while the minimum air temperature will increase between 4 °C and 6 °C. In addition, potential runoff from coastal rivers is expected to increase by 300% during the same period, while runoff from mountain and jungle rivers will decrease by 52% compared to 1970-1999 and 1980-2009. It is widely assumed that extreme events related to climate change will increase in frequency and severity in the no-so-distant future.

1.6. According to a study by the World Meteorological Organization (WMO), the planet has a 40% chance of warming 1.5 °C more by 2027 compared to the industrial era. Accordingly, Peru is considered a "particularly vulnerable" country to the adverse effects of climate change. Similarly, the United Nations Framework Convention on Climate Change (UNFCCC) indicates that the country is extremely exposed to hydrometeorological threats. If this path continues, by 2030, 15% of the country's Natural Protected Areas (NPA) will be highly damaged by climate change. In addition, 62% of the NPA will have a medium vulnerability.[8],. These effects could harm, among others, over 5.5 million people exposed to very heavy rainfall; 2.6 million who will live through droughts; and additional 5.6 million will be exposed to cold spells. Over the same period, temperature increase will speed-up glacier-loss, wiping them out entirely. Already in 2021, the Ministry of Environment (MINAM) indicated that 53% of the country's glaciers have been lost. Their melting has negative consequences on the availability of water resources or water reserves, which already suffer quality loss and are used inadequately.

[4] National Emergency Operations Center, (2023)
[5] The UNESCO Courier 2021-4
[6] https://www.internal-displacement.org
[7] MINAM (2016). Third National Communication from Peru to the United Nations Congress on Climate Change.
[8] Information obtained from the "Analysis of the Vulnerability to Climate Change of Natural Protected Areas "

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1.7. Additionally, according to data from the Humboldt Current System, the El Niño phenomenon of 1982-83 and 1997-98 caused two significant increases in temperature. Prolonged droughts, heavy rains, deoxygenation episodes, red tides, and floods, which are also common in Peru, have caused severe damage to infrastructure and disrupted communications and food supply chains, which have harmed all economic activities, including aquaculture. Additionally, floods, mudslides and alluvium deposits pose a significant threat to hydrobiological resources and water systems as they contribute to an increase in sediment load which, in turn, negatively affect the quality of water resources and increase risks to aquaculture and fisheries infrastructure, among other critical aspects. It should be noted that the magnitude of the impact of floods and landslides increases considerably when they coincide with the occurrence of El Niño events, resulting in increased damage to fishing and aquaculture either due to tidal waves or by transferring contaminated sediments (PRODUCE, 2015)[9]. The intensification of extreme events associated with global warming, as it can lead to the acceleration of sediment transfers in river systems, threatening soil and water resources in regions highly dependent on fresh water[10]. Given the vulnerability of the aquaculture sector to climate change and El Niño, [11]regions such as Piura, Puno and Tumbes are expected to face increased susceptibility.

1.8. Overall, the threat of mass relocation in the aquaculture sector is particularly significant in several regions in the north and south of the country. Specifically, the departments of San Martin, Cusco, and Puno face more severe mass movement risks as they are more exposed and vulnerable to high or very high levels of mass movement hazards. Current and future scenarios for 2030 and 2050 show[12] very similar levels of mass movement risk.

1.9. The flood risk for aquaculture is high in the coastal areas and the jungle (selva), both in the northern and southern regions of the country. In the case of the northeastern jungle of the department of Loreto, the risk of flooding is due to the intrinsic characteristics of the relief, the low slope, and the fluvial dynamics of the Amazon River. The level of flood risk is expected to increase by 2030, compared to the current situation, and decrease by 2050 due to reduced rainfall. (National Adaptation Plan. MINAM, 2021). Dry conditions in the northern and southern regions of the country also pose a threat to aquaculture, mainly in the jungle and mountains, while in the departments of San Martin, Cusco, and Puno the threat can be attributed to high exposure to dry conditions and the high level of aridity hazard. A slight increase in the risk level of dry conditions is expected by 2050 due to a projected decrease in rainfall[13].

1.10. Retreating glaciers, mainly in southern Peru, present a high to very high risk. As glaciers retreat, the volume of sediment and pollutants transported downstream during rainfall is expected to increase. This would alter the quality and quantity of water resources on which aquaculture depends. In the central Andes, glacier melt is a direct consequence of rising temperatures, which causes more rain (rather than snow) on glaciers, which increases solar energy absorption as albedo decreases and leads to accelerated ice melt (Herzog et al. 2011). Water from glaciers accounts for 5% of the water inputs to Lake Titicaca in the Puno region. Their disappearance would have severe consequences for the water supply provided by wetlands, especially during the dry season (Hoffmann and Requena, 2012). In fact, wetlands play a fundamental role as they mitigate water losses through evaporation during the dry season. They are essential to control the flow of tributaries into the lake. As they feed mainly on melting glaciers, if the inflow of water from glaciers disappears, the water cycle and the natural balance of the lake may be altered. Thus, glacier regression would lead to a brief period of intensification of tributary flows due to ice melt, followed by a major drought (Hoffmann and Requena, 2012, Rabatel et al., 2013,

[9] The product was developed in 2015 and relaunched in 2020 from the GoP portal. To date there is no other public since Produce as an author. https://www.gob.pe/institucion/produce/colecciones/1874-diagnostico-del-cambio-climatico-en-el-sector-pesquero-y-acuicola

[10] Foucher, A., Morera, S., Sanchez, M., Orrillo, J., and Evrard, O.: When climate and human interactions threaten soil and water resources through hyper sedimentation: example of El Niño events (1978–2019 period), Poechos Reservoir, Northern Peru, EGUsphere [preprint], https://doi.org/10.5194/egusphere-2022-1233 2022.

[11] According to the study Diagnosis of current vulnerability of the fisheries and aquaculture sector to climate change6 Source: PRODUCE (2020). Diagnosis of current vulnerability of the fisheries and aquaculture sector to climate change and climate change. Retrieved from: https://www.produce.gob.peru/documentos/pesca/dgsp/publicaciones/diagnostico-pesquero/Tomo-2.pdf

[12] With the exception of some provinces of Junin, where there is a slight increase in risk levels in 2030.

[13] La Convención, Rioja and Toache are the provinces with very dry conditions.

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referenced by MINAM, 2021).[14] High and high levels of risk are expected from glacier retreat. in the departments of Cusco and Puno by 2030 and 2050.

1.11. The El Niño phenomenon implies higher temperatures and intensification of rainfall, which would increase the mortality of the hydrobiological resources of the aquaculture sector due to thermal effect and sediment waves. In addition, changes in oceanographic parameters due to El Niño will affect aquaculture production due to anoxia. Global warming will cause changes that will generate negative impacts on aquaculture activities. For example, eutrophication and stratification processes could be exacerbated and consequently this would affect food chains and habitat availability and quality.

1.12. Extreme events associated with climate change will affect aquaculture productivity, the use of hydrobiological resources and the food security of the Peruvian population. Floods, mudslides and floods will affect aquaculture crops due to increased sediment, which will alter water quality[15]. This will lead to losses in cultivated hydrobiological resources. In addition, there will be imminent damage to infrastructure and disruption of market product distribution.

1.13. The increase in average water temperature impacts the metabolism of hydrobiological resources, the physicochemical properties of water and aquaculture production. In addition, the retreat of glaciers has caused changes in the loads of sediment and pollutants transported downstream during floods. As a result, mountain ecosystems and the quality, quantity and seasonality of the water regime have been altered, which could affect aquaculture. In addition, sea level rise is another threat caused by the loss of ice mass from ice caps and glaciers, as well as by the thermal expansion of the oceans caused by rising temperatures. The National Service of Meteorology and Hydrology of Peru (SENAMHI) estimates that sea level will rise between 15 and 21 cm in 2020-2050. This could affect aquaculture activities at sea due to the risk of flooding, increased presence of salts in groundwater and loss of areas for aquaculture activities.

1.14. On the other hand, droughts will cause losses due to water scarcity in aquaculture crops, especially those with open systems. Arid conditions will alter the behavior of cultivated species, reducing the productivity of target species[16].

A.1. Climatic context of the regions of Huanuco, Junin, and Puno

1.15. According to MINAM, regions with the least capacity and resources to adapt are the ones most affected by emergencies caused by climate change. The increase in the intensity and frequency of climate hazards strongly impacts those vulnerable sectors and systems, pointing to an urgent need to strengthen the ability of these communities to adapt to the likely future impacts of climate change.

As shown in Figure 1, the Huanuco, Puno, and Junin regions have high or medium food insecurity, and vulnerability in terms of health, economic activities, water resources and watersheds, making them vulnerable to extreme climate-related events. The proposed project, therefore, is both timely and badly needed.

A.1.1. Climate context of Huanuco

1.16 Rainfall is higher in the eastern zone or ecoregion of the Amazon jungle of the Huanuco Region and can exceed 2,500 mm per year. The lowest cumulative annual rainfall in the western region (Puna ecoregion) is 500 - 1,000 mm.

1.17 The average annual maximum temperature in Huanuco varies from 8°C to 34°C and the average annual minimum temperature varies between -12 to -10°C and 20 to 22°C, with an inverse relationship between

[14] MINAM (2021). National Plan for Adaptation to Climate Change of Peru: a report for the update of the National Strategy for Climate Change.
[15] PRODUCE (2020). Diagnosis of current vulnerability of the fisheries and aquaculture sector to climate change. Retrieved from https://www.produce.gob.pe/documentos/pesca/dgsp/publicaciones/diagostico-pesquero/Tomo-2.pdf
[16] Ministry of the Environment. (2021). National Plan for Adaptation to Climate Change of Peru': an input for the update of the National Strategy for Climate Change. Retrieved from: https://cdn.www.gob.pe/uploads/document/file/1936379/RM.%20096-2021-MINAM%20con%20anexo%20Plan%20Nacional%20de%20Adaptaci%C3%B3n%20al%20Cambio%20Clim%C3%A1tico%20del%20Per%C3 %BA.pdf.pdf

the relief and the spatial distribution of this variable: As the altitude increases, the air temperature decreases. Meteorological records for the last 47 years indicate that extreme temperatures show an increasing annual and seasonal trend (0.16 °C/decade). Rising temperatures are likely to lead to faster evaporation and evapotranspiration rates in watersheds and reduced solid water (snow) storage capacity in the Puna ecoregion.

1.18 Also, during the same period, annual precipitation has increased and become more irregular during the seasons: it increases in winter and decreases significantly in summer. Episodes of rain are more frequent, although they are short-lived and less intense and alternate with more frequent consecutive dry days. Over the past ten years, there has been an increase in extreme rainfall and drought events.

1.19 There has been an annual increase in extreme events associated with climate change. Between 2003 and 2012, there were 1,301 hydroclimatic events in Huanuco, which caused harm to people and damaged social and road infrastructure or the productive sector. The most frequent events are rain (27%), strong winds (22%), frost (15%) and flooding (14%). Climate change and extreme events in the region have damaged nearby housing, water, and sanitation systems, affecting the safety and livability of rural populations. In the last 10 years, approximately 9,493 homes were affected; Of these, 5,996 were affected by flooding, 1,256 by rain and 1,283 by strong winds. In addition, drinking water and basic sanitation services were interrupted 17 times by landslides and floods.

1.20 SENAMHI (2013) prepared a technical study on trends in average temperature and precipitation, addressing the parameters of intensity and frequency of extreme hydroclimatic events, and identifying the relationship between these changes and global warming and/or climatic phenomena that control the climate of the Huanuco region. We describe the trends below, using indices of extreme events and emergencies associated with climate change addressed in this study.

- **Trends and indices of extreme precipitation events:** The analysis of precipitation trends lacks consistency; the weather stations that served as the basis for the study show increases as well as decreases in annual precipitation. Rather than being caused by climate change, the observed changes are mainly associated with the high variability of spatial distribution and rainfall due to its complex orography and high temporal variability.

Table 2: Annual trend of maximum and minimum temperatures (C) and 99% significance in some localities of the Huanuco Region (1965-2012) - Source SENAMHI

	Estaciones	Período	Tendencia Anual	Tendencia Verano DEF	Tendencia Otoño MAM	Tendencia Invierno JJA	Tendencia Primavera SON
Tendencia Precipitación (mm/década)	Tingo María	1965-2012	1.85	36.05	23.90	-11.17	-26.53
	Huánuco	1965-2012	0.29	-3.71	3.81	0.00	0.80
	Jacas Chico	1975-2012	**116.41**	30.68	**36.40**	**9.83**	20.81

DEF: período de mayores precipitaciones Diciembre-Enero Febrero, JJA: período de menores precipitaciones Junio-Julio-Agosto, SON: Setiembre-Octubre-Noviembre

- **Trends and indices of extreme temperature events: Trends and indices of extreme temperature** events: There are clear signs of increasing maximum and minimum temperatures in the Huanuco region, which are consistent with current global trends.

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Table 3: Annual Trend of Maximum and Minimum Temperatures (C) AND 99% significance in some localities of the Huanuco Region (1965-2021) Source: SENAMHI

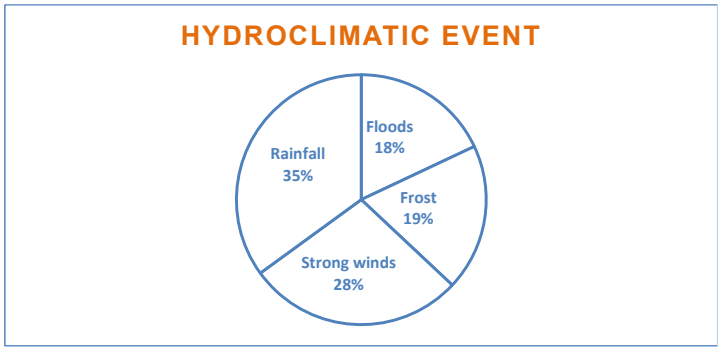
Tendencias	Estaciones	Período	Tendencia Anual	Tendencia Verano DEF	Tendencia Otoño MAM	Tendencia Invierno JJA	Tendencia Primavera SON
Tendencia Temperatura Máxima (°C/década)	Tingo María	1965-2012	0.02	0.09	0.04	0.0	0.02
	Huánuco	1965-2012	**0.16**	**0.18**	0.14	**0.14**	**0.17**
	Jacas Chico	1975-2012	**-1.0**	**-1.4**	**-0.88**	**-1.09**	**-0.71**
Tendencia Temperatura Mínima (°C/década)	Tingo María	1965-2012	**0.15**	0.17	**0.18**	0.08	0.13
	Huánuco	1965-2012	**0.25**	**0.32**	**0.30**	**0.21**	**0.33**
	Jacas Chico	1975-2012	0.07	0.38	0.22	**-0.46**	0.20

DEF: Período de mayores precipitaciones Diciembre-Enero Febrero, JJA: período de menores precipitaciones Junio-Julio-Agosto, SON: Setiembre-Octubre-Noviembre

- **Climate and hydroclimatic threats that caused emergencies: Between** 2003 and 2012 there were 1,301 hydroclimatic events that caused damage or loss to people, social and road infrastructure, or damage to the productive sector. Figure 4 describes the incidence of the most frequent extreme events in the Huanuco region, with Huanuco, Puerto Inca and Yarowilca being the most frequently affected.

1.21. As for new weather patterns and extreme events, there have been changes related to their frequency, seasonality, and duration. According to MINAGRI (2012), the frequency of extreme weather events in the region has varied. The climatic events that have sustained more significant changes are droughts, cold spells, and frosts, occurring in more months of the year. Moreover, the intensity of climatic events has varied considerably.

Figure 1. Nature of hydroclimatic events in Huanuco, several recent years.



1.22. As for precipitation projections, according to estimates by SENAMHI (2013), in the pessimistic scenario of GHG emissions (RCP8.5), annual precipitation would increase by up to 5% in the low jungle and between 6% and 10% in the high jungle. and the Andean zone of Huanuco by 2030. As for temperature projections, it is estimated that the maximum annual temperature in 2030 will increase throughout the Huanuco region by up to 1.6 °C. The minimum temperature will behave similarly in the three sectors of the region, increasing to 1.6°C. In both cases, comparisons are made with figures from 1971-2000.

A.1.2 Climate context of Junin

1.23. In Junin, total annual precipitation increases as altitude increases in the central and western areas of the region, as local differences are closely related to valley-mountain breeze systems. In the eastern region, the opposite is true; Total annual precipitation decreases with altitude and rainfall becomes more intense in lowland jungle areas with essentially convective processes. The average rainfall regime for the localities located in the inter-Andean valleys begins in July. It gradually increases in August and

September, becoming more important in October and peaking in February. The months of maximum rainfall are between January and March; In April, rainfall decreases significantly, reaching a minimum point in June. The rainfall regime in the jungle localities is more active and has a better seasonal distribution. The rains begin in August and gradually increase until reaching a peak in January. The months with the highest rainfall are between December and March, and it falls heavily in April.

1.24. Between January and March 2007, floods and landslides [17] occurred as a result of heavy rains in different localities of the departments located in the central mountains, including the Juninense jungle, where the Perene, Huatziroki and Satipo rivers overflowed and activated the Huacara stream, affecting localities and districts of the provinces of Chanchamayo, Concepción and Satipo. In the same period, 2,289 victims were registered in Junin; 9,185 people were affected and 13 died (INDECI, 2020).

1.25. The districts most at risk are highly exposed to weather events that affect people's health. In addition, districts with low life expectancy at birth and high rates of chronic malnutrition are highly vulnerable. Recent weather events that have caused damage to homes include heavy rainfall, followed by flooding, snowfall, and to a lesser extent, landslides, and frost. The most vulnerable use materials particularly susceptible to climatic events, such as quinche and adobe. In addition, the quality and quantity of water and sanitation infrastructure varies among districts in the region, so the vulnerability profile to climate change-related risks can vary substantially among Junin districts.

1.26. There is limited detailed information on annual and seasonal climate trends in the region. Information on the period 1922-2010[18] points to an increase in temperatures, and a reduction in precipitation and heavy rainfall. In addition, frosts have tended to come earlier. Since 2013, available evidence19 indicates that frost, heavy rain, and strong winds were extreme events that caused major emergencies, damaged human health and infrastructure, and disrupted economic activity. Tarma and Jauja experienced the most weather-related water channel damage, with the latter also experiencing the most collapsed or damaged reservoirs. Huancayo and Chanchamayo also suffered the highest proportion of damage to their road infrastructure.

1.27. The projections of the Regional Climate Change Strategy of Junin (2017) indicated that:

- **Minimum Temperature 2030**: Two scenarios were developed to estimate the minimum air temperature in 2030. One scenario corresponds to the future climate scenario in the Mantaro Basin, and the other corresponds to the national future climate scenario, which includes two well-defined areas with sharply contrasting temperatures. The southeast region has high temperatures, while the northwest area has low temperatures.
- **Maximum temperature in 2030**: Two scenarios were developed: one scenario corresponds to the future climate in the Mantaro Basin and the other corresponds to the national future climate scenario. The maximum rainfall in the Mantaro Basin occurs in the southeast. The minimum rainfall occurs in the western region of the Mantaro basin. In the jungle zone, minimal rainfall is found in part of the Tarma zone.

[17] The huaicos or lloclla, which in Quechua means ravine, are alluviums and landslides that generate a violent displacement of a large body of muddy water, mud and stones. These phenomena are common in Peru.
[18] Extreme Meteorological Events (Droughts, frosts and intense rains in the Mantaro Valley) (Geophysical Institute of Peru, 2012).
[19] National System for Response and Rehabilitation – INDECI 2014.

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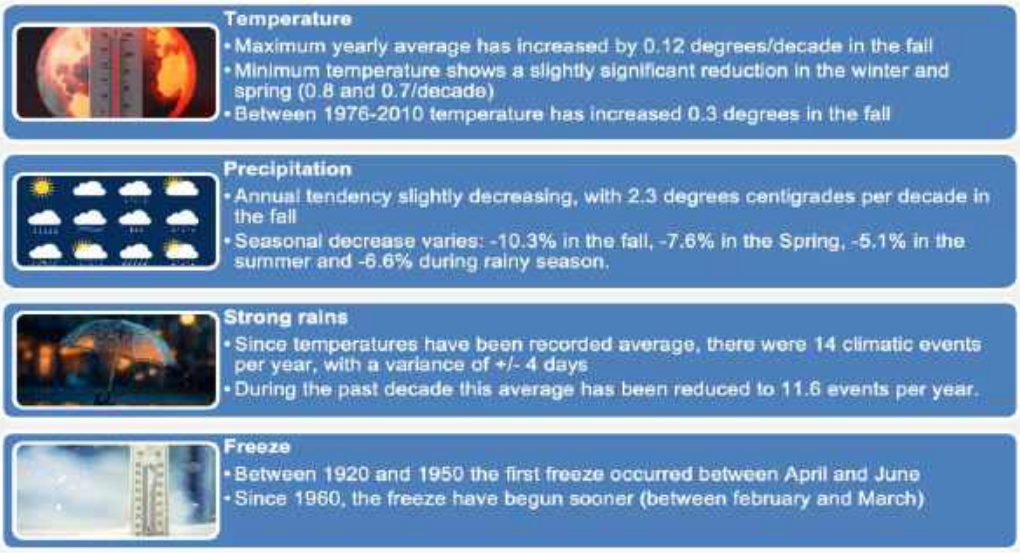
Figure 2. Annual seasonal climate trends: 1922-2010.
Own elaboration based on the Regional Climate Change Strategy of Junin (MINAM, 2017).



A.1.3 Climate context of Puno

1.28. Due to Puno's location in the southern Andean region of the Cordillera, the climate varies from predominantly dry frigid (during autumn and winter) to humid temperate (during spring - summer) on the shores of the lake. The climate is warm in the jungle, with maximum temperatures ranging between 14°C and 30°C and minimums between -6°C and 18°C.

1.29. The Department of Puno has areas of high to very high risk of disasters due to multiple hydrometeorological, atmospheric and climatic threats that affect livelihood and essential services among its inhabitants. High temperatures and heavy rainfall cause more than 60% of the phenomena associated with hydrometeorological threats. Territories with heterogeneous morphology are subject to low temperatures, droughts, thunderstorms, snowfall, hailstorms, strong winds, lightning and floods of fluvial origin. In addition, the El Niño phenomenon and heavy rains have increased the discharge of the rivers that flow into Lake Titicaca with waste and pollutants that affect the production of hydrobiological resources.

1.30. Flooding is the second highest risk in the Department of Puno. Most floods are linked to increases in the dynamic levels of lakes, lagoons and river flood-related events in the Amazon region. They are caused by heavy rains, often accompanied by snowfall and hailstorms, which cause rivers (Ramis) and lakes (Titicaca) to overflow.

1.31. According to SENAMHI, in Puno there have been strong winds that exceed 35 km / hour and sometimes 40 km / hour, causing damage to crops. In the jungle they have uprooted trees, damaged the roofs of houses, produced abortions in animals and, in Lake Titicaca, have affected aquaculture production, by overturning or destroying fish cages.

1.32. Between 2003 and 2015 there were more than 3,000 emergencies in the Department of Puno, causing almost 100,000 victims, leaving 1.5 million affected and more than 100 dead. In terms of damage to public and private infrastructure, almost 11,000 homes were destroyed, and more than 60,000 homes were affected. More than 600 schools and 158 health centers were affected, and more than 300,000 hectares were affected and destroyed (SINPAD, 2016). On January 1, 2004, the Altiplano area suffered intense rains and climatic changes for more than three months, which caused the overflow of rivers and the rise in the level of Lake Titicaca. According to INDECI statistics there were 7,333 victims, 1,350 homes affected, and 3,376 hectares of crops were lost.

1.33. The average rainfall in the department of Puno ranges from 500 mm – 6000 mm. In the 2030 climate change scenario, rainfall would range from 350 mm to -3,500 mm. There is evidence of a strong rainfall deficit for the usual average in the department, which will dangerously accentuate periods of water

scarcity and drought. Water-intensive crops will likely suffer from water stress, affecting major crops and cultivated pastures. Livestock-based development models using cultivated pastures could generate social conflicts over water in water-scarce communities.

A.2. Climate context and its impact on rainbow trout farming

1.34. Temperature is a key factor that can directly and indirectly affect the biological characteristics, distribution, abundance, and phenology of fish species, as well as the yield of cultured species[20]. For aquaculture activities, depending on exposure factors and sensitivity, the highest risk is the culture of scallops and rainbow trout. The high risk for rainbow trout increases if the availability of cultured organisms is limited, if spawning and growth of larvae and juveniles do not occur under controlled conditions, if food is not easily accessible, if farming facilities and organisms are exposed to climate variability, and if they are prone to intractable pathogens and diseases. Given these findings, there is consensus on the need to allocate efforts and resources to define lines of research that provide critical information to develop relevant management plans, minimize risks and maximize opportunities associated with climate change.

1.35. Although it was determined that fan shell aquaculture is the riskiest, followed by rainbow trout, it is important to consider that scallops are mostly sold to other countries such as Canada, Italy, New Zealand, Spain, among others, while rainbow trout aquaculture is mainly sold to the domestic market. This significant difference makes rainbow trout aquaculture more vulnerable than scallop aquaculture in terms of profitability, making it essential to improve the adaptability of many trout farming families. In addition, scallop farming has received significant international cooperation for scallop farming, while rainbow trout has not, despite the high climatic risk of rainbow trout aquaculture. While trout farming is supported by national programs, such as the National Fisheries and Aquaculture Innovation Program, [21]this support is limited, as producers must have sources of co-financing to access PNAPA resources. Fish farmers in the production categories AREL and AMYPE have many difficulties in complying with this requirement. These farmers are highly vulnerable and need to improve their adaptive capacity: this project aims to address and resolve this situation.

1.36. Extreme events exacerbated by climate change lead to losses through reduced profitability and increased insurance premiums. The impact on aquaculture productivity leads to job losses and jeopardizes the economic livelihoods of aquaculture workers, especially those whose intrinsic characteristics make them more vulnerable to the effects of climate change (e.g., consumption, the sensitivity of species to threats aggravated by climate change). Finally, the alteration and loss of hydrobiological resources due to changes in weather patterns will affect the food security of the Peruvian population.

1.37. For example, in the Puno region, strong winds in Lake Titicaca generate losses in trout hatcheries. In 2019, the Regional Production Directorate of Puno (DIREPRO) estimated that economic losses amounted to 40% of total trout production in the region[22]. Specifically, official sources estimated that, in 2019, 410 trout producers from 11 aquaculture associations in the Puno region lost around 5 million soles. This was attributed to strong winds reaching speeds of 60 to 80 kilometers per hour, causing cages used to raise trout in Lake Titicaca to tip over and break, allowing the fish to escape into the lake [23].

1.38. Similarly, in 2016, the DIREPRO of Puno stated that the El Niño phenomenon was responsible for 50%-80% of trout mortality in the region during the first half of the year, mainly due to damage to the floating cages, which affected the fry because the water temperature, usually 13ºC, increased by one or more

[20] According to the report "Peru's Advances in Adaptation to Climate Change in the Fisheries Sector and the Marine-Coastal Ecosystem" PRODUCE, Instituto del Mar del Perú, IDB and MINAM (2019). The report is available at: https://publications.iadb.org/publications/spanish/document/Avances_del_Per%C3%BA_en_la_adaptaci%C3%B3n_al_cambio_clim%C3%A1ti co_del_sector_pesquero_y_del_ecosistema_marino-costero_es_es.pdf , outlines the results of an ecological risk assessment (ERA) conducted to examine the relative vulnerability of selected fish species and some aquaculture activities to the effects of climate change (Ramos, 2017).

[21] National Program for Fisheries and Aquaculture Innovation - PNIPA

[22] https://elcomercio.pe/peru/puno/puno-fuertes-vientos-lago-titicaca-generan-perdidas-criaderos-trucha-noticia-658909-noticia/?foto=3

[23] According to the National Service of Meteorology and Hydrology SENAMHI

degrees, which caused a decrease in oxygen availability[24].

1.39. Strong winds and waves constantly occur on Lake Titicaca. In 2012, around 500 tons of trout were lost due to the destruction of the floating cages installed in Chucuito, Juli, Pomata, Ilave and Yunguyo. Climate change has caused the water of Lake Titicaca to become warmer and, as a result, 60% of trout production, mainly fry and juveniles, is lost. In addition, in addition to the warmer waters of Lake Titicaca, there have been strong winds, such as those of 2019, which reached speeds of approximately 70 km / hour, destroying cages, and generating losses to fish farmers for approximately 12 million soles[25].

1.40. In Junin, a decrease in rainfall is expected due to climate change. According to IGP (2005), this is because there can be an interannual variation in the intensity of rainfall cycles. Thus, the stress caused by suspended solids in the water that "feeds" trout ponds could be less than in other rainy seasons. In 2019, the Huallaga River overflowed its banks in Ambo province, Huanuco department, destroying several infrastructures, including those related to aquaculture[26.]

1.41. Agriculture absorbs a disproportionate share of disasters. According to global FAO data, between 2007 and 2018, agriculture and its subsectors, including aquaculture, absorbed 26 percent of the impact caused by medium and large-scale disasters, including those associated with climate change. In Latin America and the Caribbean, losses reached $29 billion.

B. Socio-economic context

2.1 Since 2000, Peru has made great progress in the fight against poverty. Between 2004 and 2022, the poverty rate in the country fell by 31.2%. Monetary poverty also clearly decreased during this period, along with extreme poverty which fell from 16.4% in 2004 to 5% in 2021.[27] Nonetheless wide regional differences remain. Over the past 30 years not all Peruvians have benefited equally from increased prosperity and the COVID pandemic has clearly shown that improvements in living conditions can be easily reversed in the event of natural or human disasters. Without diversifying economic activity, which can enable more people to participate in sustainable productive activities, a large part of portion of the Peruvian population will remain vulnerable to the economic effects of climate change.

2.2 The Peruvian Institute of Economics [28,] reports that poverty increased by 31% in the southern part of the country in 2020 as a result of the economic slowdown caused by the coronavirus pandemic. This increase in poverty has resulted in over half a million people falling below the poverty line that year alone.

2.3 Nationwide, poverty rates have increased by 10% during the pandemic, interrupting a steady 16-year decline in poverty rates. While COVID particularly affected urban areas economically[29], rural areas remain burdened with higher poverty rates. In 2021, the Puno region (42.6%) had the highest poverty rate in the nation, with[30] Huanuco (35.5%) and Junin (26.4%) also showing high levels of poverty. In the second quarter of 2020[31], the employed population decreased by more than 6 million people nationwide compared to the same period in 2019. The largest increases in the unemployment rate were recorded for men aged 25 to 44 and people with non-university tertiary education. Between July 2019 and June 2020, the informality rate rose to 74.3%.

2.4 Similarly, the situation of women in Peru has improved, reflecting the positive economic growth that the country has exhibited, particularly in the last decade (prior to COVID-19). Gains can be most notably identified in terms of economic attainment and health. The results were less encouraging in terms of

[24] https://aquahoy.com/fenomeno-de-el-nino-deja-80-de-perdidas-en-truchas/
[25] https://radioondaazul.com/region-puno-mas-del-60-de-alevinos-y-juveniles-de-trucha-mueren-por-el-cambio-climatico/ and Official document 690-2022-PUNO/DIREPRO
[26] https://elcomercio.pe/peru/Huanuco/Huanuco-rio-huallaga-desborda-provincia-ambo-video-noticia-nndc-617173-noticia/
[27] Peruvian Institute of Economics – IPE.
[28] Peruvian Institute of Economics- IPE, 2021.

[29] Leon et al., PUCP 2017
[30] Pasco (42.1%) and Huancavelica (41.2%) are second and third respectively.
[31] Source: National Household Survey.

economic participation and opportunities. Table 4 highlights this situation, describing women's national economic participation rate, income and participation into the formal labor force nationwide falling well below that of men in 2018.

2.5 Women's participation in terms of the formal employment rate is 27.6 percent and the informal one is 72.4 percent. Informal employment is higher in rural areas (96.6 percent), the jungle, and the mountains (84.9 and 83.2 percent, respectively); By branch of activity, the highest share of people in informal employment is in agriculture, fisheries, mining, and transport[32].

2.6 Access to finance is also a concern. Although the country has shown progress in the percentage of women who have a bank account, Peru ranks as ninth out of 10 countries in terms of financial inclusion of women[33] , especially in rural areas, although the gaps are reduced in the case of employed, salaried persons or income earners[34].

2.7 Finally, there are gaps in access to credit in the financial system due to job segregation and wage gaps, which are reflected in lower earnings. Gaps outside the financial system that affect access to credit are the place of residence, age, and employment. In addition, there are inequalities in property tenure and financial education, where women are at a disadvantage compared to men.

2.8 Regarding access to credit among small and medium enterprise leaders, both male and female business leaders maintain a similar probability of requesting financing (69.9 percent of male leaders and 67.3 percent of female). However, male small and medium enterprise leaders show greater probability of using financial services (28.4 percent) than female leaders (22.2 percent).[35]

Table 4: Index of Gender Inequality Index, 2018: Source USAID – Gender Analysis 2019, May 2020.

2018 INDICATORS OF GENDER INEQUALITY INDEX

Department	Economic Participation Rate (15 years and over)			Monthly Average Income from the Working Population (Soles)			Working Population with Formal Jobs (Thousands of people)			Economy (average)
	Women	Men	Women/Men	Women	Men	Women/Men	Women	Men	Women/Men	
National	**64.0**	**80.7**	**0.79**	**1052.7**	**1588.6**	**0.66**	**1830.4**	**2793.5**	**0.66**	**0.70**
Amazonas	71.0	86.3	**0.82**	737.6	1030.3	**0.72**	13.7	21.3	**0.64**	**0.73**
Ancash	64.8	83.0	**0.78**	768.4	1165.1	**0.66**	44.3	77.3	**0.57**	**0.67**
Apurimac	77.6	86.3	**0.90**	735.2	1024.8	**0.72**	11.6	19.8	**0.59**	**0.73**
Arequipa	62.9	78.1	**0.81**	1006.4	1809.5	**0.56**	96.0	148.6	**0.65**	**0.67**
Ayacucho	69.7	83.0	**0.84**	661.7	1046.4	**0.63**	20.9	27.2	**0.77**	**0.75**
Cajamarca	71.2	85.9	**0.83**	587.4	957.5	**0.61**	36.9	54.6	**0.68**	**0.71**
Cusco	70.8	81.7	**0.87**	905.5	1107.8	**0.82**	59.4	76.0	**0.78**	**0.82**
Huancavelica	79.1	86.8	**0.91**	533.9	817.9	**0.65**	8.6	14.2	**0.61**	**0.72**
Huánuco	67.8	83.3	**0.81**	764.8	1016.2	**0.75**	24.1	34.5	**0.70**	**0.76**
Ica	59.1	80.0	**0.74**	1001.8	1460.5	**0.69**	65.4	98.6	**0.66**	**0.70**
Junín	69.2	81.3	**0.85**	855	1328	**0.64**	45.4	74.5	**0.61**	**0.70**
La Libertad	62.4	80.6	**0.77**	922.1	1271.5	**0.73**	104.2	169.7	**0.61**	**0.70**
Lambayeque	59.0	79.8	**0.74**	731.9	1192.9	**0.61**	63.8	105.4	**0.61**	**0.65**
Lima (1)	62.0	77.4	**0.80**	1448.5	1992.3	**0.73**	901.7	1272.3	**0.71**	**0.75**
Loreto	57.5	81.6	**0.70**	893.2	1222.5	**0.73**	33.2	60.4	**0.55**	**0.66**
Madre de Dios	68.5	86.8	**0.79**	1416.9	1762.6	**0.80**	7.4	13.1	**0.56**	**0.72**
Moquegua	62.4	80.6	**0.77**	1107.9	2202.8	**0.50**	12.5	24.1	**0.52**	**0.60**
Pasco	68.9	85.1	**0.81**	597.4	1039.2	**0.57**	8.2	23.8	**0.34**	**0.58**
Piura	59.9	81.9	**0.73**	691.8	1075.7	**0.64**	83.3	121.7	**0.68**	**0.69**
Puno	74.0	82.6	**0.90**	558.2	988.8	**0.56**	35.7	63.1	**0.57**	**0.68**
San Martín	58.8	86.7	**0.68**	809.5	1223.5	**0.66**	26.2	46.2	**0.57**	**0.64**
Tacna	63.1	76.5	**0.82**	976.5	1565.8	**0.62**	20.2	27.8	**0.73**	**0.73**
Tumbes	63.3	83.8	**0.76**	794.8	1367.3	**0.58**	12.1	20.2	**0.60**	**0.65**
Ucayali	65.1	84.7	**0.77**	942.3	1288.6	**0.73**	21.8	70.5	**0.31**	**0.60**
Callao	57.5	80.5	**0.71**	1204.7	1745.9	**0.69**	74.8	158.6	**0.47**	**0.63**

Note: (1) It includes Metropolitan Lima and Province Lima
Source: INEI. Perú: Evolución de los Indicadores de Empleo e Ingreso por Departamento, 2007-2018. Lima, August 2019

2.9 Aquaculture generated just over 102,000 direct and indirect jobs nationwide in 2015, ensuring the

[32] USAID, 2020 – data from INEI
[33] Asociación de Bancos del Perú [ASBANC] 2018.
[34] Arbulú and Heras, SBS 2017
[35] León et al., PUCP 2017

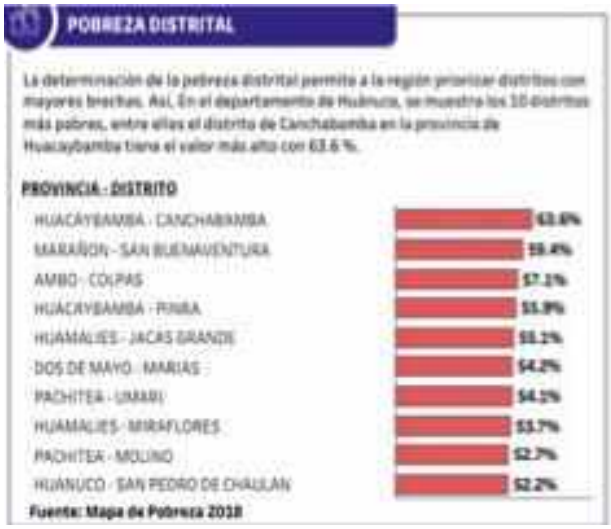
livelihood of at least 300,000 people[36]. In 2013[37], 68% of all producers were informal[38], 85% were engaged in monoculture, and 73% in subsistence production. In addition, 93% of aquaculture producers are people between 30 and 44 years old, most of whom completed secondary education and own their home. The introduction of sustainable aquaculture in vulnerable communities represents an opportunity to reduce pressure on natural water resources, limit the environmental impact of economic activities and help provide fish to improve the nutrition and economy of local populations. Aquaculture involves all family members and commits women and young adults to be economically active. In addition, aquaculture can contribute to family integration, as older people can also participate by performing simple tasks. Finally, this activity does not require workers to have theoretical knowledge; practice and experience gained over the years provide sufficient background to be productive.

2.10 Confirming the situation in the overall economy, the financial sector to date has provided only limited access to practice aquaculture, and particularly for women. A 2015 survey carried out by Mendoza indicates that access to credit is restricted by stakeholder's lack of knowledge of financing sources available from either private of public sources.

B.1.1 Social Context of the Huanuco Region[39]

2.11 According to the Ministry of Development and Social Inclusion, in 2022 the department had 721,047 inhabitants, of which 39,225 are children under 3 years old; 54,600 are adults over 65 years of age and 67,883 are people with disabilities. In Huanuco, there is quite a disparity between districts, with the poorest having a poverty level that varies from 63.2% to 52.2%. The availability of nutritious food is essential to ensure food security in the region as 54.2% of households are food insecure, higher than the national figure (51.0%)[40].

Figure 3. District poverty - Huanuco. Source: Regional Report of Social Indicators of the Department of Huanuco (MIDIS, 2023).



[36] Whereas each worker is responsible for three dependents, on average.
[37] According to the last aquaculture census in 2013
[38] Informal producers do not have authorization to develop their activity.
[39] In 2013 it was in the fourth group with a poverty rate ranging between 18.8 and 14.7, along with the following departments: Ancash, Cusco, Lambayeque (INEI 2013). According to the UNDP Human Development Index (2012), Junin is classified as a department with Low Human Development (HDI of 0.45).
[40] By calculating poverty rates at the district levels regional governments are able to target districts with higher needs. Figure 4 shows the 10 poorest districts in the region. Ambo, the district in which the project will be support rainbow trout farmers, is considered the third-poorest in the region, with a 57.1% rate of poverty. Source: Regional Report of Social Indicators for the Department of Huanuco (MIDIS, 2023) – Poverty map 2018.

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B1.1.1 Gender Analysis of Huanuco Region

2.12 The Project's scope of intervention in Huanuco is the Huampo lagoon, in the town of Huampo, province of Ambo, including Maraypata. The places are rural villages located over two hours by car from the city of Ambo.

2.13 The Huanuco Regional Governance Agreement 2023 - 2026[41] reports the region confronts several social, economic, environmental, and institutional problems. Some of the most critical issues affecting girls and women are restrictions to the social services provided to pregnant women and children younger than five years old; maternal and infant mortality, chronic malnutrition, anemia, high levels of sexual violence against children and violence against women, lack of mental health services, limited access to the Internet, among others.

B1.1.2 Gender Roles and Division of Labor

2.14 The Huanuco areas selected for Project intervention are small rural settings characterized by highly conservative gender roles (Sara Goyeneche et al., 2016) and division of labor that exclude women from managerial positions in trout farming and seclude them to their homes. These traditional gender norms limit women's access to entrepreneurial opportunities and decision-making power within the sector.

2.15 However, women in Huanuco region are extensively involved in all the activities of rainbow trout farming, from feeding the fish to cleaning the ponds and preparing the fish to sell. They perform the bulk of the trout production or cultivation activities, which are an extension of the household care duties. Very limited access to resources, information, and training—as well as the fact that women usually do not leave the house/farms—prevents them from engaging in other activities such as commercialization or entrepreneurship. Cultural expectations and family responsibilities further constrain women's participation in the sector and limit their ability to fully benefit from aquaculture opportunities.

B1.1.3 Constraints and Challenges Faced by Women

2.16 Several constraints and challenges contribute to gender disparities in Huanuco's aquaculture sector:

- Limited Access to Education and Training: Women in the areas of intervention face challenges in accessing education and training due to their remote location and high poverty levels. Cultural norms and language barriers also prevent them from taking advantage of educational and training opportunities. Farming operation safety and security, including protective gear, appeared to be an urgent necessity.
- Limited Access to Extension Services: Women in the areas of intervention face challenges in accessing extension services that provide technical support, knowledge, and information related to aquaculture. This lack of support hinders their ability to adopt best practices, improve productivity, and enhance the overall sustainability of their aquaculture enterprises.
- Gender-Inclusive Policies and Regulations: Inadequate gender-responsive policies and regulations can perpetuate gender inequalities within aquaculture. Huanuco's DIREPRO and other extension services should incorporate a gender perspective, ensuring women have equitable access to resources and training opportunities that are developed with an intercultural approach.
- Capacity Building and Skills Development: Women have few opportunities to strengthen their skills and knowledge and need targeted interventions to access to them.

B.1.2 Social Context of the Junin Region

2.17 The department of Junin is in central Peru and comprising two natural regions: the mountains (46%) and the jungle (54%) [42]. Its population is estimated at 1,225,474 inhabitants, of which 67.3% live in urban areas. Women constitute 50.2 per cent of the population. It should be noted that approximately

[41] Available at https://www.mesadeconcertacion.org.pe/storage/documentos/2022-11-16/acuerdo-huanuco-2023-2026.pdf
[42] It limits to the north with the departments of Pasco and Ucayali, to the south with Huancavelica and Ayacucho, to the west with Lima and to the east with Ucayali and Cusco.

60.9% of the population is between 15 and 64 years old (INEI 2007). The poverty rate in urban areas was 32% and in rural areas 42% (INEI 2009) [43].

2.18 The literacy rate of 92.4 per cent for those over 15 years of age is high, as is the Economically Active Population (EAP), aged 14 and over, estimated at 457,691 persons, 95.9 per cent employed and 4.1 per cent unemployed (INEI 2007). Access to water and sanitation is relatively limited, with 50.9% of households supplied with drinking water from a public network within the household, 8.4% receive water from the public network outside the home but inside the building, and 1.7% of households receive water from a public source (2007). The impacts of climate-related events or hazards, such as heavy rainfall, frost, snowfall, mass movements and floods, evidence significant exposure to hazards to drinking water and sanitation infrastructure[44]. There are human settlements, new villages and sanitation systems located in at-risk areas. The installed water networks still need to be improved. In terms of child health, the prevalence of chronic malnutrition in children under five has improved, although it is still relatively high. Between 2007 and 2013, there was a decrease in the malnutrition rate from 31.9% to 24.2%.

B.1.2.1 Gender Analysis of Junin Region

2.19 The Project's area of intervention in this region is the Chiapuquio micro-watershed, in the town of Ingenio, located in the Huancayo province; nearby trout farmers from the Rangra y Chía river may also participate.

2.20 The town of Ingenio owes its name to the "good genius" and inventiveness that characterized the inhabitants of this area of the Mantaro Valley since pre-Inca times, initially dedicated to mining. In the 20th century, with the introduction of rainbow trout farming in Peru, Ingenio became a national fish farming benchmark with the installation of the El Ingenio Aquaculture Center in 1943. The Center drove the region's aquaculture development, with the town's residents taking on trout farming and the establishment of numerous restaurants and country recreations offering typical dishes derived from trout (Gamion de la Cruz, 2009).

2.21 These activities strongly promoted tourism development in Ingenio, especially around patron saints and festive dates, as well as the promotion of other economic activities, such as the purchase of trout from small artisan producers and commerce in general (Chanca Rojas & Eulogio Espinoza, 2016).

2.22 Despite its traditional tourist activity, the Governance Agreement of the Junin Region 2023 - 202645 reports the region confronts many social, economic, environmental, and institutional problems. Some of the most critical issues affecting girls and women are restrictions to the social services to pregnant women and children younger than five years old; teen pregnancy increase; lack of vaccines against human papillomavirus for girls and adolescents; and high levels of violence against women and girls, among others.

2.23 Reports of trafficking in persons represent a serious concern[46].

2.24 The following organizations work on women's issues in the region: Central Regional de Organizaciones de Mujeres Rurales "Yachaq Mama"; Mesa de Diálogo de la Mujer de Huancayo; Mesa de Diálogo de la Mujer de Jauja; Mesa de Diálogo de la Mujer de Chupaca; Mesa de Diálogo de la Mujer de La Oroya; Mesa de Diálogo de la Mujer de Concepción; Mesa de Diálogo de la Mujer de Junin; Asociación de Mujeres Productoras Warmi Tsinani de Satipo; Confederación Nacional de Mujeres Organizadas por la Vida y el Desarrollo Integral; Pastoral Social de Dignidad Humana (FOVIDA - Fomento de la Vida

[43] In 2013 it was in the fourth group with a poverty rate ranging between 18.8 and 14.7, along with the following departments: Ancash, Cusco, Lambayeque (INEI 2013). According to the UNDP Human Development Index (2012), Junin is classified as a department with Low Human Development (HDI of 0.45).

[44] The most affected provinces are Huancayo, Chanchamayo, Satipo and Jauja, with more than 12,000 homes affected. As mentioned in previous sections of the report, in the department of Junin, structural conditions reduce the ability of this sector to adapt to climate-related events, which are mentioned below: 43.7% of homes are made of adobe or rammed earth, 14.2% of wood and 36.1% of brick or cement block. The floors are earth (53.2%), planked wood (6.9%) and cement (33.6%) (INEI 2007).

[45] The Roundtable for the Fight Against Poverty, since 2002, throughout Peru, plays an active role in formulating and consolidating governance agreements in the context of national, regional, and municipal electoral processes. The agreements are linked to the Sustainable Development Goals for 2030. Available at https://www.mesadeconcertacion.org.pe/storage/documentos/2022-11-16/acuerdo-junin-2023-2026.pdf

[46] Available at https://www.state.gov/reports/2023-trafficking-in-persons-report/peru

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ONG, 2019).

B1.2.2 Gender Roles and Division of Labor

2.25 In the Junin region of Peru, traditional gender roles and division of labor influence women's participation in the aquaculture sector. Women work primarily in gastronomic and tourist activities related to aquaculture as cooks, waitresses, and cleaning staff of restaurants and country recreation areas. Their participation tends to concentrate on lower-skilled tasks such as eviscerating and washing the trout; additionally, these types of jobs depend on consumers' demands and are temporary by nature and low-paid. Our field work identified few women established as trout producers in this area.

2.26 Historically, men have dominated fish farming and management activities, while women have been primarily involved in household-based tasks and supporting roles. These gender norms create barriers for women seeking to engage in more entrepreneurial and decision-making roles within the aquaculture sector.

B1.2.3 Constraints and Challenges Faced by Women

2.27 Several constraints and challenges contribute to gender disparities in Junin's aquaculture sector. These include:

- Limited Access to Training: Women in Junin often face barriers in accessing training programs related to aquaculture. This lack of training opportunities limits their technical knowledge and skills, reducing their ability to engage in higher-value activities within the sector.
- Women interviewed reported lacking a clear and effective channel of communication with DIREPRO, directly impacting on access to training as they ignore when they happen.
- Public sector's officials consistently reported lack of training in gender issues, and some of them evidenced a gender-blind perspective. Women interviewed for the study agreed they would benefit from women empowerment and gender training.
- Unequal Access to Resources: Junin women need help accessing essential resources, including credit, land, and technology. Inadequate access to credit from private and public sources hampers their capacity to invest in productivity-enhancing inputs and equipment and restricts their ability to expand their trout farming enterprises.
- A women producer mentioned she had a mortgage over her family house to obtain a relatively small amount of money from a private bank to invest in her farming operation. All women producers reported having applied to the Peruvian financial help program when COVID-19, to no avail.

2.28 Although the women interviewed manifested that, "unlike in the old days," there are no barriers for women to become fishing engineers or professionals within the aquaculture sector, they manifested that access to higher education is more difficult for women in this region, contingent upon social expectations regarding family duties, and having the economic resources to afford it.

- Lack of Supportive Infrastructure: Insufficient infrastructure, such as transportation networks, storage facilities, and post-processing plants, poses challenges for women in Junin's aquaculture sector. These limitations hinder their productivity, market access, and overall competitiveness.

2.29 Women in the AREL and AMYPE productive categories reported needing more power to negotiate their product's market value and lose profit in front of more prominent producers able to sell for a lower price -including the governmental-owned plant in Ingenio.

2.30 Women mentioned they lack the social opportunities provided for men to interact, such as sports playing, and therefore, are more isolated and have fewer chances of discussing common issues.

B.1.3 Social Context of the Puno Region

2.31 The region of Puno is located in the mountains between 3,812 and 5,500 meters above sea level and

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between the jungle and high jungle between 4,200 and 5000 meters above sea level. The capital of the department is the city of Puno, located on the shores of Lake Titicaca. In 2015,47 the Puno Region has 1,415,608 inhabitants, of whom 54% are concentrated in urban areas and participate in secondary and tertiary activities, and 46% are distributed in rural areas.

2.32 With an illiteracy rate of 10.5%, in the population aged at least 15 it is high compared to the national average of 6.2%. Puno is one of the poorest regions of Peru. Between 2004 and 2006 it was the second poorest after Huancavelica, with 76.3% of its population living in poverty and 41.6% in extreme poverty in 2006. This situation is a consequence of underemployment and unemployment, given that most of the population is engaged in agriculture and economic activity, which is vulnerable to the effects of climate change. Basic services such as electricity, water and sanitation in the Puno region are insufficient to meet the needs of the population. Access to these services is below national coverage: access to electricity at home is 60.1 per cent; Access to safe drinking water at home is 40.7 per cent and access to drainage or sanitation services is 24.6 per cent. From ancient times to the present day, the natural resources of Lake Titicaca have allowed the development of important surrounding towns and ensured the survival of its inhabitants, providing them not only goods for immediate use but also environmental services that have improved the climatic conditions for their productive activities. Of all the resources provided by Lake Titicaca, fish are a major food source for surrounding populations. It is often the most important source of protein in their diet, which is why traditional artisanal fisheries and aquaculture remain relevant.

2.33 Rainbow trout is one of the flagship products of the Puno region, and this region has become the first producer nationwide. The Puno region has great potential in water resources. From an ecological and socioeconomic perspective and from an aquaculture point of view, Lake Titicaca is the most critical resource in the mountains. The environmental conditions and the socioeconomic viability of the lake for the cultivation of rainbow trout have allowed its recent development to support one of the main productive activities in the region. In addition, it includes the Inambari and Tambopata basins that are part of the Amazon slope and harbor important possibilities for aquaculture.

B.1.3.1 Gender Analysis of Puno Region

2.34 The Project's area of intervention is Lake Titicaca, in the town of Pomata (Faro), Province of Chucuito. The Regional governance agreement 2023 - 2026[48] reports the region confronts many social, economic, environmental, and institutional problems. Some of the most critical issues affecting girls and women are restrictions to the social services to pregnant women and children younger than five years old; poverty and extreme poverty; teen pregnancy increase; high levels of violence against women and girls, among others. Reports of the increase of trafficking in persons in the region present a grave concern[49].

B.1.3.2 Gender Roles and Division of Labor

2.35 In Puno region, traditional gender roles and division of labor play a significant role in shaping women's participation in the aquaculture sector. Men have traditionally held primary roles in fish farming and management, while women have been engaged in household tasks and support roles. These gender norms limit women's access to decision-making positions and entrepreneurial opportunities within the sector.

2.36 Women in Puno region actively participate in various aspects of aquaculture, but their involvement is often concentrated in low-skilled activities. Limited access to resources, training, and information prevents women from engaging in higher-value activities such as fish farm management or entrepreneurship.

B1.3.2. Constraints and Challenges Faced by Women

[47] According to the projections of the National Population and Housing Census of 2007 for the year 2015.
[48] Available at https://www.mesadeconcertacion.org.pe/storage/documentos/2022-09-29/acuerdo-de-gobernabilidad-puno-2023-2026-completo.pdf
[49] https://www.state.gov/reports/2023-trafficking-in-persons-report/peru

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2.37 Several constraints and challenges contribute to gender disparities in Puno's aquaculture sector:

- Limited access to Productive Resources: Women in Puno face challenges in accessing productive resources such as land, credit, and technology. Limited land tenure rights and lack of access to credit hinder their ability to expand their aquaculture enterprises and invest in productivity-enhancing inputs.
- Limited access to training programs: Women manifested the need of training focused on technical skills, entrepreneurship, financial management, and marketing to empower them to participate in higher-value activities within the industry.
- Market Access and Value Chain Integration: Women often encounter barriers in accessing markets and integrating into value chains. Limited market information, transportation infrastructure, and market linkages prevent women from effectively marketing their aquaculture products and obtaining fair prices for their goods.
- Gender-Based Violence: Gender-based violence, both within and outside the aquaculture sector, poses a significant challenge for women in Puno. It not only affects their personal safety and well-being but also limits their mobility, decision-making power, and ability to engage in economic activities. The AURORA National Program[50] registered 4.224 incidents of violence against women in Puno in 2022, a number significantly higher than the national average.

B.1.4 Gender in Peruvian aquaculture

2.38 Approximately 8,000 women are thought to be working in Aquaculture [51]. As described in the table below, they occupy the majority in primary and secondary processing in aquaculture but are a minority in most other areas of activity. In addition, although women play a key role and occupy the majority of aquaculture processing jobs, many of these are casual and seasonal, leading to economic insecurity and low coverage of social protection systems.[52]

Table 5: Percentage of men and women working in aquaculture and fishing enterprises in Peru, by area of work.

Activity	AQUACULTURE (%)		FISHERIES (%)	
	Men	Women	Men	Women
Production, Cultivation or Extraction	92	8	100	
Primary processing	42	58	78	22
Secondary processing	12	88	89	11
Marketing	67	33	60	40

Source: Author's assessment based on a survey conducted by Mendoza in 2015.

2.39 Access to permanent or temporary work is different for men than for women[53] and these differ for

[50] The National Program for the Prevention and Eradication of Violence against Women and Members of the Family Group - AURORA belongs to the Ministry of Women and Vulnerable Populations (MIMP). Its objective is to implement and promote specialized services for preventing violence against women, members of the family group, and people affected by sexual violence, as well as victims' care and protection. It has a nationwide scope, prioritizing those areas with the highest rates of violence against women, members of the family group, and anyone affected by sexual violence. The program's services are interdisciplinary and offer assistance to anyone who voluntarily requests them for free. One of the main tools of the Aurora National Program is the CEM (*Centro Emergencia Mujer*), an assistance center that a survivor can resort to, where social, psychological, and legal help is provided. As emergency services, they should be available to any person without discrimination.

[51] FAO, 2016

[52] Ibid

[53] Mendoza (2015), who analyzes 40 companies in Peru.

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aquaculture or fishing enterprises. Access to permanent or temporary work is different for men than for women, and these differ for aquaculture or fishing enterprises. Most permanent jobs are reserved for men and, in the case of fishing enterprises, also temporary jobs. Available information also shows that there are more job opportunities for women in aquaculture enterprises than in fishing enterprises and that casual work is more common for women than for men. Overall, only 29% of jobs are held by women and only 21% of permanent jobs are held by women. According to the type of enterprise, 40 per cent of jobs in aquaculture enterprises and 14 per cent in fishing enterprises are held by women. Only 2% are women owners of fisheries and 17% of fish farmers have resorted to financing from external sources for the development of their productive activities, evidencing the need to create additional financial products in Peru specifically aimed at the needs and conditions of fishermen and fish farmers[54].

2.40 There is little participation of women in organizations in the sector, which have traditionally included only men. New spaces have been slow to open to women, not only because men have the power and direct the internal dynamics of organizations, but also because some women do not believe in their ability or are motivated to enter these spaces.

2.41 Statistical information disaggregated by sex in fisheries and aquaculture is very limited, so it is not possible to know the characteristics, situation, and particular conditions of fish farmers. This situation makes women invisible in the sector, affecting the definition of public policies, decision-making and the implementation of initiatives for women's economic and social empowerment[55].

B.1.4.1 Empowering Women in Huanuco's Aquaculture Sector

2.42 To promote gender equality and women's empowerment in Huanuco's aquaculture sector, the following strategies can be implemented:

2.43 *Enhancing Women's Access to Extension Services*: Improving the availability and accessibility of gender-responsive and intercultural extension services can provide women with technical support, training, and knowledge necessary to enhance their productivity, adopt sustainable practices, and improve their competitiveness.

2.44 *Building Capacity and Skills*: It is essential to recognize and address the unique challenges faced by women in the project's intervention locations, providing them with the necessary tools, resources, and opportunities to actively participate and benefit from the aquaculture industry. Bringing training closer to their farms seems crucial.

2.45 Developing Gender-Inclusive Protocols for the effective outreach of women: Implementing measures that consider women's safety, mobility, and ability to participate in training sessions fully will benefit the entire sector.

Picture 2: Women aquaculture producer shows us her farming operation during our field visit. Maraypata, Huanuco, 6/16/23.

B1.4.2 Empowering Women in Junin's Aquaculture Sector

2.46 To promote gender equality and women's empowerment in Junin's aquaculture sector, several

[54] (FAO, 2016).
[55] Food and Agriculture Organization of the United Nations (2016). *The role of women in fisheries and aquaculture in Chile, Colombia, Paraguay and Peru*. Retrieved from https://www.fao.org/3/i5731s/i5731s.pdf

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strategies and interventions can be implemented:

2.46.1 *Access to Training*: Enhancing women's access to training programs related to aquaculture is crucial. This includes effective outreach, providing scholarships, vocational training, and capacity-building initiatives that address the specific needs and constraints that women face.

2.46.2 *Access to Finance and Resources*: Facilitating women's access to credit and productive resources is essential for their economic empowerment. This can be achieved through targeted financial inclusion programs, establishing women-friendly credit schemes, and promoting awareness among women in the sector.

2.46.3 *Strengthening Women's Networks and Organizations*: Supporting and strengthening women's networks, associations, and cooperatives can provide a platform for collective action, knowledge sharing, and advocacy. These networks can empower women by amplifying their voices, enhancing their bargaining power, and fostering peer-to-peer learning and mentorship.

Picture 1: Focus group with women aquaculture producers and workers. Concepcion, Junin, 6/12/23.

B1.4.2 Empowering Women in Puno's Aquaculture Sector

2.47 To promote gender equality and women's empowerment in Puno's aquaculture sector, the following strategies can be implemented:

2.47.1 *Enhancing Access to Productive Resources:* Efforts should be made to improve women's access to land, credit, and technology. This can be achieved through targeted programs that provide support for land tenure rights, financial inclusion, and access to appropriate aquaculture technologies.

2.47.2 *Strengthening Market Linkages and Value Chain Integration:* Providing women with market information, improving transportation infrastructure, and fostering partnerships between women producers and market actors can enhance their market access and bargaining power. This can lead to improved income generation and economic empowerment.

2.47.3 *Addressing Gender-Based Violence:* Implementing initiatives that address and prevent gender-based violence is essential. This includes raising awareness, providing support services, and promoting a safe and inclusive working environment within the aquaculture sector.

2.47.4 *Promoting Gender-Responsive Policies and Programs:* Advocating for the integration of gender perspectives into aquaculture policies and programs is crucial. This includes ensuring equal representation and participation of women in decision-making processes, supporting women's networks and associations, and incorporating gender considerations in training and extension services.

Picture 3: Women aquaculture producer shows us her farming operation during our field visit. Puno, 6/19/23.

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C. Economic context of aquaculture in Peru

3.1. In 2020, the government's restrictive national pandemic mitigation measures negatively affected gross value added across the country. Peru's Gross Domestic Product (GDP) contracted by 11.1% in 2020, which generated job losses and a decrease in labor participation, especially among women, increasing informality and poverty. During 2021, economic [56] activity recovered to its pre-pandemic level (2019), however, employment has not improved at the same pace (CAF, 2022), further exacerbating economic vulnerability[57].

3.2. Rising average temperatures and prolonged droughts, landslides and flooding caused by frequent heavy rains, among other events, have further aggravated the economic challenges facing the country in the wake of the pandemic. Peru's biodiversity resources and ecosystem services affect economic performance and contribute approximately 15-20 percent of GDP. About one third of the population (2.2 million rural households) rely heavily on these goods and services for their livelihoods. In addition, about 65% of national agriculture and much of the gastronomic business (which moves 9.5% of Peruvian GDP) depends on native genetic resources (MINAM, 2021).

3.3. Aquaculture has been declared an activity of national interest by PRODUCE, as it has the potential to improve food security and alleviate poverty, especially in rural areas; Therefore, significant efforts are needed to adapt to climate change.

C.1. Classification of aquaculture producers in Peru

3.4. As of 2023[58], there are 770 specific aquaculture rights for rainbow trout farming at the AMYPE level, 205 aquaculture rights granted for AREL and there are also 02 aquaculture rights at the AMYGE level. The aquaculture rights AMYPE and AREL (975) for rainbow trout farming are the main beneficiaries of the project presented.

3.5. Between 2019 and 2020, the gross value added of fisheries and aquaculture grew by 3.1% (at constant 2007 prices). This growth is the result of higher landings of hydrobiological species for indirect human consumption (27.8%), attenuated by the fall in the extraction of hydrobiological resources for direct human consumption (-4.3%) (INEI, 2021).

3.6. There is ignorance and misinformation about access to competitive financing mechanisms for aquaculture projects. At the national level, aquaculture activity does not receive much attention from financial institutions and insurers due to past risks, such as the white spot and[59] the El Niño phenomenon in 1997-1998, which caused large economic losses in the aquaculture sector. Since these events, financial institutions have shown little interest in offering insurance and credit to support aquaculture activities. In 2013, 68% of fish farmers work in informal conditions, contributing to their financial isolation. The repeal of the agrarian development law (Law 27360) affected the aquaculture sector, since it granted tax benefits to formal producers, such as the reduction of income tax from 30% to 15%[60].

3.7. The informality of aquaculture producers restricts their access to credit, which is not only intended to improve their production, but also to adapt to climate change. Therefore, this places them at a higher risk of climate change impacts. As a result, there is a vicious circle where climatic events affect aquaculture producers and limit access to finance, as this activity is considered vulnerable to climate

[56] Nationally, 2.2 million jobs were lost. Labor informality increased 2.6 percentage points, reaching 75.3% (the highest since 2010). The incidence of poverty at the national level increased by 9.9 percentage points, reaching 30.1 per cent of the population. In absolute terms, the pandemic increased the number of people living in poverty by 3.3 million.

[57] Among the Peruvian population, 54.2% suffer from economic vulnerability. At the provincial level, 10 out of 25 regional governments, economic vulnerability affects between 50% and 75% of the population. Additionally, 18% of the national population lives in 1,153 districts with high or very high vulnerability to food insecurity due to the recurrence of natural and climatic phenomena.

[58] In accordance with the General Aquaculture Law, the National Fisheries Health Agency is responsible for sanitary surveillance and control in aquaculture production centers. Access to aquaculture activities for AMYGE and AMYPE requires authorization, or a concession granted by Directorial Resolution. PRODUCE grants authorizations and concessions for AMYGE, and the regional government.

effects. This could lead to reduced employment opportunities in the sector and affect the livelihoods of the actors involved.

C.2. Trout farming in Peru

3.8. Rainbow trout (*Oncorhynchus mykiss*) was introduced to Peru between 1925 and 1940. It was optimally adapted to the bioecological conditions of the aquatic environments of the high Andean areas. Since then, and due to the growth of trout farming in the high Andean zone, the Peruvian State has focused on the development of trout, promoting its naturalization in the 1940s (Cossios 2010) The species adapted well to the bioecological conditions of the aquatic environments of the high Andean areas, characterized by the presence of lotic and lentic environments where rainbow trout is born and where it can migrate to feed and reproduce. Likewise, a high primary productivity (production of organic matter by autotrophic organisms through photosynthesis or chemosynthesis) and good physicochemical water conditions such as temperatures between 8°C to 18°C and the availability of dissolved oxygen in these areas meet the requirements of rainbow trout. Since other species could not develop due to their sensitivity to water conditions and management and given the rapid development of trout farming in the Andean mountains, starting in the 1940s, the Peruvian government has focused on developing rainbow trout at the national level. It is now considered a naturalized species in the country, as autonomous populations have been established in habitats where they were previously exotic.

3.9. On the other hand, aquaculture production in Peru has increased from 10 thousand tons in 2003 to more than 137 thousand tons in 2022, with a peak in 2019 of more than 161,000 tons, with the main cultured species being trout, shrimp, fan shell, tilapia, and a set of native Amazonian species. In 2022, trout aquaculture at the national level reached just over 60 thousand tons, with Puno registering a trout harvest volume amounting to 41.7 thousand tons, Junin registering just over 3.1 thousand tons and Huanuco just 471 tons.

3.10. Between 2011 and 2022, rainbow trout farming in Peru grew by 204%, from 19,962 tons in 2011 to 60,777 tons in 2022, representing 44% of national aquaculture production for that year. Most of this production came from the department of Puno, specifically Lake Titicaca.[61] The water quality of the lake and its basin is favorable for aquaculture, for rainbow trout culture. Considering this strong economic performance, trout farming in Puno is undergoing gradual changes, such as the adoption of new production techniques, the use of imported eggs, the use of high-yield extruded feeds and the use of modern structures. However, trout farming remains a small-scale activity in Puno. At the national level there are more than 3,276 trout production units, of which 54.8% are dedicated to limited resource aquaculture (AREL), 44.8% participate in small and medium enterprises (AMYPE) and less than 1% in medium and large aquaculture companies (AMYGE). Rising or falling temperatures create habitat changes that influence overall trout metabolism, reducing growth and predicted total production.

3.11. In the Puno region, around 30 thousand tons of trout were farmed in 2013, increasing production by 39% by 2022, reaching 41,694 tons and representing 83% of the culture of this species nationwide. The strong growth of rainbow trout production has become an opportunity to import embryonated eggs. Genetically improved trout (from imported eggs) have been shown to perform better than domestic trout seed, primarily because of their genetic quality. As a result, most of the national production is based on imported trout eggs[62].

3.12. The department of Junin ranks fourth in national trout production, after Puno, Pasco and Huancavelica, with 3,335 tons per year, according to the National Aquaculture Information Network of the Ministry of Production (2023).

3.13. The natural habitat of rainbow trout in the areas visited includes rivers, lakes and lagoons of cold, clean and crystal clear waters. It prefers moderate currents and generally occupies the middle reaches of stony bottoms with moderate vegetation. Rainbow trout is a cold-water fish. Although they tolerate a

[61] Lake Titicaca is the second largest lake in South America with an approximate area of 8,400 km2, located at an altitude of 3,810 m above sea level, and considered the highest navigable lake in the world.

[62] According to PRODUCE (2018), the origin of embryonated trout eggs in 2016, fuel 52% from the United States, 30% from Spain, 10% from Denmark, 7% from Great Britain and 1% from Chile.

wide range of temperatures, they can survive several days at 25 ° C and temperatures almost below zero. However, to achieve the desired level of fat, the temperature must fluctuate between 11 and 16 °C, as lower temperatures prolong the growing time, while higher temperatures carry a higher risk of spreading diseases.

C.2.1 Climatic conditions affecting the vulnerability of rainbow trout farming

3.14. The alteration and loss of hydrobiological resources due to changes in weather patterns will affect rainbow trout farming and therefore the food security of Peruvians and local and territorial development. Recent scientific evidence suggests that the climatic or land-use factor in the lake environment might be relatively consistent in directions, but consequential changes in a lake environmental factor could result in increases or decreases in fish catches in a specific lake.[63] A subsequent correlation analysis indicates that reductions in fish catch were less likely to occur in response to potential changes in climate and land use if a lake is located in a region with greater access to clean water. This finding suggests that appropriate investments in water quality protection and water use efficiency can provide additional benefits for lake fisheries and food security.

3.15. Environmental changes brought about by changes in climate and land use have been linked to major changes in fish catches (CATCHs) and species composition in many lakes around the world. Reduced lake catches (CATCHs) caused by climate and land-use change can threaten the food security and livelihoods of millions of people worldwide, especially in impoverished countries where poorer rural communities may lack appropriate alternative animal protein sources and employment opportunities (Kao, Yu-Chun, 2020). [64]

3.16. The most crucial challenge for aquaculture concerns the environmental and social sustainability of farmed species. The future of cultivation must be based on progressively biosecure systems that produce healthy and better growing animals, ensure uniform harvests in terms of quantity and quality and minimal risk to ensure the least possible use of chemical antibiotics and generate the least negative environmental impact. It is also essential to consider policies to mitigate the social and environmental impact of this activity (biological, organic and chemical pollution, habitat modification and changes in the productive patterns of communities). In addition, it is very important to develop mechanisms to improve yields, linked to production with other industries and promote technologies such as selected seeds, polycultures, novel foods, crop rotation, microorganisms to purify water, etc. This involves the application of new culture methods, such as intensive closed-loop culture, fully controlled environments, cage culture, domesticated lines, probiotics, yeasts and bacteria in feed, and the incorporation of new species to diversify production and supply.

3.17. Rainbow trout are more susceptible to disease and high mortality in the early productive stages (mainly in the fingerling stage)[65]. The most common pathogens include the bacterium *Yersinia ruckeri* (Flores, 2013), [66] this bacterium is transmitted horizontally, that is, through water, by the droppings of infected fish or carriers to the susceptible fish, generating enteric red mouth disease (EBR), whose clinical signs are external lesions (in the mouth, belly fins) and internal in fish, causing mortalities between 60 and 65% in crops However, there are no commercial vaccines available in Peru, although an experimental vaccine, made with isolates of *Yersinia ruckeri*, which has had promising in vitro results[67] and other viable alternatives, such as probiotics, have been shown to improve the fish's immune system, nutrient assimilation and normal development, as well as preventing bacterial infections (Walter, 2012;

[63] A Nature Communications (2020) study analyzed time series data (1970–2014) from 31 lakes on five continents and concluded that fish catches can respond positively or negatively to climate and land-use changes.

[64] Author of "Effects of Climate Change and Land Use on Fish Catches in Lakes on a Global Scale". NATURE COMMUNICATIONS www.nature.com/naturecommunications

[65] i.e., the fry stage

[66] This is a Gram-negative bacterium that belongs to the Enterobacteriaceae family. It mainly affects salmonids, with trout being the most susceptible species. In addition, it causes high mortality rates, above 50% in many countries and leads to significant economic losses in fish farms (Flores, 2013). Several antibiotics have been used to control yersiniosis, such as oxytetracycline, sulfadiazine in combination with trimethoprim, florfenicol, oxolinic acid, flumequine and amoxicillin (Flores, 2013; Kumar et al., 2015). Given the limited spectrum of antibiotics approved for use in aquaculture, fish have developed resistance to these drugs (Pandiyan et al., 2013).

[67] However, Cueva et al. (2016) have developed a vaccination protocol in Peru that is showing promising results.

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Berdasco, 2016)[68]. Several studies indicate that the use of probiotics has an antagonistic effect against *Yersinia ruckeri* and other bacteria that affect trout culture, such as *Lactobacillus spp, Lactococcus spp* and *Bacillus* spp. Studies on the bacterial microflora of rainbow trout or with beneficial potential against pathogenic bacteria are scarce in Peru[69].

3.18. The temperature of the water is fundamental because it regulates the growth of trout, since they cannot regulate their body temperature. If the temperature is too low, growth is slow, at higher temperatures growth is faster. It is important to consider that temperature increases caused by climate change have led to a decrease in oxygen levels in the water, which are critical for aquaculture.

Table 6: Water Conditions required for Trout Culture

Parameter	Rank	Optimal
Oxygen (ppm)	7.5 to 12	8.5
Temperature ©	13 to 18	15
pH	6.5 to 8.5	7

Source: Practical Manual for Rainbow Trout Culture (FAO, 2014).

3.19. According to the 2013 Aquaculture Census, artificial ponds, natural ponds and artisanal floating cages are the most widely used technologies in aquaculture. Artisanal floating cages are used for extensive and semi-intensive trout farming in lakes such as Titicaca in Puno. Artificial and natural ponds are also used for the cultivation of trout, prawns and tilapia, among other less extracted species. Rainbow trout farming can also be done in floating cages installed in lagoons, reservoirs or dams, which usually consist of a floating platform holding a submerged mesh "bag" or "cage", where fish are kept for specific periods.

3.20. As for the material used to build the floating cages installed in Lake Titicaca in the Puno region, more than 56.29% is handmade with the same sticks as the eucalyptus trunk. 29.57%[70] are semi-artisanal cages, built with metal tubes[71] For greater resilience, floating cages must be of industrial quality, galvanized steel or HDPE, with corridors that allow people access to biomass management and with a capacity of 10 tons. For trout farming in stakes, it is essential to consider the volume of water required in the initial infrastructure and project future expansion plans. In this sense, it is necessary to ensure the minimum flow of water in the dry season in order to ensure production. The water must enter through the main culture channel, which allows the maximum annual production of commercial trout to be calculated. A constant flow of water will be needed to keep the ponds of the production unit full; Therefore, it is necessary to make daily refills to ensure sustainable production throughout the year. Unfortunately, most micro and small fish farmers (AMYPE), and scarce resources (AREL), work in very precarious conditions, without adequate formalization, with very little access to available technologies and little articulation in value chains. According to PRODUCE (2018), for aquaculture to be sustainable and competitive, it is essential to address several dimensions, ranging from technological and commercial aspects, logistical organization and access to credit, professionals and technicians, and a network of easily accessible suppliers of goods and services. It also requires environmental standards and those relating to the formal exercise of the activity.

3.21. Low-income fish farmers struggle to access technologies that allow them to adapt to the risks and negative impacts of climate change. Despite training campaigns on good environmental, safety and health practices, it is not yet possible to train aquaculture workers living in remote areas, so there are

[68] In addition, beneficial bacteria extracted from the digestive tract of fish can more easily colonize the host's digestive tract (Henríquez, 2013; Muñoz, 2015).
[69] Balcázar et al.; Burbank et. Al, 2012, Palikova et al. 2015
[70] Lake Titicaca Binational Authority, 2021
[71] The following link provides access to a short video (0:19 seconds) that shows the conditions of some of the cages in the Puno region, showing that they are built with precarious materials that make it difficult to resist the strong winds that occur in the area: https://www.youtube.com/watch?v=dz6A2pF1o1A

still knowledge gaps on the risks and impacts of climate change and the necessary adaptation measures.

3.22. The main challenges presented by climate change for the aquaculture sector are two: i) the impact on aquaculture activities due to the loss of ecosystems caused by extreme weather events, and ii) the vulnerability of producers who work informally and have not been able to access financing to improve their productive practices, incorporate sustainable technologies, add value, ensure the sanitary conditions of its products and strengthen environmental care in production areas. First, extreme weather events, aggravated by climate change, are causing the physical impact on the ecosystems on which the aquaculture sector depends, which alters the availability and productivity of hydrobiological resources destined for these activities.

C.2.2. Analysis of the ecological and socioeconomic vulnerability of trout aquaculture in the departments of Puno, Junin, and Huanuco under the IPCC concept.

3.23. PRODUCE (2016) designed climate change adaptation measures that are part of Peru's Nationally Determined Contributions (NDC) Thematic Area of Fisheries and Aquaculture. To do this, it used a conceptual model based on the analysis of human vulnerability and its implications on the productivity of fishers, shipowners and fish farmers and its impact on their livelihoods. This model considers a socio-ecological approach to understanding how marine and inland water systems might react to climatic and non-climatic pressures and their interrelationship with socio-economic systems. Currently, the General Directorate of Environmental Affairs of Fisheries and Aquaculture of PRODUCE seeks to apply tools to strengthen the analysis of ecological and socioeconomic vulnerability of trout aquaculture activities in the departments of Puno, Huanuco, and Junin in the context of climate change. To do this, it will use the IPCC conceptual model adapted to the socio-ecological vulnerability framework, which identifies the characteristic elements of climate risk (threats, exposure, and vulnerability), different ecological and socioeconomic indicators from research studies and PRODUCE management instruments.

3.24. **Exposure/threat indicator:** As part of the climate risk characterization process, the observed and/or expected impacts of climate change on inland aquaculture activity in each region were identified.

Table 7: Observed and/or Project Climate Change Impacts

Region	Changes in the climate parameter	Effects / Impact
Puno	1. Increase in surface temperature of inland waters	• Changes in oxygen levels in lentic resources for the developmental requirement of trout species • Fry mortality
	2. Changes in wind intensity	• Damage to aquaculture infrastructure, mainly in cages.
Huanuco	1. Changes in precipitation	• Conflicts over water use • Risk of floods, landslides and landslides affecting aquaculture infrastructure.
	2. Increase in surface temperature of inland waters	• Changes in oxygen levels in lentic resources for the developmental requirements of trout species. • Fry mortality
Junin	1. Aquifer reduction	• Reduced water availability

3.25. **Sensitivity variables[72]:**
We notice the following:

- **Poverty level:** The poverty analysis is based on information from INEI poverty reports to determine the percentage of the population classified as Poor, Extremely Poor or Not Poor, in relation to the cost of a basic basket of food and services. Likewise, according to additional information provided by the General Office of Impact Evaluation and Economic Studies (OGEIEE) of the Ministry of Production, in 2021 the poverty of fish farmers at the national level was reduced to 5%, and 15% received incomes below the Minimum Living Wage, which is equivalent to 930 soles (USD 242.82) (PRODUCE, 2022).

[72] The IPCC defines sensitivity as the degree to which a system or species is positively or negatively affected by climate variability or change. In this sense, PRODUCE defined the variables "tons harvested", "number of jobs generated" and "poverty level" as the main variables to be impacted by changes in climate parameters and that would be related to the greater vulnerability of fish farmers and the livelihoods of families located in the regions of Huanuco, Junin and Puno. Peru.

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Table 8: Poverty Level as Sensitivity Variable

Poverty category	Vulnerability condition	Description	Value (V)
Extremely poor	Very high	Monthly expenses are less than S /. 191 soles (USD 49.95) per person to cover the basic food consumption basket	5
Poor, not extremely	Loud	Monthly expenses are less than S /. 360 soles (USD 93.99) per person to cover the basic food consumption basket	4
Not poor	Stocking	Monthly expenses are greater than S /. 360 soles (USD 93.99) per person to cover the basic food consumption basket	3

- **Harvest level**:[73] The regional harvest level is assessed using a simple average of the last few years available to eliminate annual fluctuations. According to the Statistical Yearbook, the annual average (in tonnes) of trout aquaculture harvest for the three regions is considered.

Table 9: Sensitivity Variables

Variable	Sensitivity to the impact of climate variability and climate change			
	Casualty	Stocking	Loud	Very high
Annual tons harvested	From 257 to 30,984 tons	From 30,985 to 61,710 tons	From 61,711 to 92,437 tons	From 92,438 to 11,938 tons
Poverty levels		Not poor	Poor, not extremely	Extremely poor

Exchange rate: 3.83 soles/USD (SUNAT, 2022). Retrieved on 16.11.2022 in https://e-consulta.sunat.gob.pe/cl-at-ittipcam/tcS01Alias

- **Socio-economic adaptation capacity:**

a. Technology[74]: In the case of aquaculture, the variable reflects the type of culture used, whether extensive (with very little human intervention; used in restocking programs in lagoons, reservoirs or dams for recreational use or for the benefit of a community), semi-intensive (animals are confined in large structures, such as cages or ponds, where planting density, artificial feeding, water replenishment and water aeration are managed) or intensive (highly controlled production system with high initial costs, intensive technology and high production efficiency, tendency to conditions independent of the climate of the place and water quality and the use of artificial culture systems).Regional Climate Change Strategy (ERCC): According to the Organic Law of Regional Governments (Law 27867, dated 16/11/2002),[75] each regional government must "formulate, coordinate, lead and supervise the implementation of regional strategies on biodiversity and climate change". In this sense, a variable is used to reflect the existence of CCREs and their level of specificity in relation to fishing activity.

[73] For the purposes of the study, landings have been divided into 3 categories according to the type of activity. For the regional assessment, the vulnerability classification includes 5 categories or ranges, weighting the regions with the highest landings at the most vulnerable regional level (PRODUCE, 2016).
[74] The technology variable reflects the adaptation or resilience of the population to the potential effects of climate change.
[75] https://www.mimp.gob.pe/ogd/pdf/2014-ley-organica-de-gobiernos-regionales_27867.pdf

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PROJECT PROPOSAL TO THE ADAPTATION FUND

4.1 Overall Project Objective

4.1.1 The overall objective of the project is to reduce the vulnerability of rainbow trout aquaculture to climate change and climate through the implementation of innovation mechanisms and technologies, capacity building, generation of improvements in the governance framework and encouraging increased market competitiveness.

4.1.2 Rainbow trout aquaculture represents the principal source of livelihoods for communities living in the regions of Huanuco, Junin and Puno and by increasing its adaptive capacity, reducing its vulnerability to climate change and seizing opportunities to strengthen its productivity, the project will contribute to a more efficient use of hydrobiological resources and enhance food security. Without resources from the Adaptation Fund, vulnerable households dependent on aquaculture are unlikely to achieve climate resilient development in their economic, remaining therefore vulnerable to the impact of climate change events and risking a further deterioration of their already precarious economic situation.

4.2 Specific Project Objectives:

4.2.1. Promoting the development of a regulatory framework conducive to the development of sustainable climate-resilient aquaculture, strengthen the institutional capacity of the public sector to effectively enforce those rules and regulations.

4.2.2. Improve the quality and quantity of reliable and up-to-date information regarding the impact of climate change on aquaculture, the quality of hydrobiological resources and information regarding the economic and commercial performance of trout farming in the regions.

4.2.3. Assist in the development of climate disaster prediction tools and enhance systemic capacity to manage the climate crises, should they occur.

4.2.4. Improve the efficiency of aquaculture practices and water resources management through the acquisition of new clean technologies for resilient aquaculture.

4.2.5. Facilitate access to financing for fish farmers to ensure sustainability towards resilient practices and promote the formalization of aquaculture activity.

4.2.6. Increase the sustainability of resilient aquaculture through improved marketing of rainbow trout.

4.3 Components and Financing

4.3.1. The project includes three components:

- **Component 1:** Governance, knowledge management and access to finance for sustainable aquaculture are strengthened.
- **Component 2:** Innovation and technology transfer mechanisms are improved and/or implemented to promote resilient aquaculture activity in Huanuco, Junin and Puno, Peru.
- **Component 3:** Value and production chains of resilient aquaculture activities diversify aquaculture producers' livelihoods and improve their food security.

4.3.2 The Components of the proposal are described below in Table 10:

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Table 10: Project components and costs

Project Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
	1. Total Component 1 (16.08% of direct costs)		**USD 743,568**
Component 1: Governance, knowledge management and access to finance for sustainable aquaculture are strengthened.	**1.1. Strengthened Governance Sector: Legal and Regulatory Framework and instruments are improved:** 1.1.1. Public policies are reinforced to ensure a clear and transparent legal framework (USD 12,500). 1.1.2. Sanitary regulations associated with aquaculture production are reviewed/updated/developed (USD 12,500). 1.1.3. Inter-institutional coordination is strengthened to facilitate more efficient oversight (USD 30,000).	**Expected Outcome 1.1.** Stakeholders operate within a more coherent regulatory framework in which measures are adapted to local circumstances and contradictions between legal texts have been revoved.	**USD 55,000**
	1.2. Strengthened Institutional Sector: 1.2.1Asynchronous training/training modules are developed to strengthen the capacities of public institutions affected by high turnover (USD 45,000). 1.2.2 6 face-to-face workshops of two days each, on climate change and innovation for resilience are carried out. (USD 28,000). 1.2.3 Six face-to-face workshops are held on gender and equity issues (USD 28,000).	**Expected Outcome 1.2.** Employees within government administrations both at local and central government level are better informed and capacitated on matters of climate change resilience and gender.	**USD 101,000**
	1.3. Enhance the quality of the Knowledge Base: Observatory of Resilient aquaculture. The quality and quantity of knowledge available to aquaculture stakeholders is increased and strengthened through the establishment of 3 Regional Resilient Aquaculture Observatories (ROARs). 1.3.1 Three (3) virtual platforms are developed to facilitate the dissemination of information from a RORA in each department. (USD 210,000). 1.3.2 A governance model for RORAs (USD 15,000) is developed. 1.3.3. Decentralized training infrastructure is created to bring training resources closer to the aquaculture community (USD15,000). 1.3.4 Training workshops are held for women working in aquaculture (USD16,500). 1.3.5 Webinars are held for university and technical institution faculty on resilient aquaculture and climate change adaptation (USD 10,200).	**Expected Outcome 1.3.** The quality and quantity of data about the impact of climate change on aquaculture in the regions of interest to the project are improved.	**USD 266,700**
	1.4. Enhanced the quality of the Knowledge Base of Aquiculture's Communities: Thematic Knowledge is improved and networking opportunities are created. 1.4.1 Communities of practice are organized, and asynchronous training modules are created focused on developing and strengthening the technical knowledge of fish farmers (USD 45,000). 1.4.2 Communities of practice for women in aquaculture are organized (USD15,000). 1.4.3 The quantity and quality of data on aquaculture production and water quality (USD 49,226) is improved.	**Expected Outcome 1.4.** Good practices in climate-resilient trout aquaculture are mainstreamed.	**USD 109,226**

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Project Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
	1.5. Enhanced capacities of aquiculture communities about public policies, data and research 1.5.1 Technical assistance and training on access to finance is provided in Huanuco (USD 70,137). 1.5.2 Technical assistance and training on access to finance is provided in Junin (USD 70,137). 1.5.3 Technical assistance and training on access to finance is provided in Puno (USD 71,368).	**Expected Outcome 1.5.** Knowledge about available sources of funding for trout aquacultures is mainstreamed.	**USD 211,642**
	2. Total Component 2 (71.48% of direct costs)		**USD 3,305,677**
Component 2: Innovation and technology transfer mechanisms are improved and/or implemented to promote resilient aquaculture activity in Huanuco, Junin and Puno.	**2.1. Improved Risk Prevention and Management:** 2.1.1. Three (3) Early Warning Systems (EWS) of extreme events are designed and implemented for the aquaculture sector, one for each of the prioritized regions Huanuco, Junin and Puno (USD 450,000)[76]. 2.1.2. Three (3) Contingency Plans are developed for extreme climate change events. One for each region of Huanuco, Junin and Puno, including training and demonstrations, with a unit cost of (USD 51,000). 2.1.3. An Integrated Statistical Information System is designed to benefit all regions. (USD 20,000).	**Expected Outcome 2.1.** Trout Aquacultures are better prepared to confront climate-change related emergencies.	**USD 521,000**
	2.2. Promoted technologies to help adapt production systems to climate change and Infrastructure built and improved in areas highly vulnerable to climate change: **2.2.1.** Water recirculation systems (RAS), along with a photovoltaic power system. The estimated unit cost is US$ 185,000, including design, adaptation and installation and maintenance for 2 years. 1 system is delivered in each department oriented mainly to the production of fingerlings in the Resilient Aquaculture Training Centers (CAR), being a total of three (3) systems (USD 555,000). **2.2.2.** Probiotics, including research and testing, for 26 fish farmers in Huánuco; 9 in Junín and 31 in Puno, in addition to each CAR, at a unit cost of USD 2,700, and a total of (USD 186,300). **2.2.3.** Microbubble aerators, with solar panel. The estimated unit cost is USD 3,900, including design, adaptation and installation and maintenance for 2 years. 13 aerators are delivered to producers in Huánuco and 1 to producer in Junín and 1 in Puno, in addition to 1 to each CAR of each department, including Puno. (USD 70,200). **2.2.4.** Oxygenators with photovoltaic energy source. 10 are delivered to producers in Huánuco and 8 to producers in Junín. Additionally CAR in each region will receive one. , The unit cost is USD 3,900 and Includes design, adaptation, installation and maintenance costs for 2 years. (USD 81,900). **2.2.5.** Weather-resistant 10 m diameter HDPE cages equipped with automatic feeders with photovoltaic power source. 3 cages are installed in Huánuco and	**Expected Outcome 2.2.** Aquaculture practices are improved to enable increased productive efficiency and improved use of hydrological resources.	**USD 1,850,076**

[76] This amount includes design and implementation support (USD100,000 and USD50,000 in equipment per region).

Project Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
	30 in Puno in addition to one to the CAR of Puno, at a unit cost of USD 12,000. (USD 408,000). **2.2.6.** Sensors for monitoring the quality of crop water, are delivered to 26 producers in Huánuco, 8 producers in Junín and 30 to producers in Puno, in addition to each CAR in the departments, at a unit cost of USD 4,900 and a total of (USD 328,300) **2.2.7.** Water collection (planting) and reforestation projects. One in each region of Huánuco, Junin and Puno (USD 90,000). **2.2.8.** Technology transfer service, training and coaching in the use of technologies, including a user and maintenance manual. (Fee of 8% of the cost of each technology by USD 130,376)		
	2.3. Enhanced capacities of aquiculture communities about innovation and technologies for adaptation 2.3.1 Strengthening and transfer of capacities to aquaculture communities in Huanuco (USD 210,880). 2.3.2. Strengthening and transfer of capacities to aquaculture communities in Junin (USD 210,880). 2.3.3 Strengthening and transfer of capacities to aquaculture communities in Puno (USD 214,594).	**Expected Outcome 2.3.** Knowledge about efficient use of new technologies is mainstreamed.	**USD 636,355**
	2.4.Improved Environmental and Social Management with a Gender Perspective 2.4.1 Monitoring of environmental and social management with a gender perspective (USD 273,747). 2.4.2 Programs for good environmental management USD 20,000). 2.4.3 Instruments and accessories for compliance with biosafety and occupational safety protocols (USD 4,500).	**Expected Outcome 2.4.** Improved and implemented an Environmental and Social Management with a Gender Perspective.	**USD 298,247**
	3. Total Component 3 (12.44% of direct costs)		**USD 575,515**
	3.1. The aquaculture sector's value chains are strengthened, and climate related losses are reduced. 3.1.1 Three (3) primary processing plants are built and/or improved with a photovoltaic energy system, an ice producer and a vacuum packing area, for the improvement of the final presentation of the product to be sold, for Huanuco (USD 125,500), Junin (USD 125,500) and Puno (USD 89,000). 3.1.2 Three (3) silage areas for the use of by-products, one for Huanuco (USD 4,000), Junin (USD 4,000) and Puno (USD 4,000), for a total of USD 12,000 3.1.3 Certification with a gender focus for each primary processing plant (USD 7,500). 3.1.4. Business plan that includes the management model for each processing plant (USD 15,000). 3.1.5 Gender focused certification for primary processing plant (USD 2,500 for each plant). 3.1.6. Management model (USD 5,000 for each plant).	**Expected Outcome 3.1.** Increased quality of trout aquaculture.	**USD 374,500**

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Project Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
Component 3: Value and production chains of resilient aquaculture activities will help diversify aquaculture producers' livelihoods and improve their food security.	**3.2. Designed and implemented marketing strategies for each of the primary processing products. To this end, the following is contemplated:** 3.2.1 Competitive market research (USD 6,000). 3.2.2 Development of collective marks (USD 4,500). 3.2.3 Inclusion of products in virtual stores (USD 31,500).	**Expected Outcome 3.2.** Increased quality of trout aquaculture.	**USD 42,000**
	3.3. Enhanced capacities of aquiculture communities about commercial and marketing activities. Formulation of at least two (2) Business Plans for fish farmers in Huanuco, Junin and Puno, for a total of six (6) Business Plans that address projects for the development of economic activities that can be complemented with rainbow trout farming. Each Business Plan is estimated at US$ 26,613 for Junin, USD 26,613 for Huanuco and USD 27,851 for Puno. This process of technical assistance and strengthening includes: Participatory workshop for the process of formulating business plans at least two (2) for each department. dentification of source of funding and application to them (PROCOMPITE, AGROIDEAS, or another that is identified in the territory). Training and accompaniment in the management and execution of the formulated business plan.	**Expected Outcome 3.3.** Marketing practices are improved.	**USD 81,078**
	3.4. Improved and implemented Environmental and Social Management with a Gender Perspective. This includes: 3.4.1. Monitoring of environmental and social management with a gender perspective (USD 68,437). 3.4.2. Good environmental management programs (USD 5,000). 3.4.3. Instruments and accessories for compliance with biosafety and occupational safety protocols (USD 4,500).	**Expected Outcome 3.4.** Ethical and gender-sensitive practices are used to increase the profile of climate-resilient aquaculture in Junin, Huanuco and Puno.	**USD 77,937**
		4. Project Execution cost (indirect costs)	**USD 321,426**
		5. Total Project Cost (direct costs + project execution cost) (A)	**USD 4,946,186**
		6. Project Cycle Management Fee charged by the Implementing Entity (8.4%). (B)	**USD 415,480**
		7. Total Amount of Financing Requested (A) + (B)	**USD 5,361,666**

4.3.3. Project Execution costs (point 6 in the budget), amount to USD 321,426, which represent 6.50% of the Total Cost of the project without including the implementation fee.

- These costs will cover the salaries of one (1) General Coordinator (GC) including salary benefits that must be met under Peruvian law. She/he will be located in the offices of PRODUCE's General Directorate of Environmental, Fisheries and Aquaculture Affairs (DGAAMPA), in Lima which -will provide she/he a fully functional space, including internet connectivity. She/he will be making field visits to the region to carry out her/his

supervision responsibilities.

- Indirect costs will cover the air travel expenses between Lima and each of the regions, since the regions impacted by the project are not connected by road, so that the most practical and economical way is to travel by air from Lima.
- Finally, indirect costs will also cover fiduciary management costs which will be paid to an Administrative Executing Entity which will be selected once the project is approved.

Table 11 describes execution costs in detail.

Table 11: Detail of the Cost of Execution or Indirect Cost

Project Execution Cost or Indirect Costs	Total USD (4 years)
Project General Coordinator	179,486
Travel Costs	41,940
Fiduciary and Administrative Cost	100,000
	321,426

Implementation fees represent 8.40% of the total cost of the project and will be used to finance the development of annual environmental and social management monitoring plans; interim and project closure reports; annual external audits; a communication tools (written documents and a video) documenting results and lessons learned.

Table 12: Detail of the Implementation Fee of 8.4%

USD

Activities	Budget account description	Frequency	Budget	Year 1	Year 2	Year 3	Year 4
Inception / Closure Workshops (Huánuco, Junín and Puno)	Workshops/Training	Within two months after signing the agreement and at the final of Project	25,800	12,900			12,900
External Annual Audits (4) to Administrative Agency and (4) to CAF account	Professional Services – Companies/Firm	During the first quarter of each year, based on the preceding year	132,000	33,000	33,000	33,000	33,000
Report and Webinar Socialisation of Results and Lessons Learned	Professional Services – Companies/Firm	At the end of the project	40,000				40,000
Financial administration of project funds and accounting services by personnel from CAF	Professional Services	Continuously	51,320	12,830	12,830	12,830	12,830
Translations (Informs Workshops; Final and Mid Term Evaluation; PPRs; audits informs)	Professional Services – Companies/Firm	Quarterly	15,000	1,500	2,250	4,500	6,750
Project oversight. Include visits to project sites to verify quality of deliverables, and overseeing independent evaluations	Travel Expenses	At least three times a year	48,000	9,600	14,400	9,600	14,400
External Mid Term Evaluation	Professional Services – Companies/Firm	Firts Quarter of third year	15,000			15,000	
External Final Evaluation	Professional Services – Companies/Firm	At the end of the project	20,000				20,000
Final Project Report	Professional Services – Companies/Firm	At the end of the project	25,000				25,000
Socialisation of results to scale up and replicate the project: Video for Social Nerworks 3-7 min.	Professional Services – Companies/Firm	At the end of the project	18,000				18,000
Technical support and backstopping by personnel from CAF	Professional Services	Continuously	25,360	6,340	6,340	6,340	6,340
		Total Implementation Fee	415,480	76,170	68,820	81,270	189,220

4.4 Variance between the concept note and the Project Proposal

The costs included in the proposal vary slightly from the costs identified in the concept note as they were increased by USD 63,486, equivalent to roughly 1,20% of total project costs. The changes are due to the fact that the proposal:

- *Refines technology needs and requirements*: During the field visits we identified the need to differentiate further between regions in terms of choice of technology and number of recipients per technology. This has given rise to slightly different total amounts per type of technology.
- *Clarifies per unit costs*: During field visits the project preparation team further refined

technology specifications to fit beneficiaries' requirements in each of the regions. These new technical specifications were submitted to distributors so that per unit project costs estimates were actualized and reflect the availability of the technology in the Peruvian market.

- *Technology-related training requirements were added*: During project preparation, it became evident that to ensure prompt and successful implementation, beneficiaries would require assistance in the use of the technology to ensure it is appropriately installed and effectively used. These costs, roughly equivalent to 10% of the technology budget, were factored into the overall costs of technology.
- The number of recipients of the technology had to be adjusted to remain within the +/- 2% variance requirements sought by MINAM.

Inter-institutional coordination

4.5. One of the objectives of the Project is to strengthen the coordination and implementation capacity of government institutions involved in supporting rainbow-trout-aquaculture in each of the regions of intervention. To achieve this objective, public sector institutions will have to cooperate to address the weaknesses identified during project preparation. The project proposes to tackle this, among other ways, by formalizing, operationalizing and empowering coordination mechanisms established in support of aquaculture. Accordingly:

4.5.1. The project will be technically executed by the Ministry of Production (PRODUCE) through the General Directorate of Environmental, Fisheries and Aquaculture Affairs (DGAAMPA) under the responsibility of the Office of the Vice Minister in charge of Fisheries and Aquaculture[77].

4.5.2. The project will be implemented by CAF - Development Bank of Latin America, in its role as an accredited agency to the Adaptation Fund. CAF will be responsible for evaluating the fiduciary capacity of those entities who may be selected to carry out the administrative execution of the project.

4.6. The Ministry of Environment (MINAM) is Peru's focal point for the Adaptation Fund.

4.7. An Advisory Steering Committee will be created to provide strategic guidance to the project. It will convene periodically and will include the following members:

- Two (2) representatives of the General Directorate of Climate Change and Desertification of the Ministry of Environment (MINAM).
- Two (2) representatives of the Vice-Ministerial Office of Fisheries and Aquaculture of the Ministry of Production (PRODUCE).
- The directors of DIREPRO from Huanuco, Junin and Puno[78].
- Representatives of the Regional Environmental Authorities.
- Two (2) representatives of CAF – Development Bank of Latin America.
- Representatives of the Administrative Executing Agency (to be identified upon final selection of the entity).

4.7.1 The Advisory Steering Committee will coordinate the implementation of activities and ensure that the results of each project component are achieved. It will work with the support of technical and scientific bodies and/or sectoral entities, as needed and accordingly will be able to provide guidance and advice to the Technical Executing Entity - PRODUCE

4.7.2 Representatives of the institutions which are part of the *National Aquaculture System* (SINACUI) will be invited to Advisory Steering Committee meetings, even if they are not formally part of this

[77] In Peru, PRODUCE, the Ministry of Production, is the national governing body for aquaculture and operates its functions through the General Directorate of *Aquaculture (Dirección General de Acuicultura, DGA), the National Aquaculture Commission (Comisión Nacional de Acuicultura, CNA*), the Fondo Nacional de Desarrollo Pesquero (Fondo Nacional de Desarrollo Pesquero, FONDEPES), Instituto Marino del Perú (Instituto del Mar del Perú*, IMARPE), the Agencia Nacional de Sanidad Pesquera (*National *Fisheries* Health Agency)., SANIPES), and the Instituto Tecnológico de la Producción (*ITP*). The Regional Production *Directorates (Regional Production Directorates*, DIREPROS) share duties with PRODUCE in the areas of micro and small aquaculture enterprise (AMYPE) and limited aquaculture resources (AREL). The DIREPROS are part of the Regional Governments (Huanuco, Junin and Puno).

[78] DIREPRO are the decentralized agencies in charge of overseeing production. They are under the managerial responsibility of the regional government but under the thematic leadership of PRODUCE.

committee and will be able to provide their advice and recommendations regarding project implementation. Additionally, inputs will be sought from *the National Service of Natural Areas Protected by the State* (SERNANP) and *the Regional Conservation Areas* (ACR) authorities when the project intervenes or impacts these areas.

4.8. The Advisory Steering Committee will also oversee the development and operation of the Regional Observatories for Resilient Aquaculture. Accordingly, special meetings of the steering committee will be held to review the progress of this activity. Representatives of institutions who are part of the RORA will also be invited to attend these special meetings of the ASR.

4.9. Training in water resources management (component 1) will be coordinated with the National Water Authority (ANA), who will review and contribute to the development of its content. In matters of river safety, integrated water management and lake zoning for aquaculture activities, the General Directorate of Captaincies and Coast Guard of the Ministry of Defense (DICAPI), the Peruvian Amazon Research Institute (IIAP), the Lake Titicaca Binational Special Project, PEBLT), among others, will be involved.

4.10. Regional governments (GORE) are an integral part of the coordination mechanism that is being envisaged given their responsibility to monitor, promote and strengthen governance in their respective region. Accordingly, their input and intervention will be encouraged and sought systematically within the project coordination framework, both at the technical and the policy level.

4.11. Coordination between the project and other similar projects will also be within the purview of the Advisory Steering Committee, which will also invite representatives of other projects to participate in its work on an as needed basis. The project envisages close cooperation with PNIPA, should that program be renewed. PRODUCE will act as conduit between the projects. In line with modalities developed in the manual of good practices, the Steering Committee will recommend the modality of such cooperation and instruct the Technical Executing Agency on how to proceed.

4.12. NGOs, active in the jungle (selva), who are dedicated to promoting the sustainability of aquaculture producers, such as WWF Peru, among others, will be kept informed of the project's objectives and progress and be encouraged to provide feedback to the steering committee should they have relevant information that can inform its activities.

4.13. Projected schedule:

Milestones	Expected dates
Start of project implementation	April, 2024
Mid-term review (if planned)	April, 2026
Closure of the project/programme	April, 2028
Evaluation of terminals	October, 2028

PART II: PROJECT JUSTIFICATION

A. Describe the components of the project, focusing particularly on the concrete adaptation activities of the project, and how these activities contribute to climate resilience.

5.1 In Peru, innovation drives development by increasing productivity, improving competitiveness, and boosting the economy, which in turn, allows an increase in income and quality of life of millions of people. These benefits can be seen in the fisheries and aquaculture, which are sectors with a long history and a rich tradition in the country. While the development of these sectors offers enormous potential, it is hampered by uneven sectoral governance, limited access to reliable le information and data, innovative technology, and lack of financing.

5.2 Considering the dramatic impact of climate change on aquaculture, this project designs a multifaceted holistic solution capable of addressing the challenges faced by rainbow trout farming productivity. Trout farming, being highly sensitive to the effects of climate, supports the livelihood of many Peruvian families.

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5.3 The regions of Huanuco, Junin and Puno were prioritized based on their climate vulnerability, socioeconomic conditions, and potential contribution to the national aquaculture sector, as well as their budgetary limitations in the adoption of technologies to reduce exposure to climate change and strengthen value chains to increase their competitiveness.

5.4 The project focuses on three key elements necessary to address climate change effectively and proactively in the short and medium term: first, by strengthening the governance of the aquaculture sector to ensure that policies favorable to climate resilience are properly designed and their application is enforced. Second by introducing new technologies which will enable a more effective and efficient rainbow trout production; and third by focusing on enhancing the marketability of rainbow trout raised using environmentally friendly production methods. The combination of these interventions will protect the country's valuable water resources, reduce vulnerability, and increase the capacity of the aquaculture sector to adapt to climate change; It will also increase the productivity and use of farmed species, facilitating access to finance for fish farmers.

5.5 By acting comprehensively to enhance the legal framework, the project recognizes that good legislation and regulation that is enforced transparently and equitably is fundamental to create an enabling environment that fosters responsible and climate-resilient aquaculture production.

5.6 The project further recognizes that, to sustainably meet the economic expectations of the populations in the regions of interest, rainbow trout production must incorporate innovative practices and more modern technology which simultaneously increase their production capacity and preserve the quality of the country's natural resources. Thirdly the project recognizes that unless the trout farmers see an economic gain from the use of better practices and an investment in new technology, they will not adopt the needed changes in the way she/he produces rainbow trout.

5.7 Projected future climate threats are likely to negatively affect the productive capacity of aquaculture producers in the targeted regions, affecting their livelihoods. This project, through its different pillars of intervention, minimizes the negative effects of such changes and promotes the sustainable growth of aquaculture.

5.8 The project will focus technologically and productively on resource-limited aquaculture producers (AREL) and small and medium-sized trout producers (AMYPE), as they are the most vulnerable to the impacts of climate change.

5.9 The preparation of a climate change risk analysis for rainbow trout aquaculture enabled the project preparation team to identify and target climate adaptation problems which are likely to affect the communities. This analysis was based on an assessment of the climatic context of the three regions and an analysis of the main socio-economic factors of these regions. These measures are summarized and described in the table below.

Table 1: Analysis of climate risks in the regions of interest

Climate hazards	Potential impacts	Exposure	Sensitivity	Adaptive capacity
Floods and landslides	• Alteration of water quality due to increased sedimentation. • Loss of hydrobiological resources. • Impact on food security due to loss of hydrobiological resources. • Impact on the transport and distribution of hydrobiological products. • Reduction of benefits and increase in insurance premiums. • Loss of employment.	Aquaculture workers Aquaculture production Aquaculture infrastructure Food safety	Sensitivity of aquaculture hydrobiological resources to climate hazards Diversification of aquaculture species Aquaculture rights granted Self-consumption (harvest for self-consumption)	• Promote the institutional strengthening of aquaculture activities in Peru. • Ensure an appropriate regulatory framework for the promotion of climate-resilient aquaculture. • Strengthen capacities to transfer climate change resilient

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Climate hazards	Potential impacts	Exposure	Sensitivity	Adaptive capacity
Arid conditions (droughts)	• Water scarcity in aquaculture farming. • Altered behavior of cultivated species. • Reduced productivity of target species. • Impact on food security due to loss of hydrobiological resources. • Loss of employment.			technology in aquaculture activities. • Improve the connection between research generation and productive activities (practices). • Improve access to finance to mitigate climate change risks for aquaculture. • Implement early warning systems for extreme events. • Implement contingency plans to prevent and respond to extreme weather events related to climate change. • Implement adaptation technologies in the aquaculture sector. • Improve the facilities and infrastructure of the production chains. • Strengthen the value chain and support market access. • Diversify the income-generating activities of fish farmers.
El Niño phenomenon	• Altered behavior of cultivated species. • Loss of hydrobiological resources. • Impact on food security due to loss of hydrobiological resources. • Loss of employment Altered behavior of cultivated species. • Loss of hydrobiological resources. • Impact on food security due to loss of hydrobiological resources. • Loss of employment.			
Glacier retreat	• Altered water quality due to increased sedimentation. • Loss of hydrobiological resources. • Reduced profitability and increased insurance premiums. • Loss of employment.			

5.10. Component 1: Governance, knowledge management and access to finance for sustainable and climate resilient aquaculture are strengthened.

Outcome 1.1: The governance and institutional capacities of the aquaculture sector are strengthened to address the present and future threats of climate change to the sector.

Activity 1.1.1: Promote the development of the regulatory framework and institutional capacities to contribute to the prevention and resilience of the aquaculture subsector to climate change and other external factors.

5.10.1. Addressing weaknesses in sectoral governance requires updating, clarifying, and strengthening the legal and regulatory framework for aquaculture production in selected regions to respond to the challenges associated with climate change. In an institutional environment in which multiple agencies and different levels of government can claim some responsibility in regulating the sector, ensuring that laws and regulations relevant to environmental policy, management of land and marine resources, as

well as productive activity are understandable, relevant enforceable and enforced is of paramount importance. Accordingly, project activities include cataloguing and assessing of existing norms, regulation and legislation which have been promulgated by all relevant authorities, identifying potential weaknesses and contradictions, recommend corrections and updates that should be made to such norms and legislation, and designing new laws, policies, and regulations where gaps have been identified.

Sub-Activity 1.1.1.1: Public policies are reinforced to ensure a clear and transparent legal framework.

5.10.2. The project will support the identification and cataloguing of all existing norms, procedures and legislation likely to impact sustainable and climate-friendly aquaculture in the regions of interest to the project. This evaluation exercise will be used to identify gaps and propose forward-looking legal and regulatory solutions.

5.10.3. Based on the evaluation exercise, as well as the inputs derived from the consultative workshops, PRODUCE, MINAM, SANIPES, Regional Governments, and other relevant institutions have identified areas in which enhanced cooperation can bring significant added value. The standards to be prioritized by the project will be determined by existing workspaces at both sectoral and regional levels, under the recommendation of the committee, according to the priorities and circumstances identified in the regions. During the preparation of the project, a list of relevant and priority standards has been jointly identified by the institutions involved:

- ***Implementing regulations of the National Aquaculture Policy to 2030***[79] that facilitate the adoption of resilient aquaculture practices and technologies.
- ***Laws and regulations guaranteeing occupational safety and health applied to aquaculture:*** During the validation workshops, the need to improve the working conditions of aquaculture workers was identified. In Puno, between January and February 2023, four workers died due to unsafe work environment[80]. In Junin, Key Informant Interviews and focus group discussions have documented that stakeholders have long been concerned about the need to strengthen safety in aquaculture and have raised these issues with the relevant public institutions, yet, to date, these concerns have not yet led to the implementation of improved laws and regulations to address the issue. In Huanuco, workers mentioned that they practice aquaculture without knowing how to swim, and without access to protective gear. These practices represent a danger to their own safety and those that either work with or depend on them. To address this issue, the project has developed an occupational safety plan that includes measures that reinforce work environment safety without imposing excessive additional costs for producers.
- ***Regulation associated to fishing and aquaculture activities zoning:*** Currently, due to the drop in water levels in the case of Lake Titicaca, aquaculture activities overlap with spawning areas of native species. Additionally, often producers do not install floating cages at the adequate depth[81]. In addition, they may conflict with economic actors, such as informal fishermen, leading

[79] Supreme Decree No. 001-2023 -PRODUCE - https://busquedas.elperuano.pe/download/url/decreto-supremo-que-aprueba-la-politica-nacional-de-acuicult-decreto-supremo-n-001-2023-produce-2145839-1

[80] Primary information collected during validation workshops.

[81] Floating cages are commonly used in aquaculture to grow and maintain fish or other aquatic species in natural water bodies. If floating cages are not installed at an adequate depth, several consequences can arise:

- **Oxygen Depletion**: Shallow waters might not have a consistent level of oxygen, especially during hot weather or algal blooms. Fish require a stable oxygen level for growth and survival, and low oxygen can stress or even kill the fish.
- **Predation**: Cages closer to the surface might be more accessible to birds and other predators. This can lead to increased loss of stock due to predation.
- **Temperature Fluctuations**: Shallow waters can experience rapid temperature changes, which can be stressful to fish. Many fish species are sensitive to sudden temperature shifts, which can impact their growth and health.
- **Waste Accumulation**: Proper depth helps in the dispersion of fish waste. In shallow waters, waste can accumulate faster, leading to toxic conditions, disease outbreaks, and harmful environmental impacts.
- **Wave Damage**: Cages that are not submerged adequately can be more exposed to wave action, which can lead to damage or even breakage of the cage structure.
- **Crowding and Stress**: If cages are too close to the bottom in shallow waters, fish may not have adequate space to move, leading to crowding,

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to social tensions. Finally, there is a risk that their activity will be affected by untreated effluents from domestic use that are discharged on the shores of the lake. Improvements in the zoning process, as well as its systematic enforcement of the zoning requirements, would likely create a more friendly environment in which to carry out resilient environmentally friendly aquaculture.

- ***Update and design of Regional Aquaculture Plans in Junin, Puno and Huanuco:*** *Regional aquaculture plans in Junin, Puno and Huanuco must be retrofitted to* incorporate climate change adaptation mechanisms applied to aquaculture, as tools for the management and ordering of aquaculture at regional and local level. The project will facilitate this process.
- ***Develop roadmaps which enable the implementation of adaptation measures in aquaculture and their linkage climate change integrated management systems at the regional and local level.*** Specifically, this may involve, for example, developing or adapting regional Climate Change Strategies and/or Local Climate Change Plans which describe how these measures can be.

Sub-Activity 1.1.1.2: Procedures will be improved to ensure sanitary conditions and protection of hydrobiological resources.

5.10.4. To ensure the protection of natural resources used to carry out aquaculture activity in general and rainbow trout in particular, the project will focus on facilitating the implementation and evaluation of relevant regulatory instruments. Among them:

- *Procedures to strengthen control of rainbow trout eggs*. SANIPES has developed the sanitary procedures which are to be used to assess risk analysis prior to importing of hydrobiological resources, such as rainbow trout eggs, to preserve and environmental viability of the aquaculture areas and preserve the health of individuals living in Peru. The project will support an assessment of the efficacy and impact of these regulations in each of the regions.
- *The project will also assist in developing procedures that allow SANIPES to regulate the management of aquaculture production centers that* are in lakes and lagoons, depending on the carrying capacity of water resources[82].
- *The project will support the development of procedures that regulate products used in aquaculture* (such as detergents and disinfectants) and promote. eco-friendly behavior on the part of producers and consumers, to implement disease prevention and/or control actions and not generate negative impact on the environment[83]**.**

Sub-Activity 1.1.1.3: Improve Inter-Agency Coordination

5.10.5. Recognizing that responsible institutions, particularly at the regional level, lack personnel, vehicles, and other needed resources to allow them to systematically supervise aquaculture and enforce laws and regulations, the project will focus on identifying ways to ensure that institutions cooperate to mutually reinforce each other's actions. This will be done in a variety of ways:

- **Building joint assessment tools to ensure that current and future climate change risk management are comprehensively assessed**. Currently, the General Directorate of Aquaculture of the Ministry of Production has tasked the Instituto del Mar del Perú (IMARPE) to evaluate how to better support DICAPI in either authorizing or disabling of areas for the

stress, reduced growth, and increased susceptibility to diseases.

- **Exposure to UV Radiation**: UV radiation can harm both the fish and the cage materials. Cages that aren't deep enough might not provide sufficient protection against excessive sunlight.
- **Algal Blooms**: Shallow waters, especially those with high nutrient concentrations, can encourage the rapid growth of harmful algae. This can result in decreased oxygen levels and the production of toxins harmful to fish.
- **Interaction with Bottom Substrate**: If the cages are too close to the bottom, fish might meet the substrate, leading to potential injuries or exposure to parasites and diseases.
- **Limited Water Exchange**: Proper depth allows for better water circulation around the cage. Shallow placement might limit this circulation, leading to poorer water quality inside the cage.

[82] Maximum densities, feed quantities, weight and size of sowing and harvesting, distance from the location of aquaculture production centers.

[83] This activity would also involve DIREPRO, OEFA, SANIPES, DIGESA.

development aquaculture, including rainbow trout, especially in Lake Titicaca by carrying out Aquaculture Area Assessments. Obtaining DICAPI authorization is a necessary requirement for legal aquaculture production. The project will support the update of these aquaculture area assessment reports to ensure that climate risks are assessed and managed using a cross-cutting approach that convenes multiple stakeholders. It is worth noting that this will benefit not only trout producers, but also all those who farm species in the marine and continental areas of the country.

- **Creating or adapting communication tools which raise awareness to the dangers of climate change and promote a better environmental management of aquaculture activities.** These instruments should highlight international and local good practices leading to more efficient effluent and sludge management, as well as treatment and discharge infrastructure. In addition, focusing on waste management and systems to evaluate and monitor biological and chemical parameters that may affect aquaculture management, both AREL and AMYPE.
- **Creating or adapting monitoring and supervision tools to ensure the implementation of adequate laws and regulations regarding sustainable aquaculture production.** Even in key areas where adequate laws and regulations exist, Regional Governments and relevant sectoral institutions find it difficult to systematically monitor their implementation. Monitoring and supervision tools could be revised to make better use of the oversight activity carried out by different institutions, ensuring a more uniform oversight process of the application of government laws and regulations related to sustainable aquaculture production in the context of climate change. In addition, these instruments would be maintained operationally for as long as inter-agency cooperation was developed, as part of the project monitoring arrangements.
- **Develop a territorial basin approach** for adaptation to climate change as a governance model in aquaculture, strengthening the articulation, coordination, and cooperation between operators in the sector and other economic activities that take place in the territory.
- **Developing or adaptation tools and procedures to improve the frequency and reliability of water monitoring in the areas affected by the project.**

5.10.6. The beneficiary population of this activity includes all the actors linked to aquaculture activity that interact with the aquatic ecosystem, without any distinction. Among them we have officials of the Regional Governments (GORE), who will receive the regulations and tools for an adequate sustainable management of aquaculture in their jurisdiction. At the same time, the 975 owners of productive units that cultivate rainbow trout in the regions of Huanuco, Junin, and Puno (AMYPE and AREL), as well as their families (3,900 in total), in addition to the two (2) aquaculture producers of the AMYGE category in Puno (In Junin and Huanuco there are no AMYGE producers) will receive the product of this activity.[84]

Activity 1.2. Institutional Strengthening of the Sector

5.10.7. Strengthening sectoral governance requires improving the institutional capacity of key public sector institutions. International experience suggests that lack of financial resources reduce capacity-development opportunities, especially at the regional level. Moreover, within government institutions, frequent staff turnover also contributes to reducing capacity within public sector institutions, since the comparatively few employees who have received training or have a required skillset take their knowledge with them when they leave their posts. The proposed project addresses the issue of capacity development issues in a multitude of ways.

Sub-Activity 1.2.1.: self-paced virtual training modules are developed.

5.10.8. First, specific training on climate change and aquaculture is provided to relevant stakeholders in the three regions, through the development of training modules that aim to strengthen climate-resilient aquaculture. Developing training as self-paced training modules ensures that incoming public sector

[84] In this case only the number of trout AMYGE will be maintained, producers who farm other species will not be considered, since the monitoring systems would be in areas linked to trout farming.

staff which supports rainbow trout farming will be able to access this training at any time. This adds a level of sustainability to the capacity development initiatives supported by the project.

Sub-Activity 1.2.2.: Six face-to-face workshops associated with climate change and innovation for resilience are carried out.

5.10.9. In addition to the production of self-paced virtual training modules, the project will fund a number of face-to-face trainings, in the form of two-day workshops in each region. The first will be carried out immediately after the beginning of the implementation period, with the aim of transferring knowledge regarding the impact of technology on aquaculture practices and how they contribute to strengthening resilience of productive activities to the impacts of climate change.

Sub-Activity 1.2.3: Six face-to-face workshops on gender issues are held.

5.10.10. The gender analysis revealed that public officials will benefit from gender focused training, and additional exposure to gender perspectives. Accordingly, the project will support training workshops which will focus on raising awareness to how gender issues manifest themselves, both focusing on women-related issues, but also raising awareness of gender diversity and LGBTQ+ related issues. Civil servants at all levels, especially those with direct contact with producers are expected to benefit from this activity, as they will be better prepared to relate to women fish farmers and more sensitive to gender inequalities in the aquaculture sector.

Outcome 1.2.: The region-specific knowledge base and availability regarding climate change impacts and good practices for resilient aquaculture are improved.

5.10.11. Strengthening sectoral governance requires improving the institutional capacity of key stakeholders. International experience suggests that scarce resources limit the activity of stakeholders to provide sustained opportunities for knowledge development. The absence of reliable information is a major constraint to the adaptability of aquaculture in the region. This is manifested, among others, by long-term strategic documents that are based on reports developed ten years ago, and the lack of information that allows academic and technological institutions to develop updated reports on aquaculture activity.

Activity 1.3.: The quality and quantity of knowledge available to aquaculture stakeholders is improved through the construction of 3 Regional Resilient Aquaculture Observatories.

5.10.12. To strengthen the knowledge base of aquaculture actors, the quality and quantity of knowledge generated must be improved, as well as the capacity to collect, analyse, manage and disseminate this knowledge so that all stakeholders can benefit from it.

Sub-Activity 1.3.1: Creating three Regional Observatories of Resilient Aquaculture

5.10.13. The project will create three Regional Observatories of Resilient Aquaculture, one in each region, which to act as platforms to produce and share regional knowledge on good practices in resilient rainbow trout aquaculture. To this end, the RORA convene academic institutions and technical centers in each region who develop or currently carry academic programs which support aquaculture or have expertise in issues associated with climate change, so that, together, they can act as producers and disseminators of regional knowledge. RORAs are virtual platforms and participating institutions will be involved the development of a framework cooperation agreement and a memorandum of understanding specifying the roles, responsibilities and benefits of the institutions that voluntarily subscribe to the agreement. member institutions of the RORA will be expected to (i) have a number of permanent staff with specific identified responsibilities to support climate-resilient sustainable aquaculture; (ii) generate relevant research on the topic, which is submitted to peer review.

5.10.14. The following institutions have sent letters of intent to accompany this proposal, confirming their interest in participating and developing the activities (see letters in the annex 3):

- DIREPRO Junin.

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- Faculty of Zootechnics of the National University of Central Peru, Junin.
- Herminio Valdizán National University, Huanuco.
- DIREPRO Huanuco.
- Food Industries Studies Program of the Institute of Higher Education Public Technological "Aparicio Pomares", Huanuco.
- Academic Program of Environmental Engineering of the University of Huanuco.
- Program of Studies of Agricultural Production of the Institute of Higher Education Public Technological "Max Planck" of Ambo, Huanuco.
- Regional Management of Natural Resources and Environmental Management of the Regional Government of Puno.
- Program of Studies Fisheries and Aquaculture Development of the Institute of Higher Education Public Technological Juli, Puno.

Likewise, the necessary coordination will be made for the involvement of the ITP and the Network of Centers for Productive Innovation and Technology Transfer (ITP and CITE network).

5.10.15. The RORA will be composed of institutions that provide services aimed at strengthening knowledge and understanding of best aquaculture practices, events associated with climate change and climate-resilient aquaculture. Among them:

- Assist aquaculture producers and public sector support institutions in identifying knowledge gaps in areas such as technologies for adaptation in the aquaculture sector, quality and health safety, marketing of aquaculture products and their added value. Regarding their areas of intervention, both SANIPES and IMARPE are committed to supporting RORA to socialize relevant content, including training modules developed by these institutions and assistance in the adaptation of training modules.
- Identify gaps in environmental management, occupational safety, and circular economy with a gender focus in a context of climate change, responding by generating evidence through applied research.
- Support fish farmers in the adoption of processes and technology resilient to climate change through capacity building and training of the sector.
- Provide sector-specific compliance certifications, such as biosafety certificates, providing trained individuals with official recognition of this training.
- Design and apply instruments to monitor water quality (e.g. upper basin-lower basin egg disease control) and regularly collect data on the local impact of climate change. The relevant indicators shall be listed in the Memorandum of Understanding.
- Provide technical-legal assistance to fish farmers to formalize their activity and implement climate change adaptation measures.
- Assist in the regular monitoring and evaluation of local aquaculture-related programs.

5.10.16. The Regional Observatories for Resilient Aquaculture (RORA)s will help generate and disseminate new knowledge by:

- Organizing and maintaining communities of practice aimed at sharing local, national, and international good practices in climate-resilient aquaculture (further described in sub-activity 1.4.2).
- Acting as an observatory of climate change adaptation practices and repository of best lessons learned that can be incorporated into the design of new projects.

5.10.17. In return for their participation in the network, participating institutions will receive the following support funded by the project:

- Improvements in the academic infrastructure of the centers, in particular by (i) improving connectivity (ii) increasing access to content from other similar institutions, (iii) improving the classroom environment. This support is in addition to the activities envisaged in component 2, in which the project will support the improvement of the technology-related infrastructure supporting trout producers and provide skills training needed to carry out climate-resilient aquaculture.

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- Support in the development of skills by personnel specialized in aquaculture, through training and capacity building.
- Support in the development of region-specific learning modules and reference materials to be used as resources by stakeholders.
- Facilitation of cooperation agreements with international institutions to facilitate the maintenance of investments beyond the execution of the project.

5.10.18 It is recognized that strengthening the knowledge base in the regions selected by the project requires increasing the volume and quality of primary data. A review of secondary information sources reveals that available, reliable, and up-to-date data on local conditions are limited. Forward-thinking programs and strategies are based on evidence that goes back years and sometimes decades. As climate change is an evolving phenomenon, the development of relevant policies and strategies must be based on reliable up-to-date data. The project addresses this problem in two ways. First, it recognizes that the collection and updating of primary data is a shared responsibility of multiple stakeholders. Consequently, the project requires all actors who will benefit from project resources, and who depend on their role, to assume responsibility for collecting and reporting primary data. Secondly, the project will support the development of a database where all stakeholders can contribute to uploading relevant primary data and having access to the information.

5.10.19 Measures have been included in the design of this activity to ensure the sustainability of the RORA and their contributions. These include: (i) the requirement for participating institutions to designate two permanent focal points as technical referents on climate change resilient aquaculture, who will be trained during the project period; (ii) strengthen the infrastructure of the participants and, if necessary, the support and facilitation of the certification of their laboratories; (iii) develop training modules that reflect good practices by developing support material for those responsible for training; (iv) facilitate the maintenance of the quality and updating of information through improved access to online information; (v) create in public institutions and fish farmers an interest group for the products of the RORA. Taken together, these measures will increase the potential for sustainability after the completion of the project.

Sub-Activity 1.3.1: Virtual platforms are developed to facilitate the creation of RORA's.

5.10.20 The RORA must have its own personality and differentiate from the institutions that are part of the consortium. This identity creation will be developed from a virtual platform in which all those involved can add relevant information and that acts as a single repository of relevant information on resilient aquaculture, the impacts of climate change and good practices of adaptation of productive activity. The platform will serve as the main entry point for regional knowledge on resilient aquaculture. The creation of virtual platform to centralize relevant information regarding resilient aquaculture will enable the centralization and distribution of important information to and from the producer and other stakeholders. Ensuring the broad mainstreaming dissemination of SEMP plans, and relevant laws regulations regarding safeguards will also be a point of focus in developing the RORA.

Sub-Activity 1.3.2: A model of Governance for RORAs is developed.

5.10.21 The organization of RORA requires institutions of various types: public and/or private universities, technological institutes, representatives of NGOs, and other eventual participants identified during the implementation of project activities. It will act within a customized governance model that takes into account for the expectations, capacities, and weaknesses of the members of the RORA. In particular, it will be necessary to establish responsibilities for the operation of the platform and logistics and procedures to include information that can allow control over its quality and sociability (information must be processed, standardized and explained to be useful to the fish farmer, for example). The project will support the design of these governance models.

Sub-Activity 1.3.3: Decentralized training infrastructure is created.

5.10.22 The validation workshops identified the need to innovate in training delivery models that guarantee

access for all. There is a particular need to address the needs of women fish farmers, who are unable to travel long distances from their homes to attend trainings and workshops.

5.10.23 The project responds to this need by establishing audio-visual training infrastructure in places easily accessible to women (schools, for example) where asynchronous or face-to-face training can be received. In addition, the possibility of developing training material on DVD will be reviewed, taking into consideration the lack of connectivity that exists in some areas of intervention of the project.

Sub-Activity 1.3.4: Customized workshops for women are held.

5.10.24 Additionally, the project will finance a number of customized face-to-face training modules for women, in the form of two-day workshops in each region – one immediately after the beginning of the implementation period with the aim of providing more knowledge about the impact of technology on the improvement of aquaculture practices and also how they contribute to the adaptation of productive activities to the impacts of climate change. [85].

Sub-Activity 1.3.5. A series of webinars are held for university teachers.

5.10.25 Through the RORA, university professors involved in aquaculture, climate impact or related issues will benefit from customized training through webinars presented by recognized authorities in the field, enabling the dissemination and acquisition of new theories, practices and information related to the impact of climate change on aquaculture.

5.10.26 The beneficiaries of activity 1.3 will include representatives of the academic community, who will be better prepared on climate change issues, as well as the total number of aquaculture producers that farm trout and other aquaculture species in the departments of Huanuco, Junin and Puno, which reach 2,791 holders of aquaculture rights (concessions and authorizations). In total, 11,164 who depend on aquaculture activity (producer and their families) will benefit from the activity.

5.10.27 Additionally, a number of cooperating institutions, such as SANIPES have agreed to participate in these knowledge sharing activities to familiarize academic faculty and technical center staff with the latest relevant norms and regulations, compliance requirements and latest development. It is expected that by imparting this training and knowledge, the project can foster a better understanding of the legal, regulatory and governance framework of the sector.

Activity 1.4: Knowledge of good practices in resilient aquaculture is improved through exchanges of experiences.

5.10.28 The project recognizes the need to ensure that actors involved in the aquaculture sector share their experiences and learn from each other and from international good practices. The project addresses this need in two ways:

Sub-Activity 1.4.1: Communities of practice are organized.

5.10.29 The project will create an environment conducive to closer cooperation among value-chain stakeholders through the creation of exchange and dialogue spaces called Communities of Practice. These spaces will allow different actors in aquaculture to network during meetings, workshops, and conferences and focus on matters that are relevant to their productive activity. They will share their experiences, knowledge, thus promoting collective learning and the dissemination of best practices, which they can adapt and implement in their local context.

5.10.30 Twinning agreements will be sought between resilient aquaculture observatories and other similar institutions in Latin America. Twinning will allow RORA to benefit from the experience and resources of these other centers, and they will be able to profit from their mentorship. This is especially important in the initial period of RORA's experience, in RORA governors will be able to benefit from the experience from more seasoned counterparts. Additionally, twinning will also allow RORA to share local

[85] It is understood that this is linked to people who benefit from the training, in that sense all the producers of the three departments and their families are considered.

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experience and research, generating a process of feedback and mutual enrichment.

Sub-Activity 1.4.2: Communities of practice for women in aquaculture are organized.

5.10.31 Communities of practice will be organized specifically for women working in Aquaculture in the regions of Junin, Huanuco and Puno to share knowledge, experiences, and good practices. COP are yet another instrument set up by the project in which women can receive customized support that considers their specific circumstances. In addition to issues related to access to finance and improving productive practices, the focus will also be around the reconciliation of family and work roles and overcoming socioeconomic and cultural barriers, reflecting some of the concerns highlighted during the validation process.

5.10.32 Women-focused communities of practice are expected to empower them by encouraging their active participation in the sector, which in turn will lead to more gender equity in aquaculture. A more systematic interaction among women, is expected to strengthen their leverage and bring more systematically gender-specific issues in trout aquaculture to the fore. COP activities will be open to all women wishing to partake in their work and activities, and will be advertised extensively, using the same channels that were used to ensure women participation in validation workshops.

5.10.33 Communities of Practice are part of a broader objective to enhance women's associativity and participation in the sector's governance. The gender analysis developed for this project proposal, which examined the aquaculture sector in Peru, with a specific focus on the Junin, Huanuco, and Puno regions, identified a gender gap in formal and informal support structures that allow men producers to share knowledge, peer-to-peer learning, mentorship, and collective action, but do not provide women with the same opportunities. The study identified underlying factors contributing to this disparity and recommended fostering women's networks and organizations within the aquaculture sector. Facilitating the formation of alliances and partnerships between women producers, market actors, and relevant stakeholders also will enhance market access and improve bargaining power. Women-focused CoP specifically align with cross-cutting measure number 1, and measures 7 and 8 of the Gender Action Plan, annexed to the full proposal.

Sub-Activity 1.4.3: The quantity and quality of data on aquaculture production and water quality is improved.

5.10.34 The project will the collection of more accurate and comprehensive data related to aquaculture production, such as monitoring the number of species farmed, the amount of production obtained, the methods used, and the results obtained. This will help to have a clearer and more detailed view of aquaculture activity, facilitating informed decision-making and the development of effective strategies.

5.10.35 In addition, project resources will be allocated to improve the collection, monitoring and analysis of water quality used for aquaculture. This involves acquiring appropriate equipment and technology to measure key parameters such as pH, temperature, dissolved oxygen levels, nutrients, and potential contaminants. With a better understanding of water quality, more efficient and sustainable management practices can be implemented, ensuring an optimal environment for aquaculture farming.

5.10.36 Under the project, software to facilitate data collection will be introduced on a pilot basis[86]. The use of specialized software will speed up and optimize the process of collecting data related to aquaculture production and water quality and reducing errors and delays. The software will include data validation and verification functions to ensure the quality and accuracy of the information collected. The introduction of software will enable the capture and analysis of data in real time which will permit the generation of faster, more detailed reporting and informed and timely decision making. Likewise, trends and patterns can be identified from the data collected, which will help in the implementation of strategies to improve and optimize aquaculture production. The introduction of software to facilitate data collection will not only improve the efficiency and accuracy of the process, but also lay the foundation for more effective and evidence-based management in the aquaculture sector.

[86] This type of software can include mobile applications, data management systems, and analysis tools.

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Outcome 1.3: Barriers to obtaining finance for fish farmers are reduced and knowledge of the sources of financial resources available to introduce practices that induce climate change resilience is improved.

Activity 1.5: Improve trout farmers access to finance.

5.10.37 Lack of access to finance is often cited in literature as one of the main obstacles to improving and incorporating sustainable technologies and good aquaculture practices in Peru, which suggests that the problem is caused by a lack of knowledge on the part of fish farmers of how and where to seek this financing.

5.10.38 The project will provide technical assistance and training on access to finance. to help them identifying suitable existing programs likely to provide the needed financing, understanding the requirements assess their capital needs, prepare sound business plans, and craft effective financing requests.

Sub-Activity 1.51/2/3 Technical assistance and training on access to finance is provided in Huanuco, Junin and Puno

5.10.39 To address this weakness, the project will facilitate the interface between aquaculture producers that require financing and those institutions that have financing available. Specifically, this will be done by:

(i) *Facilitating access to information regarding available financing:* To this end, the RORA platform will identify and maintain current a list of programs for which trout farmers could be eligible, along with deadlines and contacts. Moreover, ORAR member institutions will develop informational tools regarding such funds to familiarize trout farmers regarding the modalities for applying. This could include guides and manuals. These documents will be made available online through the platform and in print form at the local DIREPRO or other suitable focal points.

(ii) *Providing training and capacity development:* The project will finance training capacity development modules which will be made available through the ORAR platform. Additionally, Workshops will be held to provide training on access to finance, proposal preparation and business models, including one per workshop specifically targeting women.

(iii) *Providing longer-term technical assistance opportunities.* The project technical specialist for the region, which will be housed in the DIREPRO will be responsible for providing trout farmers who benefit from the project assistance in developing plans and proposals should they require it, or alternatively direct them to resources that they can use to prepare those plans.

(iv) *Taking advantage of Communities of practice to bridge the gap between farmer and financing institution:* by leveraging the power of collective action, communities of practice can enhance trout farmers credibility, strengthen their bargaining power, and establish better connections with financing institutions. By sharing their experiences and expertise, farmers can collectively improve their skills and enhance the overall productivity and profitability of rainbow trout farming. This increased knowledge and capacity can make farmers more attractive to financing institutions as it demonstrates their commitment to continuous learning and improvement. Secondly, through communities of practice trout farmers can collaborate in collecting and analyzing data related to rainbow trout farming, including production figures, financial performance, market trends, and other relevant information. This data can be invaluable in providing financing institutions with accurate and reliable information about the industry's potential and the financial viability of individual farmers. This, in turn, can help build trust and confidence between the farmers and financing institutions. Thirdly, a well-organized community of practice can effectively represent the interests of rainbow trout farmers to financing institutions. This collective advocacy can create a conducive environment for financing institutions to engage with and support the farmers. Most importantly, communities of practice can showcase successful rainbow trout farming enterprises within their network. By highlighting these success stories, they can demonstrate the industry's potential and the positive impact of financing support. These real-life examples can serve as compelling evidence for financing institutions to invest in rainbow trout farming and provide

financial assistance to individual farmers.

(v) This activity will produce at least two project proposals in each region (Huanuco, Junin and Puno) to be presented to PROINNOVATE, PROCOMPITE, AGROIDEAS or other sources of climate financing, whether funded nationally or by development partners (GIZ, CAF, IDB, etc.).

(vi) The beneficiaries of this activity will include GORES officials and 975 owners of trout production units in Huanuco, Junin and Puno (AMYPE and AREL) and their families, for a total of 3,900 direct beneficiaries. Aquaculture producers who farm other fish species will also benefit (1,260 in Huanuco; 471 in Junin and 51 in Puno). If we consider their families, there are 7,124 beneficiaries who depend on aquaculture for their livelihood. In total, this activity will benefit 11,024 individuals who depend on aquaculture activities. In addition, this activity will benefit university students pursuing undergraduate and postgraduate studies related to aquaculture activities.

5.11 Component 2: Innovation and technology transfer mechanisms are improved and/or implemented to promote resilient aquaculture activity in Huanuco, Junin and Puno, Peru.

5.11.1 For a sustainable, competitive, and resilient aquaculture, the strengthening of the entire value chain must be considered, which includes technological and commercial issues, logistics organization and access to credit, professionals and technicians, suppliers of easily accessible goods and services, quality and safety of the crop, among others. Including environmental and health regulations, as well as those of the formal exercise of the activity. For this reason, the project has a component where the elements for the early prediction of extreme events, information for decision making and the incorporation of technology are fundamental. This component described below has two expected outcomes.

Result 2.1. The response capacity of the aquaculture community to extreme weather events is improved.

Activity 2.1 Response capacities of aquaculture actors are strengthened.

Sub-Activity 2.1.1. An early warning system (EWS) for extreme events in the aquaculture sector will be implemented for each Huanuco, Junin and Puno.

5.11.2 This activity will consider the implementation of these EWS to predict climatic conditions for aquaculture. The implementation of each EWS will include training and education for farmers to know how to interpret the information provided to them in order to make decisions regarding production management. Such a system is critical to help all farmers at all levels of production mitigate adverse effects and adequately prepare for extreme weather events.

5.11.3 The system will consider in its design, climate monitoring through the network of weather stations. Specifically, with the support of the National Service of Meteorology and Hydrology (SENAMHI), an SAT will be designed and implemented for each of the following locations:

- Microcuenca Huampo, province of Ambo, in Huanuco.
- Microcuenca Chiapuquio, province of Huancayo, district of Ingenio, Junin.
- Lake Titicaca, in the department of Puno. In this case, in addition to working with SENAMHI, it also includes the Institute of the Sea of Peru (IMARPE), an agency attached to the Ministry of Production, responsible for evaluating and monitoring the Lake, in order to support the management and administration of fishing and aquaculture activity. There are currently several weather stations in Lake Titicaca, these do not measure variables such as temperature in the water column, oxygen line depth and wind speed, among other critical parameters for aquaculture.

5.11.4 It is worth noting that all EWS installed in the context of the project will cover variables that existing weather stations do not consider. They will also use specially adapted technologies to measure strategic parameters for aquaculture activity and climate variables that need to be predicted and shared

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with farmers to help them prepare for and prevent losses. The objectives, methodological approach and activities of the SAT for extreme weather events for trout farming in the targeted regions are specified below:

Objective: to mitigate the risks and impacts of extreme weather events associated with climate change in this activity.

Methodological approach and activities

- **Collection of climate and aquatic data**
  - Select information currently available and useful at weather stations in nearby and representative areas of trout aquaculture in each of the regions. Prioritize key parameters such as air temperature, precipitation, wind speed and direction, relative humidity, among others.
  - Integrate existing and new sensor technology and weather stations to increase the coverage and accuracy of climate data.
- **Monitoring of aquatic variables:**
  - Install sensors in water bodies where trout aquaculture takes place, to measure parameters such as water temperature, dissolved oxygen level, pH and conductivity.
  - Establish a pilot monitoring network to collect data on a regular and continuous basis and ensure proper calibration and maintenance of sensors.
- **Data analysis and modeling:**
  - Use data analysis techniques to process and analyze information collected from weather stations and water sensors.
  - Develop climate and water quality models to predict extreme events, temperature changes or adverse conditions that may affect trout aquaculture.
- **Development of early warnings:**
  - Establish thresholds and alert criteria based on the results of data analysis and developed models.
  - Set up an alert system that notifies trout farmers in a timely manner when established thresholds are exceeded.
  - Identify and select cost-effective means of communication to transmit alerts: such as text messages, emails, mobile applications or local public address systems.
- **Training and dissemination:**
  - Provide training and guidance to fish farmers on how to interpret and respond to early climate warnings.
  - Organize workshops and information sessions to inform fish farmers about climate risks and adaptation measures they can implement.
- **System monitoring and evaluation:**
  - Establish a mechanism to monitor the effectiveness of the early climate warning system and collect feedback from fish farmers to continuously improve it.
  - Assess the impact of the system on reducing economic losses and on the ability of fish farmers to adapt and make informed decisions in the face of extreme weather events.
  - It is essential to adapt this design to the conditions and resources available in each of the regions involved, as well as to the specific needs of trout farmers in the region. In addition, it is important to have the support of local institutions, scientists and experts in meteorology and aquaculture to implement and maintain this early warning system.

Sub-Activity 2.1.2. Contingency plans will be developed to support producers' response to extreme weather events related to climate change.

5.11.5. This is an essential activity because Peru's aquaculture sector lacks a contingency plan for events related to extreme weather. Specifically, with the support of the National Institute of Civil Defense (INDECI) and in coordination with regional authorities, a contingency plan will be developed for each of the following locations:

- Microcuenca Huampo, province of Ambo, in the department of Huanuco.
- Microcuenca Chiapuquio, province of Huancayo, in the town of Ingenio, in Junin.

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- Lake Titicaca, Department of Puno.

5.11.6. Fish farmers will receive training on procedures and actions to respond to adverse weather events; these procedures will be included in the contingency plans, which will be complemented by the installation of specific EWS for the aquaculture sector.

Sub-Activity 2.1.3. Design and implementation of an Integrated Statistical Information System

5.11.7. The design of an integrated statistical information system for aquaculture productive and economic activities in Huanuco, Junin and Puno, Peru, can help collect, organize, and analyze data relevant to the aquaculture sector in those regions. It is necessary to establish the variables and indicators and the primary data sources. Such sources can be government institutions, producer associations, research centers and other relevant actors in the aquaculture sector. Establishing the mechanisms and protocols for data collection in a regular and reliable manner.

5.11.8. The design of an integrated statistical information system for aquaculture productive and economic activities in Huanuco, Junin and Puno, Peru, can help collect, organize and analyze data relevant to the aquaculture sector in those regions. Here are some key considerations for designing this system:

- Identify variables and indicators: Determines the key variables and indicators that should be included in the statistical information system. These may include data on aquaculture production, number of aquaculture farms, composition of cultured species, production volumes, sales prices, production costs, jobs generated and other relevant economic aspects.
- Data sources: Identifies primary data sources, such as government institutions, producer associations, research centers and other relevant actors in the aquaculture sector. It establishes protocols and mechanisms to collect data from these sources on a regular and reliable basis.
- Establish a data collection framework: Design a data collection framework that establishes procedures for collecting, storing, and managing information. This may include standardized forms, questionnaires, or electronic systems to facilitate data capture and processing.
- Data validation and quality control: Implements mechanisms to ensure the quality and reliability of the data collected. This may include cross-checking information with different sources, training data collection staff, and conducting regular audits.
- Data analysis: Develops tools and methods to analyze collected data and generate statistics relevant to the aquaculture sector. This may involve the use of statistical software for data processing, generation of key indicators and periodic reporting.
- Information dissemination platform: Creates an online platform or system to disseminate statistical information to actors involved in aquaculture in Huanuco, Junin and Puno. This can include publishing reports, visualizing real-time data, creating interactive dashboards, and making data available in formats accessible to different users.
- Institutional strengthening: Promotes collaboration between government institutions, producer organizations and other stakeholders to ensure the sustainability and continuity of the statistical information system. This may involve collaborative arrangements, the allocation of adequate resources and the involvement of stakeholders in the design and implementation of the system.

5.11.9. The design of an integrated statistical information system for aquaculture in Huanuco, Junin and Puno must be adapted to the specific needs and characteristics of each region, involving relevant actors and ensuring the quality and reliability of the data collected.

5.11.10. The population that receives the product of sub-activity 2.1.1, 2.1.2 and 2.1.3 of Result 2.1, are GORES officials and the total of aquaculture producers that cultivate trout and other aquaculture species in the departments of Huanuco, Junin and Puno that reach 2 791 holders of aquaculture rights (concessions and authorizations). In total, 11,164 people who depend on aquaculture activity (producers and their

families) will benefit from the SAT system implemented, contingency plans developed, and a statistical system implemented[87].

Result 2.2. Climate change adaptation infrastructure and technologies enable the sustainable use of hydrobiological resources for aquaculture.

Activity 2.2: Infrastructure will be built and/or improved in areas highly vulnerable to climate change.

5.11.11. The project will support the construction and/or improvement of infrastructure in areas highly vulnerable to climate change. In addition, the project will incentivize AMYPE and AREL aquaculture producers to adopt technologies to adapt production systems to climate change. These trout farmers and their families work in very precarious conditions and this activity will help build and modernize aquaculture facilities to make them resilient to climate change.

5.11.12. Below is a detailed description of the infrastructure and technology improvements that will support AMYPE and AREL's aquaculture resilience project in Huanuco, Junin and Puno. The improvements and technologies described below have been validated by PRODUCE based on national and international experiences and were agreed and validated with aquaculture producers in the indicated regions and by other key stakeholders during consultative workshops and workshops.

a. In Huanuco:

(i) Water recirculation systems for ponds.

5.11.13. For aquaculture production, water recirculation systems in aquaculture, known as RAS[88], allow water to be reused through the application of physical, chemical and biological treatments, which allows less than 10% of the water required in a conventional culture to be used. RAS systems are increasingly prevalent and offer an alternative to traditional production systems (ponds or floating cages). Environmental conditions can vary significantly in traditional outdoor systems, particularly as water temperatures and flows. RAS systems, on the other hand, physicochemical parameters are more stable and can be managed to provide optimal conditions for rapid growth. An advantage of these systems is that it allows to control and reduce the spread of diseases, make efficient use of the water available in the area, considerably reduces pollutants to the environment, can be integrated with other crops and allows for a more efficient and sustainable aquaculture production.

5.11.14. The use of SAN systems for seed production has been spreading, as a result of the scarcity of water and the competition that exists for the use of this resource, the RAS in seed production have been efficient and contribute to the development of aquaculture of species such as rainbow trout and salmon.

5.11.15. In Peru, seed production is one of the main links to ensure sustainable aquaculture production, however, the biosecurity of these is not guaranteed, it is in that sense, that a SAN system can guarantee the biosecurity of trout seed and maintain a constant supply, for the benefit of all producers in the region.

5.11.16. In this sense, through the project a RAS system will be installed accompanied by a photovoltaic energy system for its operation prioritizing the use of clean energy in the Huanuco region, located in the Molinos Fishing Station, belonging to the Regional Government of Huanuco, this system will contribute to the production of rainbow trout seed with appropriate biosecurity conditions for aquaculture producers; Likewise, through this implemented system, training and technology transfer will be provided, in addition

[87] It is understood that this is linked to people who benefit from the training, in that sense all the producers of the three departments and their families are considered.

[88] Source: Global Fish Farming 2019
https://lc.cx/zDLTRl

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to developing various types of own research for the use of the system applied to rainbow trout, benefiting all aquaculture producers in the Huanuco region.

(ii) Probiotics:

5.11.17. Probiotics have been used in aquaculture for several years to stimulate the immune response of fish (Nayak, 2010), establish a healthy environment in their gastrointestinal tract (Pandiyan et al., 2013), significantly increase larval survival (Luis-Villaseñor et al., 2013), increase disease resistance through competition and immunomodulation, or increase appetite and improve feed conversion. Probiotics are involved in the prevention and treatment of acute infectious digestive diseases and chronic intestinal and liver diseases. They act on host immune function and intestinal homeostasis, being able to modulate the intestinal microbiota (Castañeda Guillot, 2018). Vendrell et al. (2008) analyzed the effect of probiotic supplementation on the control of Lactococcus's in rainbow trout. Probiotics were administered orally for 30 days at a concentration of 107 CFU g of food. The results showed that probiotic supplementation reduced fish mortality from 78% in the control group to 46-54% in the probiotic groups.

5.11.18. This activity will include the necessary research and testing to define the type of probiotics to be used in the production of rainbow trout and considering the particular characteristics of their crops; Regarding the use of the probiotic, this will cover the commercial feed used by aquaculture producers having as an indicator 1 kg of probiotics per 1 ton of feed. In this sense, probiotics will be provided to 13 AREL aquaculture producers and 13 AMYPE aquaculture producers of Huanuco, in addition to the Resilient Aquaculture Center located in the Molinos Fishing Station, the amount of probiotic that will be provided will be to cover an average production of up to 50 tons of rainbow trout per aquaculture producer.

(iii) Aerator:

5.11.19. This mechanical equipment incorporates atmospheric oxygen to the water stored in the culture tanks. An aerator sucks air out of the atmosphere and injects it in the form of microbubbles into the water column, generating an efficient transfer of oxygen. In turn, the propeller of the aerator generates strong circulation, accelerates the dissolution of oxygen in the water and creates optimal conditions for aquaculture. This technology will allow aquaculture producers to solve the problem of reduced oxygen levels caused by the increase in surface temperature caused by climate change, which causes trout mortality[89].

Figure 6: Microbubble Aerator

5.11.20. Peru has generated previous experiences with the use of aerators, since through innovation projects technical assistance services have been provided for the adoption of different types of aerators powered by photovoltaic energy systems. For this, microbubble aerators with photovoltaic energy sources will be implemented for 13 AREL aquaculture producers in Huanuco. In addition, a unit will be delivered to the Resilient Aquaculture Center of this region for a total of 14 microbubble aerators.

[89] Source: Agroshow, accessed 21.06.2023
https://agroshow.info/productos/acuicultura/aireadores/aireador-de-micro-burbujas

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(iv) Oxygenators:

5.11.21. An oxygenator is a device designed to increase the levels of dissolved oxygen in the water of ponds or aquatic systems where aquatic organisms breed. Oxygen is essential for aquatic life and its adequate availability is crucial to maintaining the health and growth of animals. There are several types of oxygenators used in aquaculture farms, and the choice of device will depend on the size of the aquatic system, the number of organisms present and other specific factors[90].

Figure 7: Oxygenators

5.11.22. In the case of the project, the implementation of direct injection oxygenators is evaluated; These systems use air pumps to directly inject air into the water using diffusers or perforated tubes. This creates a vigorous flow of water and increases the dissolution of oxygen in the water.

5.11.23. In the case of Huanuco, 10 oxygenators that work with photovoltaic energy systems will be delivered to 10 AMYPE aquaculture producers who carry out the culture in *raceway* type pond systems. Direct injection oxygenators are efficient in large-scale systems and can provide high levels of dissolved oxygen.

(v) HDPE floating cage for harsh conditions (heavy duty):

5.11.24. This infrastructure built of HDPE. It is resilient to strong winds caused by climate change and helps mitigate the potential risks of raising limited trout using inadequate infrastructure. These cages cannot be overturned or destroyed, preventing trout from escaping or dying and avoiding impacts on other organisms.

Figure 8: HDPE cage for fish culture

5.11.25. The cages that will be installed will be able to withstand the strong waves and winds of up to 80 km / hour that occur in high Andean lakes and lagoons. These HDPE structure cages will be circular 10 m in diameter, with nylon or polyethylene meshes, including walkways for greater safety of aquaculture producers, and will also be equipped with automatic feeders that will work with photovoltaic energy. The project will be based on the experience of Puno fish farmers in the design, construction and installation of this floating cage91. In Huanuco, three (03) resistant HDPE floating cages will be installed with the indicated equipment, for a total of 03 aquaculture producers that have current concessions.

[90] Source: Nautiexpo.es
https://www.nauticexpo.es/prod/linde-gas/product-196247-549499.html

[91] Source: Made in China 2023. https://lc.cx/fDnP1U

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(vi) Sensors for monitoring crop water quality:

5.11.26. Water is a livelihood of a hydrobiological resource, and even more in aquaculture water quality must be controlled and monitored, focusing on the most relevant parameters that determine the management of an aquaculture culture, such as, in the case of rainbow trout farming, pH, dissolved oxygen, temperature, alkalinity, Ammoniacal nitrogen, transparency.

5.11.27. All aquaculture farming, in order to be managed and apply good practices, must consider the constant monitoring and recording of the various physicochemical parameters of water quality. In this sense, in order for aquaculture farms to better manage their crops, in the face of various climate changes that may impact water quality, it has been considered to deliver 26 sensor systems for monitoring water quality which will be distributed among 13 AREL producers and 13 AMYPE producers. In addition to 01 to the Resilient Aquaculture Training Center

b. In Junin:

(i) Water recirculation systems for ponds.

5.11.28. In the case of Junin, through the project a RAS system will be installed accompanied by a photovoltaic energy system for its operation prioritizing the use of clean energy in the Junin region, located in the El Ingenio Fish Center, belonging to the Regional Government of Junin, this system will contribute to the production of rainbow trout seed with appropriate biosecurity conditions for aquaculture producers; Likewise, through this implemented system, training and technology transfer will be provided, in addition to developing various types of own research for the use of the system applied to rainbow trout, benefiting all aquaculture producers in the Junin region.

(ii) Probiotics:

5.11.29. Probiotics will be delivered to 01 AREL producer and 08 AMYPE producers, so that they can improve the health of fish, preventing the spread of diseases and improving feed efficiency, for these probiotics will be delivered to 01 AREL producer and 08 AMYPE aquaculture producers, in addition to the Resilient Aquaculture Center, located in the El Ingenio Fishing Center. Similarly, at least one campaign of up to 50 tons of rainbow trout meat will be supported, in its various presentations.

(i) Microbubble aerator:

5.11.30. It is estimated that a microbubble aerator will be installed for one (01) AREL aquaculture producer in Junin, in addition to one (01) unit for the Resilient Aquaculture Training Center of this region.

(ii) Oxygenators:

5.11.31. Direct injection oxygenators with the use of photovoltaic energy will be installed to a total of 08 AMYPE aquaculture producers in Junin, in addition to an oxygenator that will be delivered to the Resilient Aquaculture Training Center.

(iii) Sensors for monitoring crop water quality:

5.11.32. For aquaculture farms to better manage their crops, in the face of various climate changes that may impact water quality, it has been considered to deliver 08 sensor systems for monitoring water quality which will be distributed to 08 AMYPE producers, in addition to 01 to the resilient aquaculture training center.

c. In Puno:

(i) Water recirculation systems:

5.11.33. In the case of Puno, through the project a RAS system will be installed accompanied by a photovoltaic energy system for its operation prioritizing the use of clean energy in the Puno region, located in the Public Technological Institute of Juli, which is an institution of technical training and technical training in aquaculture, such a system shall contribute to the production of rainbow trout seed under appropriate biosecurity conditions for aquaculture producers; Likewise, through this implemented system, training and technology transfer will be provided, in addition to developing various types of own research for the

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use of the system applied to rainbow trout, benefiting all aquaculture producers in the Puno region.

(ii) Probiotics:

5.11.34. Probiotics will be delivered to 01 AREL producer and 30 AMYPE producers, so that they can improve the health of fish, preventing the spread of diseases and improving feed efficiency, in addition probiotics will be delivered to the Resilient Aquaculture Center, located at the Higher Public Technological Institute of Juli. Similarly, at least one campaign of up to 50 tons of rainbow trout meat will be supported.

(iii) Microbubble aerator:

5.11.35. It is estimated that a microbubble aerator will be installed for one (01) AREL aquaculture producer in Puno, in addition to one (01) unit for the Resilient Aquaculture Training Center of this region.

(iv) Oxygenators:

5.11.36. An oxygenator powered by photovoltaic energy will be installed in Puno at the Resilient Aquaculture Training Center, for research purposes.

(v) HDPE floating cage for harsh conditions (heavy duty):

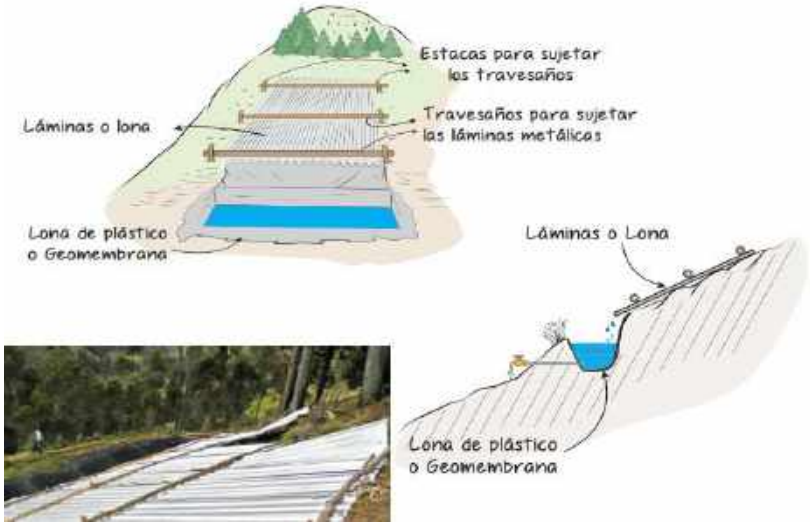
5.11.37. In Puno, thirty (30) resistant HDPE floating cages equipped with automatic feeders, powered by photovoltaic energy, will be installed for a total of 30 AMYPE aquaculture producers that have current concessions; in addition to 01 cage equally equipped, for the resilient aquaculture center located in the Higher Institute of Public Technology of Juli

(vi) Sensors for monitoring crop water quality:

5.11.38. For aquaculture farms to better manage their crops, in the face of various climate changes that may impact water quality, it has been considered to deliver 08 sensor systems for monitoring water quality which will be distributed to 30 AMYPE aquaculture producers, in addition to 01 to the resilient aquaculture training center.

(vii) A water harvesting and reforestation project as appropriate for Huanuco, Junin and Puno.

5.11.39. The implementation of "harvesting and sowing of water" as an effective practice of good management of natural resources based on a principle of development from the capacities and potentialities of local actors where the exchange of knowledge and social participation are fundamental pillars in the implementation of this alternative. With the sole purpose of having a better use and sustainable use of the resource that causes life "WATER"[92].



[92]Source: https://www.fao.org/fishery/static/FAO_Training/FAO_Training/General/x6709s/x6709s02.htm

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Figure 9: Water harvesting by taking advantage of existing slopes

5.11.40. The harvesting of water must be associated with reforestation, using infiltration ditches that improve the growth of the plant. In addition, Peru has a National Reforestation Plan that constitutes an important axis of implementation, among them, the recovery of ecosystems and environmental improvement. Its principles and foundations are aligned with the project and the Environmental and Social Safeguards that are rural development, understood as the well-being of the inhabitants of the countryside and from there the contribution to the national community[93].

5.11.41. Considering the importance of productive diversification for local development, which implies harmony between the population and its activities with the environment. Integrality, equity and the vision of the territory seen as a whole and not as a sum of parts are also fundamental concepts, where the achievements and benefits are shared according to the effort and commitments of the project with the communities. In this way, water harvesting, and reforestation go hand in hand, giving communities the possibility of being better prepared to face climate variability and better adapt to climate change.

5.11.42. For this, a water collection infrastructure or water reservoir (qocha) is considered for each region to guarantee its availability. Water harvesting is being successfully implemented in several regions of Peru in response to the problems of climate change and water stress. Water harvesting improves the collection, storage, and regulation of rainwater in soil, subsoil, and aquifers for use during drought and dry periods. Water harvesting will be complemented by reforestation activities, which will contribute to reducing the impacts of floods and mudslides, which can impact ponds, cause pollution, and kill trout, and contribute to the accumulation of water in the subsoil. However, due to the characteristics of the intervention area at more than 3,700 meters above sea level, the project will identify the most suitable tree species with water regulation properties.

Tools for good practices in environment and occupational safety in Huanuco, Junin and Puno.

5.11.43. The problems that are occurring in the regions of Huanuco, Junin and Puno in relation to climate change and climate variability require the incorporation of technologies and tools for good environmental management, being necessary that, together with the communities and beneficiaries of the project, generate a diagnosis on the environmental problems that afflict people and the territory. It is important that the information is georeferenced in order to use the best tools. The use of drones and satellite maps will be necessary for the analysis of the basins where aquaculture is developing. In addition, this mapping will help define areas where it will be necessary to carry out the reforestation foreseen in the project. On the other hand, identify the agricultural areas near ponds and if they use pesticides, in order to incorporate runoff management and that the residues do not reach the water bodies.

5.11.44. Waste management is another fundamental element to avoid contaminating the basins where the fish farms are installed. The community must be sensitized to incorporate the idea of reducing, recovering and recycling waste. Another central element is to reduce the loss of biodiversity, strengthening the search for conservation, adaptation and mitigation solutions of all kinds. Using technological, innovative, creative and low-cost tools. Only a few tools have been named here. The use of sustainable energy to reduce greenhouse gases has already been reported in fish farming technologies and will also be used in the processing plants that are built in the three regions. The concept of circular economy will be implemented at different points in the production chain.

5.11.45. This component includes the environmental, social, gender and occupational health and safety measures required to ensure that all beneficiary farmers comply with environmental and occupational health and safety standards, as well as the Adaptation Fund's Environmental, Social and Gender Policy. These measures should be established on the basis of the results of a gap analysis. The measures should mainly address the following aspects: (i) Generation of effluents from trout farming; (ii) Domestic effluents; (iii) Generation of solid waste (including mortality); (iv) Fuel management; (v) Flue gas emissions; (vi) Noise caused by equipment, engines and machinery; and (vii) Controls to prevent species escapes.

[93] Source: https://www.jica.go.jp/project/ecuador/001/materials/ku57pq000011cym2-att/water_harvest_sp.pdf

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5.11.46. In this framework, some technologies for environmental management that would be implemented are listed below, these being the following:

Biodigester:

5.11.47. A preliminary 32 (preliminary) biodigesters are included. The amount will be adjusted according to the identification of existing gaps and the number of producers who are developing culture in pond systems. The biodigester is used for the primary treatment of sewage and grey water to be discharged into the soil (absorption or infiltration well) or drained. It uses an internal anaerobic filter that increases the efficiency of water treatment and does not require electricity for its operation or chemicals to treat the water.

Effluent treatment

5.11.48. Effluent treatment plant: 32 plants (preliminary) are included. The amount will be adjusted according to the identification of existing gaps. The treatment system is aimed at those who carry out rainbow trout culture in ponds.

Double-bottom nets for floating cages

5.11.49. It is considered the implementation of double bottom networks for the control of sedimentation of balanced feeds consumed by rainbow trout in the culture process, contributing to the care of the funds of the areas where the culture of this aquaculture species is developed, the amount will be determined, according to the collection of information in the field of the conditions of the beneficiaries of the aquaculture technologies that carry out the culture in these Systems.

Fish escape control

5.11.50. Management improvements and technologies are included to prevent rainbow trout from escaping from the pond culture system or the cage culture system into the environment, a review of the conditions of the productive units of aquaculture rights holders (cages and ponds) that are beneficiaries of the technologies will be carried out, and determine the management measures to be implemented and the number of technologies that must be incorporated, if applicable, for ponds or cages.

Equipment and signage for safety and health (OSH) at work:

5.11.51. 65 support teams for occupational safety and health are preliminarily included, and the final quantities will be specified after determining the beneficiaries of aquaculture technologies in the regions of Huanuco, Junin and Puno and determining the conditions of compliance with OSH. These include: (i) safety signage; (ii) emergency response measures; (iii) personal protective equipment (PPE); and (iv) controls to be determined based on hazard identification and risk assessment of specific activities.

Activity 2.3: The knowledge of fish farmers towards innovation, technology for adaptation to climate change is improved:

5.11.52. As part of this project, technical assistance and specialized training will be provided to help fish farmers gain greater knowledge and understanding of the innovations and technologies available to adapt to climate change in the aquaculture sector.

5.11.53. Technical assistance will focus on providing guidance and individualized support to fish farmers, with the aim of socializing them with the new technology to ensure a good start-up of the activities once the new technologies are acquired. The technical assistance will make it possible to identify the specific training needs of each one and offer solutions adapted to their particular situation.

5.11.54. The main objective of this technical assistance and training is to strengthen the knowledge of fish farmers in relation to the technological solutions financed by the Project to face the challenges of climate change in aquaculture.

Activity 2.4: Environmental and social management is improved with a gender perspective through technical assistance and training.

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5.11.55. Within the framework of this project, technical assistance and specialized training will be provided to strengthen environmental and social management in the aquaculture sector, also considering a gender perspective. Technical assistance will focus on providing guidance and support to trout farmers to improve their environmental management practices, such as, inter alia, improving waste management, reducing the use of chemicals, and promoting sustainable production practices.

5.11.56. In addition, the project will provide environmental and social management training In line with the project's focus on enhancing improved, environmentally conscious practices in aquaculture, with a gender perspective. this training will focus on assisting trout farmers to incorporate a gender perspective into their environmental and social practices and demonstrate with good international practices that doing so can enhance aquaculture's social and environmental sustainability, contribute to the empowerment of women, and increase revenue potential for their families. During this training, trout farmers will work with the instructors to reconsider their environmental practices and to rethink them in ways that maximize the women's contribution to their aquaculture production by considering how to best manage differentiated needs, preference and constraints of both men and women.

5.11.57. An important element of the project's gender-related interventions is to encourage and mainstream a more systematic and active participation of women in decision-making and management of aquaculture activities. The validation workshops have demonstrated to all participants that giving women a voice in identifying problems and developing solutions brings value added and that by a encouraging a more inclusive communication production-related communication, men will not only consider it, but they will embrace it. In the context of the communities in which the project will be operating, gender mainstreaming will require women to overcome self-imposed limitations to their input into decision making on the one hand, and on the other, encourage men to accept the input. Because, changing these long-engrained mechanisms is a process that cannot be reversed overnight, the project Environmental and Social Specialist, will provide technical assistance in this area as a part of his outreach to the beneficiaries of project technology.

Component 3: Strengthening value and production chains associated with resilient aquaculture activity supports diversification of aquaculture producers' livelihoods and food security.

A relevant aspect to promote the development of resilient aquaculture is the consolidation of the chain, the addition of value and access to sustainable markets, which generate not only economic, but environmental and social benefits. In this regard, the activities of Component 3 are described below.

Result 3.1. The value chains of the aquaculture sector are strengthened and reduce their losses due to climatic events.

Activity 3.1.1. The facilities of the production chain associated with the trout aquaculture sector will be improved.

5.11.58. Here the infrastructure for rainbow trout collection, handling, primary processing and product preservation systems will be modernized. Currently, aquaculture producers buy packaging material, among others, individually and in isolation, without considering compliance with sanitary regulations and the formality for processing which ensures a healthy and safe product. It has been identified that it is key to promote partnerships between small producers within the localities, so that they can access better prices, incorporate technologies, and have the capacity to expand their markets.

5.11.59. Likewise, it has been identified that the fish farmers of Huanuco, Junin and Puno do not have primary processing plants authorized by health to process rainbow trout and generate presentations for the markets they serve, so they market their product in whole presentation (with viscera, head, etc.), and in the case that evisceration is done in a very artisanal way without conditions that ensure the safety of the product and without having any sanitary registration. Given this situation, it is necessary to have an adequate infrastructure for primary processing. Likewise, in order to strengthen the competitiveness of fish farmers, it is proposed to encourage the circular economy so that, when processing rainbow trout in different presentations, the waste generated goes through a process of adding value such as silage and can be sold as biofertilizers or inputs for animal feed, in general.

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Figure 10: Technical Specifications Primary Processing Plant

5.11.60. The installation and strengthening of the primary processing plants will be installed in the case of Huanuco, in the Molinos Fishing Station, managed by the Regional Directorate of Production of Huanuco. In the case of Junin, the plant will be installed in the El Ingenio Fish Center, managed by the Regional Directorate of Production of Junin; and in the case of Puno, the processing plant of the *Instituto Tecnológico Superior Público* de Juli will be strengthened and improved. It should be noted that the aforementioned institutions have issued a letter of intent to cede the spaces required for this purpose. The installation and strengthening of the processing plants considers purchases of equipment and implements for each plant, such as: stainless steel tables; vacuum sealing machine especially for fillets; clothing for plant personnel; air conditioning; meat grinders; ice production machine (flake or presentation deemed most cost efficient); among other implements that allow compliance with good practices for fish processing, in addition to ensuring the hydraulic infrastructure needed for an adequate water supply. Additionally, it is considered for the operation of these primary processing plants, the implementation of a photovoltaic energy system, contributing to the use of renewable energies[94] . It should be noted that the energy source for lighting and ice production and vacuum sealer will be generated through a photovoltaic energy system composed of solar panels, charge controller, batteries, and inverter. This activity will be supported by the ITP and CITE network.

[94] Source: Modular Constructions

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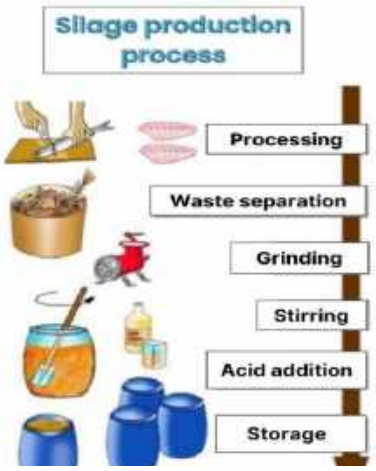

Figure 11: Components of a photovoltaic solar installation - Source: AC & DC Ingenieros

Figure 12: Vacuum sealing or packaging machine

5.11.61. Considering that trout processing will generate a variety of wastes, there are several alternative technologies for the use of trout waste, including silage processing, which is particularly important because of its low cost and easy processing. Through the use of this simple technology, the fish and its waste are transformed into a liquid substance of pasty consistency, where the bromatological values of the fish are preserved in terms of its protein, mineral and lipid contents, in the same proportion that are found in fish in its initial state. Fish silage is a valuable ingredient when used in animal feed rations, and it has been shown that it can be highly efficient in feeding pigs, poultry, as well as fish. The silage area, generated from the use of fish waste (viscera and remains of cuts and filleting), includes an electric meat grinder due to the volume of fish waste that is processed and others such as containers for maceration and storage[95].

5.11.62. Likewise, to ensure proper operation at the plant, a gender-focused training program is established for aquaculture producers and their families, which will consider the following topics: i) handling, processing, fish packaging, ii) HACCP and iii) Silage production.

5.11.63. Similarly, not only the implementation of the infrastructure is enough, but also the approach of a management model for the operation, maintenance and sustainability of the processing plant, so that over time they continue to provide the maquila service to aquaculture producers. It is important to note that the plant will provide services not only to producers in the intervention area, but also to all those producers in the region who have the interest and require the service of processing and adding value to their hydrobiological products.

5.11.64. Each processing plant will have sanitary authorization granted by SANIPES, operating license granted by the Regional Municipality and operations license granted by DIREPRO. Likewise, each plant will have manuals for each of the processes that its employees will carry out and a business plan in order to determine the feasibility in terms of construction area and processing and storage capacity, as well as the management of sanitary records for the products generated, facilitating their access to any commercial channel. The DIREPRO of the Regional Governments would be in charge of the supervision and control of these plants.

5.11.65. This activity, in addition to benefiting the 975 holders of aquaculture rights (concessions and authorizations) for rainbow trout farming in the regions of Huanuco, Junin and Puno (AMYPE and AREL), as well as their families, for a total of 3,900 beneficiaries, at the same time, could generate job opportunities for approximately 20 people, prioritizing the granting of jobs to women heads of household.

Outcome 3.2 Aquaculture producers access sustainable markets

Activity 3.1.2. The value chain and market access of the production chain associated with the aquaculture sector for trout production will be enhanced.

5.11.66. This activity includes the development and implementation of marketing strategies for aquaculture

[95] Source: Adapted from "Production and use of fish silage. Manual on how to convert fish waste into profit and into a valuable feed ingredient or as fertilizer", FAO, 2018.

products generated in the processing plants built, in order to generate greater competitiveness and generate a greater opportunity to enter the formal market.

5.11.67. The go-to-market strategy includes:

- Determination of the target markets where the products generated by each processing plant are expected to enter (public purchases with municipalities, schools, soup kitchens, wholesalers, retailers, restaurants, supermarkets, municipal fairs, institutional promotion platforms),
- Use of social networks for the promotion of the products generated, origin of the product, quality and safety, preparations and stories behind the dish, promotion of consumption with a focus on health and nutrition.
- Inclusion of products in institutional virtual stores (Marketplace) such as Rapipez and / or Peru Unstoppable
- Preparation of recipes that contemplate the preparation of healthy dishes based on local and regional cuisine that are easy to prepare.
- Training in commercial management, logistics and customer service, includes the acquisition of *150-liter coolers for the distribution of fish to specific commercial channels and commercial promotion platforms.*

All these aspects will contribute to being able to comply with the requirements demanded by any commercial channel, as well as promote their access to this type of sustainable markets.

Figure 13: Fish Marketing – Source Eat Fish Program

5.11.68. Similarly, as part of the commercial strategy and give an identity to resilient aquaculture in the departments of Huanuco, Junin and Puno, the development of collective brands and the adoption of institutional certification marks (family farming in Peru, SANIPES classified center, Safe Company, Sustainable Aquaculture, etc.) will be promoted, in order to encourage access to markets and comply with the demands and requirements established by the commercial channels. public or private to make your purchases effective.

Result 3.3 Aquaculture producers diversify their economic activity by complementing it with activities and products around trout production.

Activity 3.2.1. The economic activities of aquaculture producers dedicated to trout farming in the regions of Huanuco, Junin and Puno (AMYPE and AREL) will be diversified.

5.11.69. A portfolio of projects and technological alternatives will be developed to diversify the livelihoods of aquaculture workers. It will seek to promote complementary activities to aquaculture, some ideas of possible business plans could contemplate for example ecotourism, aquaponics, crafts, or others that have a legitimate interest on the part of the beneficiaries of the intervention areas.

5.11.70. **Ecotourism**: The aquaculture activity of trout farming could be strengthened if combined with ecotourism and / or gastronomic tourism, taking advantage of the landscapes and cultural wealth of the Huanuco, Junin and Puno regions. The proposal is to offer tourists the knowledge of the process to

produce rainbow trout, the gastronomic culture of trout while enjoying the landscapes and natural attractions. A trout gastronomic route could be offered as a tourist product that would contribute to the maintenance of the landscape, the dissemination of local culture, economic development, and the positioning of the territory.

5.11.71. **Aquaponics**: The temperature range for rainbow trout farming is optimal for plants with cold temperatures such as green leafy, for example: lettuce, beets, carrots, spinach, among others. Likewise, plants with high demands for nutrients, such as tomatoes, cucumbers, peppers, other vegetables, as well as fruits, such as strawberries and herbs, such as basil, also represent a good option for combined cultivation with rainbow trout. However, one challenge to overcome is water temperature, which has a significant effect on plant and fish growth. Experts have identified aquaponics as a promising management strategy that can contribute to the development of new forms of trout farming. Aquaponics can be integrated into rainbow trout farming, allowing higher incomes for fish farmers, as well as improvements in effluent quality. From an environmental point of view, aquaponics represents a new technology that improves production efficiency, while mitigating environmental impacts, diversification of fish production, animal welfare in aquaculture systems, among other benefits.

5.11.72. **Handicrafts:** Associated with the aquaculture theme and the area, highlights the cultural and artistic value and identity of the population, this can be an important value in the participation of women and their families, complemented by ecotourism.

5.11.73. **Trout Smoking:** A business alternative is to see the possibility of preparing smoked trout. The trout smoking process is a cooking technique that allows to obtain rustic and unique flavors that are not achieved by other cooking media. This business can be associated with gastronomic tourism. The Business Plan development process will require intensive participation on the part of the beneficiary, so that at the end of the process, she/he will be completely invested in its success. It includes the following activities:

- **Participatory workshop with beneficiaries for the definition of the business idea** considering as potential alternatives ecotourism, aquaponics, handicrafts or other related in which the productive actors have a legitimate interest, and the participation of women is prioritized.
- **Participatory workshop for the process of formulating business plans** at least two (02) for each department.
- **Identification of source of funding and application to them** (PROCOMPITE, AGROIDEAS, or another that is identified in the territory).
- **Training and accompaniment in the management and execution of the formulated business plan.** The product of this activity addresses the development of at least two (2) Business Plans for fish farmers in Huanuco, Junin and Puno, for a total of six (6) Business Plans that address projects for the development of economic activities that can be complemented with rainbow trout farming, taking into account feasibility conditions and opportunities for the generation of greater income and the use of the landscape and cultural beauties of these regions.

B. Project beneficiaries

6.1. The project will directly benefit 975 vulnerable aquaculture rights holders in the regions of Huanuco, Junin and Puno (AMYPE and AREL) and their families (each fish farmer is responsible for four dependents or family members on average), for a total of 3,900 direct beneficiaries. Beneficiaries will be able to access funding implement innovative practices using enhanced technology and their regional authorities will have the necessary policy instruments, regulations, and an enhanced oversight capacity to promote resilience to climate change in rainbow trout aquaculture. Beneficiaries will also benefit from increased availability to reliable information on how to strengthen resilience to climate change and diversify their productive activities to increase their incomes and become more resilient.

6.2. In order to determine the most vulnerable direct beneficiaries to receive from the project, innovative technologies for resilient aquaculture, within the framework of Component 2 of the Project, relevant

productive and socioeconomic characteristics linked to Fish Farmers of Limited Resources (AREL) and Micro and Small Enterprise Fish Farmers (AMYPE) have been considered; In this sense, elements that may be relevant to determine the eligibility of direct beneficiaries in the intervention areas are identified, recognizing that the number of producers compared to the number of eligible beneficiaries is relatively small.

B.1. Identified Beneficiary Selection and Prioritization Criteria

6.3. Multiple relevant dimensions can be considered for the determination of the eligibility of these actors. These include intervention areas, operational formality category (AREL or AMYPE) and socio-economic status. This section of the document defines the criteria as follows:

B.1.1. Intervention areas

6.4. The following intervention areas were identified in the Concept Note as at-risk areas, highly vulnerable to the effects of climate change.

B.1.2 Socio-economic conditions

6.5. The Concept Note further identifies small producers, such as AREL and AMYPE as target recipient. It is important to note, however that there is producers in these categories vary greatly, and there can be marked economic, social and technological differences between them. Consequently, differentiated selection criteria have been established:

a. Criteria for selection of beneficiaries for aquaculture AREL

6.5.1 <u>According to socioeconomic characteristics</u>:

Eligible AREL beneficiaries must:

- Formal AREL producer has an authoritative resolution provided by DIREPRO to develop the aquaculture activity (concession or authorization). This information must be duly reflected in the National Aquaculture Cadastre - CAN (http://catastroacuicola.produce.gob.pe/web/) and the DIREPRO files.
- Natural Person: the authoritative resolution was granted to the natural person. The source of information corresponds to the National Aquaculture Cadastre - CAN (http://catastroacuicola.produce.gob.pe/web/) and the DIREPRO.
- Active operability: those producers who, in addition to being formal, are in a current condition of operability. The source of information corresponds to DIREPRO and field verification.
- Family labour: the aquaculture production unit has no external workers except for the family one. The information comes from the DIREPRO and the collection of field information.
- Entrepreneurship led by a woman, with the aquaculture right granted to her name (holder): The producers will have preference of the first order. The source of information corresponds to the National Aquaculture Cadastre - CAN (http://catastroacuicola.produce.gob.pe/web/) and the administrative records of the DIREPRO.
- Holder of the aquaculture right registered in the General Household Register of SISFOH with economic classification of Poor or Extreme Poor: Second degree preference. The ID number of the person is considered for verification in the indicated system (https://operaciones.sisfoh.gob.pe:450/cse/).
- Entrepreneurship led by a man, with aquaculture right granted to his name (ownership): Third degree preference for operations where women have active responsibility in the following aquaculture activities: management, sowing, production, harvesting, feeding or marketing The information comes from the DIREPRO and the collection of field information.

6.5.2 <u>According to access to development services</u>:

- Have been a user of the aquaculture extension provided by PRODUCE, GORE, FONDEPES, PNIPA or CITE (Administrative Records) and that these practices are being applied (corroboration and collection of information in the field).

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- Not have current credits granted by FONDEPES (Administrative Records).
- Not have received other types of subsidies for productive or innovation activities (Administrative Records).

b. Beneficiary selection criteria for AMYPE aquaculture

6.5.3 <u>According to socio-economic characteristics</u>:

- Formal AMYPE producer: has its authoritative resolution provided by DIREPRO to develop the aquaculture activity (concession or authorization). The source of information corresponds to the CAN (http://catastroacuicola.produce.gob.pe/web/) and the DIREPRO.
- Formal AMYPE producer who has a sanitary authorization of a farming center granted by the National Fisheries Health Agency (SANIPES) (http://app02.sanipes.gob.pe:8089/Publico/Consulta_protocolos_concesion), or failing that, have initiated the procedure to obtain it (document of charge of the procedure of the same producer).
- Natural person with business or legal person: has RUC active in the SUNAT (https://e-consultaruc.sunat.gob.pe/cl-ti-itmrconsruc/FrameCriterioBusquedaWeb.jsp)
- Active operability: those producers who, in addition to being formal, are in a current condition of operability. The source of information corresponds to DIREPRO and field verification.
- Entrepreneurship led by a woman, with the aquaculture right granted to her name (ownership) or, in the case of Legal Persons, the name of the legal representative is reviewed: The producers will have preference of the first order. The source of information corresponds to the National Aquaculture Cadastre - CAN (http://catastroacuicola.produce.gob.pe/web/) and the administrative records of the DIREPRO or SUNAT (https://e-consultaruc.sunat.gob.pe/cl-ti-itmrconsruc/FrameCriterioBusquedaWeb.jsp
- Entrepreneurship led by a man, with aquaculture right granted to his name (ownership) or male legal representation: Second degree preference for operations where women have active responsibility in the following aquaculture activities: management, sowing, production, harvesting, feeding or marketing The information comes from the DIREPRO and the collection of field information.
- Paid labor: the aquaculture establishment has paid external workers, whether or not they have family work1. The source of information corresponds to DIREPRO and field verification.
- Not have a firm sanction imposed by the regional authorities in the environmental field or in the productive field. The source of information corresponds to the DIREPRO.

6.5.4 <u>According to access to development services:</u>

- Have been a user of the aquaculture extension provided by PRODUCE, GORE, FONDEPES, PNIPA or CITE (Administrative Records), and that these practices are being applied (corroboration and collection of information in the field).
- Not have current credits granted by FONDEPES (Administrative Records).
- Not have received other types of subsidies for productive or innovation activities (Administrative Records).

In all cases, field verification will be important to know if these external workers have evidence of being paid workers in the formality (they have a contract, issue receipts, etc.).

B.2. The methodological selection process

6.6. The methodology proposed for the selection of beneficiaries for each of the intervention areas is as follows:

a. A Matrix is prepared with the determined selection criteria, one for AREL producers and another for AMYPE producers, which will indicate whether or not it meets each of the selection criteria and in what order.

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b. Based on the updated information of the National Aquaculture Cadastre (CAN), the universe of aquaculture producers to which the Matrix will be applied is established.
c. The technical staff that contracts the project for each zone will be responsible for applying the Matrix, considering the various public databases indicated in the selection criteria.
d. Likewise, there are criteria that will require that the information must be taken and verified in the field, for which the technical staff of the project will collect the corresponding information, considering pertinent evidence to verify whether or not the criterion is met.
e. The technical staff of the project, as a result of the application of the Matrix, will have a list of producers preselected for each of the intervention areas.
f. Subsequently, a meeting will be organized in each area - which can be a single assembly with the producer groups or associations of the intervention areas that have current aquaculture law according to the CAN - with the aim of presenting and supporting the lists of preselected producers. Affirmative action is required to ensure that 30% of attendance is women (see measure #1 PAG).
g. After the presentation and support of the lists, the attendees approve by simple majority the list of preselected aquaculture producers. A record shall be signed as a sign of agreement, in which the approval of the list shall be expressed. Producers will go from being pre-selected to being selected.
h. The minutes will remain in the custody of the project coordination.

6.7. The official databases of free access to consult and that will be supported during the selection process are:

- SISFOH: https://operaciones.sisfoh.gob.pe:450/cse/
- National Aquaculture Cadastre: http://catastroacuicola.produce.gob.pe/web/
- SUNAT:https://e-consultaruc.sunat.gob.pe/cl-ti-itmrconsruc/FrameCriterioBusquedaWeb.jsp
- SANIPES: http://app02.sanipes.gob.pe:8089/Publico/Consulta_protocolos_concesion

6.8. Likewise, the beneficiaries will sign delivery certificates and binding agreements to guarantee the proper use of the goods received and certify that they have met the requirements to qualify for these benefits. Women heads of household will be prioritized to receive technologies that strengthen their aquaculture infrastructures and will also be given priority to fill jobs in primary processing and silage plants.

6.9. In addition, the Regional Directorates of PRODUCE belonging to the Regional Governments of Huanuco, Junin and Puno will benefit, since their officials will be better trained and will have solid policy and regulatory instruments to properly manage aquaculture activities in the context of climate change.

6.10. The number of indirect beneficiaries of the project would be 7,124 fish farmers and families, made up of 2 aquaculture producers in the AMYGE category located in Puno; as well as the rest of the fish farmers who cultivate other fish species in the intervention regions: 1,260 in Huanuco; 471 in Junin; and 50 in Puno. Children in the regions of intervention are another group of indirect beneficiaries, as they would have greater access to rainbow trout, a highly nutritious food. Table 14 below describes these numbers.

Table 2: Number of direct and indirect beneficiaries

DIRECT beneficiaries who farm rainbow trout	Rights holders	Family members	N° people benefited	Observations
AREL producers from prioritized areas of Huánuco (13), Junin (1) and Puno (1)	**15**	**4**	**60**	
AMYPE producers from prioritized areas of Huánuco (13), Junin (8) and Puno (30)	**51**	**4**	**204**	
Resilient Aquaculture Center for seed production and training (1 in each region)	**975**	**4**	**3,900**	This number includes producers who receive the technologies of component 2

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INDIRECT beneficiaries who cultivate other species	Rights holders	Family members	N° people benefited	Observations
AREL producers that cultivate other species in Huánuco (1229), Junín (462) and Puno (48)	**1,739**	**4**	**6,956**	
AMYPE producers who cultivate other species in Huánuco (31), Junín (9) and Puno (2)	**42**	**4**	**168**	
			7,124	Total number of indirect beneficiaries cultivating other species.
Data of holders of aquaculture rights as of 30/06/23 of the National Aquaculture Cadastre				
http://catastroacuicola.produce.gob.pe/web/			**11,024**	Total direct and indirect beneficiaries

C. Describe how the project provides economic, social, and environmental benefits, with reference to the most vulnerable communities and vulnerable groups within communities, including gender considerations.

7.1 **Additional environmental benefits**: The project will enable the most vulnerable farmers AMYPE and AREL to sustainably produce rainbow trout by introducing improved practices and more appropriate technology. Focusing the intervention on small producers, AREL and AMYPE which comprises low-income fish farmers, who have been least exposed to good practices in trout farming production, and whose practices are currently inefficient and environmentally harmful will contribute to reducing the impact of aquaculture of hydrobiological resources. In addition, water quality and conservation of the aquaculture ecosystem will be improved through the introduction of technology to manage, treatment and discharge of effluents, sludge and undigested feed produced in aquaculture operations.

7.2 Moreover, the project focuses on strengthening the legal and regulatory framework and facility a more thorough and systematic oversight of trout farming activities in the regions. Improved practices, and improved enforcement of good laws and regulations will greatly strengthen the management of the region's hydrobiological resources.

7.3 The project promotes reforestation in the intervention areas is beneficial to the fish farmer, since it generates a barrier of protection against floods and that can affect aquaculture farms and in turn contribute with their own mitigation actions against climate change; Other benefits of reforestation include increased soil fertility and moisture retention; soil stabilization, and the reduction of field erosion. Reforestation, therefore, creates a favorable microclimate is provided for microorganisms and wildlife, among others.

7.4 **Additional social benefits:** The project will strengthen the food security and livelihoods of the aquaculture community by improving the adaptive capacity and resilience of this sector to extreme climate change events. Women will be provided with trout, which is traditionally presented as a nutritious food for the diet of their children, especially younger children.

7.5 In addition, fish farmers will strengthen their technological capacities in aquaculture activities through training and education activities in good health, safety and environmental practices and in the capacity to adapt to climate change. In addition, governance will be strengthened with protocols, guidelines and plans for climate resilient aquaculture.

7.6 **Additional economic benefits:** Aquaculture productivity and the use of hydrobiological resources will be improved. This will lead to economic benefits such as reduced losses due to climate change impacts, increased confidence of the financial sector to invest in the aquaculture sector and reduced production costs. These characteristics translate into a strengthening of the competitiveness of the sector.

7.7 With the reduction of costs and the added value provided by the project, the sector becomes attractive

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for more people to get involved in the activity. In addition, fisheries certifications, which the project proposes to promote, provide economic benefits that include environmental costs and promote diversification of the aquaculture sector. The implementation of the project will limit economic losses in production, infrastructure, livelihoods, services, ecosystems and environmental resources in the aquaculture sector due to extreme weather events associated with climate change.

7.8 **Gender approach:** The project clearly recognizes the need to further strengthen women participation in aquaculture to ensure economic and social resilience in the face of climate change. To achieve this objective, the project includes activities and measures aimed specifically at reducing gender gaps. In addition, the project focuses on providing women supporting mechanisms which allow them to participate in aquaculture, despite often adverse socio-economic circumstances. These include mentoring, peer-learning, networking, among others. The Gender Action Plan (GAP), which can be found in annex xx, lists those activities in more detail.

7.9 The project aims, through its activities to ensure a more transparent and inclusive regulatory framework. Accordingly, it promotes the use of a gender lense in the review and upgrade of the legal and regulatory framework. Additionally, to improve the gender-perspective in public policy, the project invests significant effort in ensuring that disaggregated gender data is collected, vetted and widely shared.

7.10 The participation of women in aquaculture organizations and assemblies held in the context of the project will be encouraged. Priority will also be given to women heads of household in the selection of beneficiaries.

7.11 The planned training events will include gender issues to encourage women's participation in activities and jobs along the aquaculture value chain. This will help strengthen women's self-esteem and capabilities.

D. Describe or provide an analysis of the cost-effectiveness of the proposed project.

8.1 The project represents a comprehensive intervention to strengthen the resilience of rainbow trout aquaculture. It combines institutional capacity development activities, with a combination of investment in different technologies, including hard adaptation measures – mainly green technology – and soft adaptation (sectoral governance strengthening, capacity building, awareness raising, improved transfer of knowledge). Together these measures will address climate change adaptation for aquaculture in a comprehensive way.

8.2 The project focuses on strengthening technological innovation in two aspects: on the one hand, strengthening the technical infrastructure of institutions that provide services to the community, allowing new technologies for resilient aquaculture to benefit a maximum of actors involved. In this sense, emphasis has been placed on improving the infrastructure of Early Warning Systems (EWS), contingency plans, water recirculation systems (RAS) mainly oriented to the production of fingerlings, located in resilient aquaculture training centers (CAR), as well as water harvesting and reforestation projects in each region. On the other hand, the project provides individual small rainbow-trout farmers with more environmentally friendly technology which will improve the efficiency of the productive process and reduce its impact on water quality.

8.3 Soft adaptation measures are principally focused on three dimensions: first, enhance sectoral governance through enhanced interagency cooperation, second, enhancing quality and quantity of available data, thirdly improving commercialization potential of trout farming products and increase access to finance.

8.4 In ensuring cost effectiveness, the project has emphasized (i) choosing options which maximize impact and minimize costs compared to benefits; (ii) engaging in proactive, and preventive approaches to address flood, drought, and worsening water quality and (iii) Identifying technologies which reduce the costs of investments, limit the costs of maintenance, and increase associated co-benefits and (iv) leveraging local resources and existing systems.

8.4.1 **Examples of choice of which maximize impact and minimize costs compared to benefits**

would include the choice of aquaculture producers as beneficiaries of this project, since aquaculture has the lowest carbon footprint of all food production sectors, meaning it can provide high nutritional quality feed with minimal greenhouse gas emissions. The technological solutions proposed with the project have been planned with the use of clean energy from photovoltaic panels, further reducing emissions. Recent studies have estimated that the use of photovoltaic energy has contributed to the reduction of costs of up to 30% in energy use[96].

8.4.2 **Include activities aimed at strengthening aquaculture governance in the regions of interest.** Moreover, providing more efficient productive technology to eligible trout farmers should be considered high impact, low-cost option to ensure resilience to climate change in these communities. Similarly, capacity development and knowledge sharing associated with new technology deployment should be considered high impact and zero to low-cost options respectively, since these are activities which have proven long-term effectiveness and guarantees the sustainability of the technology investments. Furthermore, social awareness, institutional training is a low cost measure which work to ensure sustainability of more expensive technologies.

8.4.3 **Proactive and preventive approaches taken by the project to address flooding, drought, and increase risk of water pollution will** contribute to avoid associated increasing losses and economic costs compared to the current approach of inadequate, absent or reactive measures such as strengthening early warning systems, ensure producer buy-in by strengthening access to finance opportunities.

8.4.4 **Emphasis on minimizing costs of investments, low maintenance costs and increased associated co-benefits**: The project has emphasized working with existing systems to enhance sustainability and has focused on addressing systemic flaws by incentivizing pragmatic institutional cooperation at the local level, thus maximizing economies of scale. For example, the creation of the regional observatory of resilient aquaculture to improve the associativity of academic and technical / professional institutions around a virtual platform, thus taking advantage of each of their skill set and reducing competition for scarce resources. Finally, during the preparation of the project, assessment tools were prepared to assist in the execution of project activities and enabling a wider distribution of resources. Recent similar projects, rather than establishing an analysis framework invested in hiring consultants to design the project, thus reducing resources available for the acquisition of technology. The limited but highly customized selection of technology options has enabled more AREL and AMYPES to benefit from project activities.

8.5 The project sought to leverage local resources and previous experiences by:

- Leveraging human and technical resources by bringing together different key actors within the value chain, including public sector institutions, academia and other specialized technical institutions, the producers themselves. For the implementation of activities, the project will rely on existing structures while strengthening them and ensuring the mainstreaming of climate change and adaptation solutions. This contributes to sustainability while ensuring consideration of climate change aspects in future interventions. The RORA are prime example of this approach.
- Considering additional infrastructure and activities required, complimentary to current and planned investments and projects aimed at improving water management in the region and the country.
- Ensuring complementarity with other projects and programs run by public institutions promoting community involvement, training and communication strategies based on local practices, culture, and social norms to effectively promote behavior change.

[96] https://www.itp.gob.pe/archivos/vtic/ACUICULTURA_002-2017.pdf, p.22

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8.6 The project has particularly benefitted from the experience of the PNIPA project, financed by the World Bank and led by PRODUCE. In It is important to indicate that from the review of some subprojects financed by PNIPA which is a program of the Ministry of Production, the following experiences have been identified in Peru and from which the proposed project adopts the lessons learned in its components, these being the following:

8.6.1 The subproject PNIPA-ACU-SEREX-PP-000830-V2 "Technology transfer in the primary processing of rainbow trout (*Oncorhynchus mykiss*) and the implementation of the cold chain in the post-harvest until its commercialization of the "association of breeders of southern rainbow trout" in district of Condoroma, espinar, Cusco", gives us as a lesson learned that the beneficiaries learned, to use the ice machine, within which they also learned to make the ice inside the conservation chamber, they also learned to give added value to the trout, in the evisceration, and filleting cut, in stowing with whole trout ice and eviscerated since with this it maintains its conservation for longer in its commercialization. This experience confirms the need for value addition and the importance of conservation means for AREL and AMYPE fish farmers, strengthening the marketing stage of the value chain, having an important link with Component 3 of the project and the activities linked to the installation of primary processing plants.

8.6.2 The subproject PNIPA-ACU-SFOCA-PP-000272-V2 "Capacity building in design, construction and installation of floating cages based on high-density polyethylene to increase the production of rainbow trout (*Oncorhynchus mykiss*) culture for adverse environmental conditions, in Lake Titicaca", gives us as a lesson learned the vital knowledge transfer comparing floating cage technology, diagnosis, design and installation of cages, environmental factors in culture structures and economic aspects so that they can efficiently face the design, construction and installations of floating cages of HDPE material as well as the management of production in polyethylene cages. The experience indicated provides us with relevant information on the evaluation of studies linked to the implementation of HDPE cages applied to rainbow trout culture and the economic feasibility of their implementation, as well as the importance of training for the use of these. Within this framework, the Project within component 2, referring to innovative aquaculture technologies, has considered the implementation of this type of HDPE cages for the areas of Puno and Huánuco where trout culture is carried out in high Andean lakes and lagoons, in addition this technology is complemented with training and technical assistance for the use of this technology.

8.6.3 The Subproject PNIPA-ACU-SEREX-PP-002043-V2 "Improvement of access and use of management tools for planning, monitoring and evaluation of the trout production process in floating cages in the Puno region", gives us as a lesson learned regarding the importance of having a computer system of the trout breeding process, to have better control in feeding, Since it allows to adjust the rations according to the evolution in their growth of the trout throughout the culture. Likewise, production formats allow us to know the real cost of production and productive factors. the application of Good Aquaculture Practices has made it possible to reduce the mortality rate throughout the production process. This project ratifies the need for technological tools that allow monitoring the various physical-chemical parameters of the crop water, allowing an adequate management of good aquaculture practices, calculations of feed rations, densities, among others. The project within component 2 has considered the implementation of monitoring systems for the development of aquaculture crops, which are important for the management of aquaculture crops in the face of various adverse events caused by climate change; In addition, this information is an important input for the management of the information contemplated for the Regional Resilient Aquaculture Observatories (ROAR) contemplated in component 1 of the project.

8.6.4 The subproject PNIPA-ACU-SIA-PP-000816-V2, "Technical assistance in good aquaculture production practices for the cultivation of rainbow trout (*Oncorhynchus mykiss*) in floating cages with the association of Andean Colca trout producers of the district of Caylloma, province Caylloma, Arequipa region", gives us as a lesson learned that the cages implemented of HDPE allow a better control of the production process, an improved trout feeding and a better

conservation of the ecosystem where this culture is carried out. This experience highlights again the viability regarding the use of HDPE cages for trout farming which is favorable not only for control and management but also for the proper care of the environment; These cages are a technological proposal of component 2, which will complement this aquaculture infrastructure with aerators, automatic feeders and water monitoring systems that contribute to environmentally sustainable aquaculture management.

8.6.5 The subproject PNIPA-ACU-SIA-PP-000089-V2 "Adaptability of three varieties of growing trout with the use of concentrates in floating cages under conditions of the San Jose de Uzuña dam, Polobaya district, department of Arequipa", shows us that environmental variables (temperature and oxygen mainly) have a great impact on the management of aquaculture production (densities, feeding rates, mortalities, among others), for example it has had that in the rainy season months of February and March the waters become more turbid by the entry of the rivers, and also the presence of suspended matter that adheres to the nets and lowers the oxygen in the trout, reaching 2 to 3 ppm of oxygen causing death of trout. In the other months there are records of 5 to 7 ppm of oxygen. The behaviour of the various trout varieties in the face of changes in hydrometeorological variables will be taken into account by the project team, and the experience of this particular project could be presented as an important experience to share in the training sessions. The early warning system and the relationship with the National Service of Meteorology and Hydrology of Peru (SENAMHI), will allow the project team to prevent any impact during the implementation of the project; and this is accompanied by the monitoring systems that are implemented in the aquaculture farms within the framework of Component 2 of the project, in addition to the implementation measures of oxygenators and feeders that will work with renewable energy sources.

Table 3: Cost Effectiveness of project activities and Alternatives Considered

Component	Climate change related problem	Expected Concrete Output	Measures envisaged	Measures Adopted	Justification of the selection
1. Governance, Knowledge Management and Access to finance for sustainable aquaculture	Poor sectoral governance is preventing the effective design, implementation and enforcement of policies to ensure climate responsive aquaculture.	1.1 Strengthened regulatory system	No intervention at the level of laws and regulations. Mapping of all legal and regulatory norms related to aquaculture in the regions, identification of gaps. Strengthen regulatory framework. Focus on sanitary regulations associated with aquaculture production. Address zoning for efficient aquaculture, especially in Lake Titicaca Updating Regional Aquaculture plans Preserving water quality	Mapping of all legal and regulatory norms related to aquaculture in the regions, identification of gaps. Strengthen regulatory framework. Focus on sanitary regulations associated with aquaculture production. Address zoning for efficient aquaculture, especially in Lake Titicaca	Climate-responsive aquaculture is dependent upon the presence of a transparent regulatory framework in which measures are enforceable and enforced. Given the weakness of the regulatory framework along all three dimensions, no intervention would be prejudicial for program credibility. The project had a choice of going in depth in one of the areas of concern or have a lighter intervention across multiple areas of concern. The project chose the broader approach, expanding upon initiatives developed by single agencies but focusing on facilitating inter-agency cooperation to improve implementation of regulation and take advantage of economies of scale. This is effectively extending the reach of the

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Component	Climate change related problem	Expected Concrete Output	Measures envisaged	Measures Adopted	Justification of the selection
			Development of new instruments to strengthen monitoring and enforcement of key regulations.	Development of new instruments to strengthen monitoring and enforcement of key regulations.	project and minimizes costs. The focus on sanitary regulations stems from the nutritional importance of rainbow trout for the populations of those regions, and the need to have strong regulations in place to ensure that egg imports are disease free. While SANIPES leads the process, the project takes advantage of economies of scale by strengthening the instruments used to monitor and implement norms thus strengthening enforcement in key bottleneck areas.
		1.2 Strengthened Institutional system for climate-responsive aquaculture.	No training of public sector employees. Training delivery through workshops principally targeting public sector employees. Development of online training modules Focus on the development of self paced training modules. Gender sensitization training.	Combination of training workshops, online training modules and gender focused training.	Institutional capacity of public sector employees is a long recognized weakness of the public sector in general in Peru, across levels of government. Not addressing training and capacity development within the public sector. Developing the capacity of the public sector to understand and anticipate impact of climate change is key to the success of the operation, The focus was especially in ensuring that the delivery model for the capacity development program suited the circumstances of the public sector especially at the regional level. high turnover of staff has crippled the effectiveness of the public sector and limited the impact of capacity building initiatives. To address this issue, project focused on developing self-paced training modules which could be made available to new incoming staff at any time, as a cost effective solution to mitigate the impact of staff turnover. While it is unlikely that the project can prevent staff turnover, it can ensure that on-boarding of new staff is readily available thus offering more continuous support to trout farmers. This is both cost-effective and strengthens sustainability.
		1.3 Enhance the	Creation of a stand-		The creation of stand-

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Component	Climate change related problem	Expected Concrete Output	Measures envisaged	Measures Adopted	Justification of the selection
		quality of the Knowledge Base	alone regional observatory. Strengthen the capacity of an academic institution. Develop a platform which convenes local knowledge and incentivizes stakeholders to produce quality information regarding local trout aquaculture on a regular basis and share it.	Develop of a virtual platform to assemble academic and technical institutions to develop and share quality data and analysis regarding trout farming.	alone observatory required a substantia upfront financial commitment beyond the capacity of the project. Moreover, sustainability of such institutions beyond the implementation period was a concern. While Multiple institutions provide support to aquaculture in some way, none was determined to possess sufficient resources to meet the requirements of the trout farmers. Focusing all resources in only one institution carried additionally the risk that the institution after a period loses interest and staff. The virtual platform, which included all stakeholders who have the capacity to participate, leverages local resources, and enables these institutions to come together as a network to support aquaculture in their region. Furthermore, upfront costs and fixed costs are limited. Overall for sustainability, cost effectiveness and practicality, the Virtual ORAR model was chosen, with emphasis on support delivery modes to ensure maximum reach.
		1.4 Improve thematic knowledge and create networking opportunities	Create communities of practice. Workshops and Training sessions. Webinars. Study Groups.	Communities of Practices Webinars Trainings	Variety of methods have been envisaged to take into account issues relating to connectivity and travel within the regions. Communities of Practices have been used by other projects in related space, so that participants are likely familiar with them. Communities of Practice rely on RORA (which is described above) as well as professional associations and organizations when they exist, thus leveraging existing social infrastructure, Webinars will leverage resources of implementing agency (CAF) to provide best practice example from the region. Facilitates contact with

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Component	Climate change related problem	Expected Concrete Output	Measures envisaged	Measures Adopted	Justification of the selection
					hard-to reach stakeholders, such as financial institutions.
		1.5 Enhanced Capacity of Aquaculture communities about public policies data and research	TA on access to finance. TA on norms and regulations.	TA on access to finance. Short Teerm TA vs. Long Term TA.	Insofar as Regulatory framework was work in progress, it was determined that TA on regulatory system was not an efficient use of resources. It was determined that LT TA would likely be more cost-effective as application process for available funding is iterative. One of the identified gaps was the lack of knowledge and understanding of funding sources and their procedures. Improved adherence to funding process and procedures will benefit trout farmers and is expected to have a multiplier effect on available funding.
2. Innovation and technology transfer mechanisms are improved and/or implemented to promote resilient aquaculture activity in Huanuco, Junin and Puno.	Limited reactive capacity due to poor environmental monitoring and statistical information on aquaculture development for adaptation to climate change Inefficient aquaculture production which limits economic gains and compromises	2.1 Improved Risk Prevention and Management	Implementation of an early warning system applicable to aquaculture by region. Implementation of a national alert system Implementation of contingency plans. Implementation of a national statistical information system for aquaculture Implementation of a statistical information system for each region.	Not intervening in terms of enhancing risk prevention and management capacity. Implementation of an early warning system applicable to aquaculture by region. Implementation of a national alert system Implementation of contingency plans Design and implementation of a National Water Resources Assessment Program Implementation of a national statistical information system for aquaculture Implementation of a statistical information system for each region Implementing all of the above.	The approach of the project is to take a broad and holistic approach to addressing issues by leveraging existing infrastructure and ongoing activities from agencies operating on the ground and filling the gaps as needed. SENHAMI has meteorological monitoring stations in all regions of the country, which can be retrofitted to fit the purpose of early warning systems. According, the system will be complemented with new equipment by region to create EWS. This is both cost-effective and ensures sustainability as SENAMHI will be responsible for operation and maintenance of the system, Contingency plans will leverage the existing work of government agencies in addressing climate change and fill gaps. Centralized statistical information system will provide a central repository easily available to those who require the

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Component	Climate change related problem	Expected Concrete Output	Measures envisaged	Measures Adopted	Justification of the selection
	water quality. Impact on aquaculture farming infrastructure and processes on land and in lagoons due to the effects of climate change and flooding				information.
		2.2 Promoted Technologies to help adapt production systems to climate change	Water Recirculation Systems along with photovoltaic system. Probiotics, including research and testing. Microbubble aerator with solar panel, installation, and maintenance for two years. Oxygenators with Photovoltaic energy source. Weather Resistant HDPE cages. Planting and Reforestation projects. Technical Assistance, training and mentoring in the use of the technology.	Standardized technology for individual aquaculture farmers Tailored technology transfer depending on circumstances. Individual technology Vs. Collective Technology. Biofloc	To maximize the impact, it was decided to tailor technology transfer to the specific cases of target population. Gains in terms of improved targeting offsets increased technical assistance required for onboarding technology. Likewise, Biofloc is not considered because it is not suitable for trout farming, it is more appropriate for other types of species such as shrimp, tilapia and Amazonian fish; Similarly, offshore cages are not considered since they are more adaptable to marine conditions and not lakes and lagoons. To increase the number of beneficiaries water recirculation system (RAS) oriented mainly to the production of fingerlings which constitute a bottleneck for efficient trout farming. Taking into account that the technologies must be supported by small producers, it has been considered that the RAS systems are one per region for seed production and not for meat production, this because of the cost it has, in the same way the RAS systems will serve for training and training of producers, as well as research, having a greater reach and benefit to all producers in each region. Similarly, water collection (planting and reforestation project per region to maximize impact on the largest number of participants.

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Component	Climate change related problem	Expected Concrete Output	Measures envisaged	Measures Adopted	Justification of the selection
		2.3 Enhanced capabilities of aquaculture communities and technologies for adaptation.	TA and transfer of Knowledge. ST/TA.	Long Term TA and transfer of knowledge.	To ensure appropriate onboarding and ongoing efficient maintenance of technology.
		2.4 Improved Environmental and Social Management with a Gender Perspective.	Development of Environmental and Social Management Plan with a Gender Perspective.	Development of Environmental and Social Management Plan with a Gender Perspective	Leveraged enhanced institutional capacity and improved regulatory framework to introduce inclusion and safeguard measures. Leveraged technology allocation criteria to enhance likelihood of enforcement of PGAS.
Component 3: Value and production chains of resilient aquaculture activities will help diversify aquaculture producers' livelihoods and improve their food security	Marketability of aquaculture production must be improved to ensure formalization of producers and adherence to quality standards and climate-responsive aquaculture.	3.1 The aquaculture value chains are strengthened, and climate related losses are reduced.	Primary processing plants are built or improved. TA in the development of business plans for eligible trout farmers. Development of sileage areas. Quality Standards, in terms of gender certification.	Primary processing plants are built or improved. TA in the development of business plans for eligible trout farmers. Development of sileage areas. Quality Standards, in terms of gender certification. All of the above.	The approach of the project is to take a broad and holistic approach to addressing issues by leveraging existing initiatives and infrastructure. In Puno existing infrastructure will be retrofitted. In Huanuco and Junin it will be built from scratch in existing technical centers which are located strategically and are familiar to producers. This ensures accessibility and sustainability as those centers will be responsible of operation and maintenance.
		3.2 Marketing strategies are implemented for each of the primary processing products	Development of market research. Development of a collective brand. Inclusion of aquaculture products in virtual marketing stores Manage the adoption of an international certification (ASC, Global GAP, Friends of the Sea, etc.) Implementation of a national rainbow trout consumption campaign.	Development of market research. Development of a collective brand. Inclusion of aquaculture products in virtual marketing stores.	Trout from farming centers that incorporate clean technologies must have recognition, so the generation of a collective brand will be important to give such identification to the markets. Similarly, for these types of products that have a collective mark, a market study must be developed for a broad identification of commercial channels where they can be valued. Also, virtual commerce has increased it is important to include these differentiated products in virtual commerce platforms. The adoption of an international certification has not been considered because of the standards

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Component	Climate change related problem	Expected Concrete Output	Measures envisaged	Measures Adopted	Justification of the selection
					they have oriented in those generally applied by large producers who have the financial capacity to sustain it. Likewise, it is not considered a national campaign for the consumption of rainbow trout produced with clean technologies, since the nutritional value is the same as in other fish farms.
		3.3 Enhanced capacities of aquaculture communities about commercial and marketing activities	Formulation of complementary business plans to trout farming. Participatory workshops focused on the formulation of business plans that allow participants appropriation. Training and mentoring t in the administration and execution of business plans with a commercial focus. Identification of funding sources for business plans. Design a national financing program for business plans. Hiring a team of experts for the formulation of business plans.	Formulation of complementary business plans to trout farming. Participatory workshops for the formulation of business plans that allow the appropriation of these. Training and accompaniment in the administration and execution of business plans with a commercial focus Identification of funding sources for business plans.	The selected alternatives that contribute to capacity building and financing management consider the formulation of business plans through participatory processes that generate empowerment towards them. In addition, in this same process the identification and application to existing sources of financing locally and regionally, as well as in the training to manage and execute a business plan that strengthens the productive and commercial capacity It is not considered a national financing program for business plans, since there are other sources of financing that can complement the project, likewise, the hiring of only experts for the formulation of business plans does not ensure the execution of participatory processes for the empowerment of the same by the population to be benefited.
		3.4 Improved and implemented and Environmental and Social Management Plan with a Gender Perspective.			

E. Describe how the project is consistent with national or sub-national sustainable development strategies, including, where appropriate, national adaptation plan (NAP), national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

The project is aligned with the following policy instruments, plans and strategies:

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9.1 Environmental Norms and Regulations

9.1.1 **Final Report of the Multisectoral Working Group on the Nationally Determined Contribution (NDC) of**[97] Peru This is the framework for addressing climate change in Peru. The Government of Peru has designed adaptation measures in five thematic areas to address the risks associated with extreme climate change events. These measures address fisheries and aquaculture as priority areas, covering 18 measures, six of which are aquaculture.

9.1.2 **Updated report on Nationally Determined Contributions for 2021-2030,** which commits to contribute to the global adaptation goal by reducing current and future damage, potential disruption and losses. It also highlights the use of the opportunities offered by climate change to pursue sustainable and resilient development in five thematic areas: (i) Agriculture; (ii) Jungles; (iii) Fisheries and aquaculture; (iv) Health; and (v) Water.

9.1.3 **Framework Law on Climate Change (Law No. 30754),**[98] especially Article 15, which specifies that the three levels of government will work together and in coordination to adopt climate change adaptation measures that guide the implementation of the NDC of the Paris Agreement specified in the previous point. In the aquaculture sector, the following adaptation measures have been prioritized.

9.2 Aquaculture-Specific Laws and Regulations

9.2.1 **Strengthening aquaculture management** in the context of climate change. The aim is to ensure that information and management tools for aquaculture investment and intensification consider the opportunities and risks associated with climate change. These instruments relate mainly to the generation of information on demand, statistics, employment and replication of business plans, development of strategies and procedures for the granting of rights.

9.2.2 **Capacity building in good health and safety practices in aquaculture:** The purpose of this program is to strengthen the capacity of fish farmers to adopt good health practices (hygiene, sanitation, safety and waste management) to ensure the sanitary quality and safety of aquaculture products in the event of rain, floods, droughts and abnormal waves.

9.2.3 **Capacity building in good environmental practices**: The purpose is to reduce anthropogenic pressure and increase the adaptive capacity of aquaculture systems to cope with the impacts of climate change. These good practices mainly concern the management of effluents and sludge using adequate infrastructure for treatment and discharge; manage undigested feed residues and decaying organic matter; control the application of chemicals; and systems to assess and monitor biological and chemical parameters that may affect ecosystem resilience.

9.2.4 **Managing current and future climate change risks in the assessment of areas for aquaculture:** The purpose of this program is to ensure that the assessment, identification, and selection of viable areas for aquaculture activities includes an assessment of climate change risks to water resources and aquatic environments. This will help prevent aquaculture infrastructure from being exposed or vulnerable to the dangers of climate change.

9.2.5 **Implementation of technological knowledge for the production chain of aquaculture species in the context of climate change**: The purpose of this program is to apply technological knowledge, such as increasing feed efficiency, alternatives to the use of fishmeal and fish oil, aquaculture of native herbivorous species and regulatory incentives.

9.2.6 **Supreme Decree number 164-2021**[99]: defines the pillars of the Government's General Policy for 2021-2026, including some related to aquaculture activities, such as: i) Promoting welfare and social protection through food security; (ii) Economic reactivation and productive activities based on agricultural and rural development; (iii) Promotion of science, technology and

[97] https://www.minam.gob.pe/cambioclimatico/gtm/
[98] https://busquedas.elperuano.pe/normaslegales/ley-marco-sobre-cambio-climatico-ley-n-30754-1638161-1/
[99] https://busquedas.elperuano.pe/normaslegales/decreto-supremo-que-aprueba-la-politica-general-de-gobierno-decreto-supremo-n-164-2021-pcm-2002063-5/

innovation.

9.2.7 **National Adaptation Plan[100] (NAP):** This instrument identifies that the central problem of the fisheries and aquaculture sector is related to the productivity and use of hydrobiological resources for fishing and aquaculture activities in the context of climate change. The NAP also highlights the increased vulnerability of families involved in fishing and aquaculture activities in the context of climate change and the impact of climate change on the productivity of these activities.

9.2.8 Specifically, the project is aligned with the following Specific Priority Objectives (SPO) of the National Adaptation Plan:

9.2.8.1 **SPO 1:** "**Reduce the potential damage, disruption and consequent current and future losses of people and their livelihoods as a result of the hazards of climate change**." Regarding aquaculture, the objective is to strengthen the opportunities offered by climate change by improving the capacity of people engaged in aquaculture to implement good intensive aquaculture practices that consider the risks and opportunities of climate change and include the health, safety and quality of aquaculture products as key factors for food security. In addition, the implementation of good aquaculture practices will strengthen risk management in the assessment of aquaculture areas in the context of climate change. It will also support an aquaculture insurance system for extreme weather events and technologies to increase the productivity of aquaculture activities in a climate change scenario.

9.2.8.2 **SPO 3: "Reduce the potential damage, disruption and consequent current and future losses of people and their livelihoods as a result of the dangers of climate change**." It is essential to reduce the exposure of people involved in aquaculture to potential extreme weather events that could harm safety and productivity.

9.2.9 In addition, the project will contribute to the following measures defined in the NAP:

- Strengthening aquaculture management in the context of climate change (CAP13).
- Capacity building in good aquaculture health and safety practices (PAC14).
- Capacity building in good environmental practices to address the hazards of climate change (CAP 15).
- Management of current and future risks of climate change in the assessment of aquaculture areas (CAP16).
- Capacity building in the design and implementation of contingency plans to prevent and respond to extreme weather events associated with climate change in aquaculture (PAC17).
- Support the transfer and application of knowledge throughout the aquaculture production chain in the context of climate change hazards (CAP18).

9.2.10 **Supreme Decree No. 002-2017 of** the Ministry of Production - PRODUCE, approves the new Regulation of Organization and Functions of PRODUCE. It entered into force on February 2, 2017, and includes the creation of DGAAMPA, which includes the directorates of Climate Change and Fisheries and Aquaculture Biodiversity (DCCBPA) and Environmental Management (DIGAM). The functions of DCCBPA include formulating, proposing and promoting the implementation of programs, projects and actions to support adaptation to climate change and reduce greenhouse gas emissions from fishing and aquaculture activities. It also includes new provisions for monitoring, evaluating and governing NDCs.

9.2.11 **Innovation system** implemented by the Ministry of Production and the National Program for Innovation in Fisheries and Aquaculture, comprising the PNIPA[45] and the National Aquaculture Development Plan (2010-2021) [46]. The projects funded by PNIPA are undoubtedly a reference point for pilot testing of technological solutions.

[100] https://cdn.www.gob.pe/uploads/document/file/1485830/ANEXO%20RM.%20275-2020-MINAM%20-%20PLAN%20NACIONAL%20DE%20ADAPTACION%20AL%20CAMBIO%20CLIMATICO%20DEL%20PERU.pdf.pdf

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9.3 Environment and Climate Change

9.3.1 **Capacity building in the design and implementation of contingency plans to prevent and respond to extreme weather events**: The purpose of this program is to implement actions to use and manage information on climate hazards and vulnerabilities; capacity building in relation to early warning systems; and the formulation and implementation of contingency plans, protocols, alerts and responses.

9.3.2 **The National Climate Change Strategy (ENCC)[101]** it is the main management instrument that guides the long-term actions of the State in the field of climate change and contributes to the implementation of the NDCs.

9.3.3 National Environmental Education Policy (PNEA)[47]. This policy focuses on promoting environmental education based on the notion that nature is inseparable from human beings, their societies and cultures. The project highlights an adequate environmental and social management as complementary and indispensable for the implementation of all the proposed solutions.

9.4 Gender

9.4.1 **National Plan for Gender Equality 2012 - 2017[48].** This instrument aims to incorporate the gender approach in the public policies of the three levels of government of the Peruvian State, guaranteeing equality and effective protection of the human rights of women and men, non-discrimination and the full development of individual and collective potentialities and capacities.

9.4.2 Supreme Decree No. 008-2019-MIMP states that the National Gender Equality Policy is based on the following national regulations:

a) Norms that recognize and develop the content of the right to equality and non-discrimination:
- Political Constitution of Peru (article 2, 2; article 26; article 191).
- Law No. 28983, Law on equal opportunities between women and men.

b) Norms that prohibit discrimination in various areas:
- Law No. 26772, provides that job offers and access to educational training means may not contain requirements that constitute discrimination, annulment or alteration of equal opportunities or treatment. Regulation approved by Supreme Decree No. 002-98-TR.
- Law No. 30709, prohibits wage discrimination between men and women. Regulation approved by Supreme Decree No. 002-2018-TR.
- Legislative Decree No. 635, approves the Penal Code (article 323 – crime of discrimination), modified by Legislative Decree No. 1323.
- Supreme Decree No. 004-2009-TR, specifies behaviors that are considered discriminatory acts against domestic workers.

c) Norms that prohibit violence against women:
- Law No. 27942, for the prevention and punishment of sexual harassment. Regulations approved by Supreme Decree No. 010-2003-MIMDES.
- Law No. 29944, on Teacher Reform, which regulates disciplinary administrative processes against educational personnel reported for sexual violence against students.
- Law No. 30314, to prevent and punish sexual harassment in public spaces.
- Law No. 30364, to prevent, punish and eradicate violence against women and members of the family group. Regulations approved by Supreme Decree No. 009-2016-MIMP.
- Law 30403, prohibits the use of physical and humiliating punishment against children and

[101] https://www.minam.gob.pe/wp-content/uploads/2015/09/ENCC-FINAL-250915-web.pdf

adolescents.

- Legislative Decree No. 1408, to strengthen families and prevent violence, amended by Legislative Decree No. 1443.
- Legislative Decree No. 1410, incorporates the crime of harassment, sexual harassment, sexual blackmail, and dissemination of images, audiovisual or audio materials with sexual content to the penal code, and modifies the procedure for sanctioning sexual harassment.
- Legislative Decree No. 635, approves the Criminal Code (articles 108-B – crime of femicide; 121-B, 122 and 122-B – crimes of injuries due to family violence; 151-A – crime of harassment; 153 and 153- A – crimes of trafficking in persons; 153-B – crime of sexual exploitation; 153-C; 154-B – crime of slavery and other forms of slavery; 168-B – crime of forced labor; 170 to 177 – crimes against sexual freedom; 183-A – crime of child pornography; 183-B – crime of sexual propositions to children and adolescents, and 442 – offense against the person: mistreatment).
- Vice Ministerial Resolution No. 091-2015-MINEDU, regulates the disciplinary administrative process for teachers in the public sector.
- Supreme Decree No. 004-2018-MINEDU, Guidelines for the management of school coexistence, the prevention and care of violence against girls, boys, and adolescents.
- Ministerial Resolution No. 428-2018-MINEDU, approves the Technical Standard called "Provisions for the prevention, care and punishment of sexual harassment in technical-productive education centers and higher education institutes and schools".

d) Norms that establish measures that promote equality between women and men, including affirmative actions.

- Law No. 26859, Organic Law of Elections (article 116).
- Law No. 26864, Municipal Elections Law (article 10).
- Law No. 27683, Regional Elections Law (article 12).
- Law No. 28094, on Political Organizations (article 26)1.
- Law No. 29896, establishes the implementation of lactation facilities in public and private sector institutions promoting breastfeeding. Developed by Supreme Decree No. 001-2016-MIMP.
- Law No. 30367, protects the working mother against arbitrary dismissal and prolongs her rest period. Its regulatory standard is Supreme Decree No. 002-2016-TR.
- Law No. 30807, modifies Law No. 29409, which grants the right of paternity leave to workers in public and private activities.
- Supreme Decree No. 002-2007-MIMDES, provides for the implementation and operation of day care services through cradles or institutional *wawa wasi* in public administration entities.

e) Norms introducing gender considerations into state policies and interventions:

- Law No. 29083, Law that modifies article 47 of Law No. 28411, General Law of the National Budget System.
- Law No. 29700, includes unpaid work in national accounts. Regulation approved by Supreme Decree No. 056-2014-PCM.
- Law No. 29414, establishes the rights of users of the health service.
- Legislative Decree No. 1098, which approves the Law on Organization and Functions of the Ministry of Women and Vulnerable Populations (MIMP).
- Supreme Decree No. 003-2012-MIMP, approves regulations for the organization and functions of the Ministry for Women and Vulnerable Populations (MIMP).

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- Supreme Decree No. 003-2015-MC, approving the National Policy for Mainstreaming of the Intercultural Approach.
- Supreme Decree No. 005-2017-MIMP, provides for the creation of a mechanism for Equality of Gender in the entities of the National Government and of the Regional Governments.
- Supreme Decree No. 068-2017-PCM, which provides for the "diagnosis of wage inequality in the State".
- Supreme Decree No. 056-2018-PCM, approving the General Government Policy (paragraph 4.6 of article 4).
- Supreme Decree No. 027-2015-SA, Regulation of Law No. 29414, which establishes the rights of health services' users.[102]

9.5 Scientific Research and Innovation

9.5.1 **Law No. 30309**[49]**.** Law No. 30309 aims to promote Scientific Research, Technological Development and Technological Innovation through tax benefits applicable to expenditure on scientific research, technological development, and innovation projects.

9.6 Food and Health Safety Standards

9.6.1 **SUPREME DECREE NO. 022-2001-PRODUCE**[103]**.** This norm establishes health and safety provisions applicable to the development of aquaculture activity under the productive category of Limited Resource Aquaculture (AREL) and promote the development of aquaculture activity under the productive category of Limited Resources Aquaculture (AREL), ensuring public health to protect the sanitary status of the country where hydrobiological resources are located**.**

9.6.2 **Executive Presidential Resolution NO. 080-2020-SANIPES/PE**[104]**.** Sanitary Regulations approved for Environmental Sanitation activities in Homes and Commercial, Industrial and Service Establishments. This norm establishes health and safety provisions applicable to AREL to promote the development of aquaculture activities while ensuring public health and protecting the sanitary status of the country where the hydrobiological resources are located.

9.6.3 **SGC-MAIISANIPES**[105]**.** Manual of Indicators or Criteria of Food Safety and Hygiene for Food and Feed of Fisheries and Aquaculture Origin. It establishes, in accordance with national and international regulations, safety and quality indicates that food and feed of fishing and aquaculture origin must comply with throughout the production chain to be considered suitable for their consumption, in order to guarantee the sanitary safety of food of fishing and aquaculture origin in protecting the health of consumers and promoting safe food trade. Executive Presidential Resolution No. 064-2022-SANIPES/PE[106]**.**

9.6.4 **Guidelines for the preparation of technical manuals on sanitary matters, for the development of aquaculture activity.** This norm establishes guidelines for the preparation of technical manuals (good aquaculture practices and hygiene procedures), in sanitary matters and facilitate the operators of aquaculture production centers the processing of the sanitary authorization and / or the corresponding environmental management instrument, for the development of aquaculture activity, in compliance with the regulations on health and safety.

9.6.5 **Law No 28405**[107]**: Law on the Labeling of Manufactured Industrial Products** which establishes mandatory labeling requirements for industrial products manufactured for final use or consumption, which are marketed in the national territory in order to protect health.

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[102] [1]Available at https://www2.congreso.gob.pe/sicr/cendocbib/con5_uibd.nsf/AA7DBEFD6B737935052583D20057585C/$FILE/1757065-.pdf
[103] https://www.sanipes.gob.pe/documentos_sanipes/lin/13.%20R.%20P.%20E.%20N%C2%B0%20080-2020-SANIPES-PE.pdf
[104] https://www.sanipes.gob.pe/documentos_sanipes/ds/2001/64e18fbcd72872e6cb9edeadb9a44841.pdf
[105] https://www.sanipes.gob.pe/documentos_sanipes/guias/2018/3dd0379bdd2beeb13c573c1527d27bbc.pdf
[106] https://www.sanipes.gob.pe/documentos_sanipes/lin/24.%20R.%20P.%20E.%20N%C2%B0%20064-2022-SANIPES-PE.pdf
[107] 2ee71cdc176dfc5068950c11508f177a.pdf (sanipes.gob.pe)

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9.6.6 **General Fisheries Law DECREE LAW Nº 25977[108].** Regulates fishing activity to promote its sustained development as a source of food, employment and income and to ensure responsible use of hydrobiological resources, optimizing economic benefits, in harmony with the preservation of the environment and the conservation of biodiversity.

9.6.7 **Ministerial Resolution No. 059-2008-MINSA[109].** Sanitary standard that establishes microbiological criteria of sanitary quality and safety for food and beverages for human consumption.

9.6.8 **Ministerial Resolution No. 495-2008-MINSA[110].** Health standard for the manufacture of low-acidity and acidified packaged foods intended for human consumption.

9.6.9 **Ministerial Resolution No. 461-2007-MINSA.Technical Guide for the Microbiological Analysis of Surfaces in Contact with Food and Beverages.** This norm contributes to ensuring the essential sanitary quality in the manufacture, processing and sale of food and beverages intended for human consumption and the implementation of the Hazard and Point Analysis System.

9.6.10 **Supreme Decree No. 027-2021-PRODUCE.** [111] Regulation for the health of hydrobiological resources within the scope of competence of the National Fisheries Health Agency (SANIPES)

9.6.11 **Supreme Decree No. 027-2021-PRODUCE Regulation for the Health of Hydrobiological Resources** within the scope of competence of SANIPES https://www.sanipes.gob.pe/documentos_sanipes/reglamento/19.%20D.%20S.%20N%C2%B0%20027-2021-PRODUCE.pdf

9.7 **Nutrition**

9.7.1 Implementation Plan of the **National Program "*Let's Eat Fish*"[50],** which encourages the consumption of highly nutritious hydrobiological products in Peru and focuses on articulating the supply and demand sides. It is essential to consider that trout is a highly nutritious food; It is an important source of potassium and phosphorus, moderate in sodium, magnesium, iron and zinc, compared to other fresh fish.

9.7.2 **National Strategy for Food and Nutrition Security 2013-2021**[51] **(ENSAN).** According to ENSAN, food and nutrition security refers to the permanent physical, economic and socio-cultural access of all people to sufficient, safe and nutritious food, so that it can be used adequately to meet their nutritional needs.

F. Describe how the project 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.

10.1 The project's Environmental and Social Management Plan, included as an annex to this proposal conforms with the regulations and policies in force in Peru regarding the aquaculture sector and the management of the resources and activities included in the project. This plan establishes actions aimed at minimizing all risks and ensuring compliance with the safeguards of the Environmental and Social Policies of the Adaptation Fund, as well as the safeguards of CAF (the Implementing Entity). To ensure its implementation, the Project Team will include a specialist in Environmental and Social Issues, who will follow up on the environmental and social management aspects of the activities implemented, including gender. This specialist will work with officials of the Directorate of Representatives of Regional

[108] https://www.senace.gob.pe/wp-content/uploads/filebase/senacenormativa/NAS-4-8-01-D-LEY-25977.pdf
[109] https://www.sanipes.gob.pe/documentos_sanipes/rm/2008/d8b2e8e5dd1785d3ba7f3d759851587b.pdf
[110] https://www.sanipes.gob.pe/documentos_sanipes/rm/2008/1ec421a88fff626921c1c34a8bdb377d.pdf

[111] https://www.sanipes.gob.pe/documentos_sanipes/reglamento/12.%20R.%20P.%20E.%20N%C2%B0%20075-2020-SANIPES-PE.pdf

Governments and will benefit from the support and guidance from MINAM and CAF's environmental, social and gender specialists.

10.2 Additional information on laws and enforcement actions can be found in the table in section 9 of this document. The project will focus on enforcing laws and regulations within the purview of the ministry such as (i) Sustainable production measures established by PRODUCE, such as the use of Good Aquaculture Production Practices (GAP), (ii) institutional strengthening, (iii) use of local development and management schemes, (iv) sanitary certifications, (v) production of safe products, biosecurity, vaccination protocols, (vi) traceability and application of the precautionary principle to minimize possible environmental impacts and irreversible changes in the ecosystem. Nonetheless, agencies responsible for climate related regulations, through project activities identified in component 1 will rely on inter-agency cooperation to enhance their enforcement capacity.

10.3 **National Environmental Policy** formulated by MINAM, the governing body and competent authority in environmental matters, issued by Supreme Decree DS No. 012-2009-MINAM. This policy is one of Peru's main management instruments for sustainable development. It considers the Rio Declaration on Environment and Development, the Millennium Development Goals of the United Nations and other international treaties and declarations signed by the Peruvian State in environmental matters. Considering the integration of social, environmental, and economic aspects of public policies and the needs of current and future generations, the National Environmental Policy is a mandatory instrument that guides public and private activities.

10.4 **National Biodiversity Strategy approved by Supreme Decree No. 102-2001-PCM**. This is a shared, consensual, and strategic vision of national development, which guides future actions aimed at generating economic and socio-ecological benefits for present and future generations.

10.5 **Law No. 26839 on the Conservation and Sustainable Use of Biological Diversity**, which regulates the conservation of biological diversity and the sustainable use of its components. In the context of sustainable development, the conservation and sustainable use of biological diversity involves: (a) conserving the diversity of ecosystems, species and genes, as well as maintaining the essential ecological processes on which species depend for survival, (b) promoting equitable and equitable sharing of the benefits of biological diversity, (c) promoting education, information exchange and human resource capacity-building, scientific research and technology transfer related to biodiversity and the sustainable use of its components; The project addresses all these aspects.

10.6 National Gender Equality Policy D.S. 008-2019-MIMP and Law No. 28983 on equal opportunities between men and women, which establishes the regulatory, institutional and public policy framework at the national, regional and local levels, to guarantee the rights of women and men to equality, dignity, free development, well-being and autonomy, avoiding discrimination in all areas of their public and private life, and aspiring to full equality. The project will be aligned with these regulations by prioritizing women and women heads of household to receive benefits and employment in silage plants, as well as giving them a voice and voting rights in consultative workshops, meetings and community assemblies held as part of the project.

G. Describe if there is duplication of project with other funding sources, if any.

11.1 Currently, there are no similar projects that focus on strengthening the resilience of the most vulnerable fish farmers in Huanuco, Junin and Puno in Peru. There are no other comprehensive resilience programs that address policy instruments, procedures, training, improved opportunities for access to finance, technologies for innovation and resilience, and strengthening the competitiveness of fish farmers in the trout value chain market.

11.2 It should be noted that the project "Adaptation to the Impacts of Climate Change on the Coastal and Fishing Marine Ecosystem of Peru", financed by the Adaptation Fund, implemented by PROFONAMPE and executed by PRODUCE since 2018, addresses a different economic activity, since it is the informal fishing of species such as giant squid, yellowfin tuna and hake, among others, that it is completely different from aquaculture.

11.3 This project directly benefits the most vulnerable rainbow trout aquaculture producers, such as AMYPE

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and AREL, who make up low-income families that lack access to financing offered by first-tier banks or other funds, such as PNIPA, which requires counterpart funds or the acquisition of credit. Therefore, there are currently no similar efforts or initiatives that are being duplicated or carried out in the regions of Huanuco, Junin and Puno.

11.4 However, it should be noted that the lines of intervention of the PNIPA have included the implementation of various studies and technical assistance initiatives, which have yielded lessons learned that have been considered for the design of this project. According to the public databases of the PNIPA located in the Geosnipa[112], during the course of PNIPA project implementation period (2017 – 2021) at least 11 subprojects executed by small producers AREL and AMYPE have experimentally used photovoltaic energy for oxygenation and feeding of the rainbow trout. Additionally, 12 trout subprojects using innovative floating cages designs, as well as 5 subprojects that have used small experimental recirculation systems for the cultivation of tropical species. These projects, while innovation pilots, are considered to have given positive results. These experiences confirm the technology choices offered to producers in the regions of interest in the context of this project. Furthermore, it should be noted that implementation was achieved through the strategic partnerships between producers, suppliers, and academia who jointly implemented each project according to their responsibilities defined in their formulation. This is precisely the dynamic the proposed project is trying to incentivize through the development of RORA, among other activities. A list of subprojects financed by PNIPA can be found in Annex 4 of this project proposal.

11.5 With regard to support for fish farmers, mainly in the categories AREL (limited resources aquaculture) and AMYPE (micro and small enterprise aquaculture) at the national level we National Program 0094, funded directly through the Peruvian central budget called "Management and development of aquaculture" whose main objective is to strengthen the use of hydrobiological resources in Peru "taking into account the prioritized culture species, according to the National Aquaculture Development Plan. The PP0094 carries out the following activities:

- Generation and dissemination of documents and technical standards for investment in aquaculture.
- Studies to expand the aquaculture.
- Promotion, management, and evaluation of aquaculture development.
- Implementation of standards and management instruments for surveillance and control in health and safety.
- Implementation of research plans in aquatic pathobiology.
- Sanitary monitoring of aquaculture activities.
- Financial support for aquaculture.
- Technological development.
- Training and technical assistance actions.

11.6 PP0094 is led by PRODUCE, with the participation of other institutions such as SANIPES, FONDEPES, IMARPE, ITP. Despite the broad agenda, the budget to carry out these activities is insufficient and therefore its impact thus far has been marginal.

11.7 In the department of Puno there is the Special Binational Project of Lake Titicaca (PEBLT), this project aims to contribute to raising agricultural development in border areas in a sustainable and inclusive competitive manner; coordinated and articulated with public and private actors within the scope of intervention through the execution of activities, programs and projects of public investment of agricultural infrastructure and irrigation, as well as sustainable agricultural development, forestry and ecosystem recovery, as well as contributing to investment in border areas; within its structure it has the Agroeconomic Development and Ecosystem Recovery Unit, and it is here in which they operate a laboratory for the recovery of native hydrobiological species of Lake Titicaca, and through the

[112] GEOSNIPA is a technological platform of spatial information of the subprojects in Fisheries and Aquaculture promoted by the PNIPA, as well as information related to the competitions and the promotion of the governance of the sector.

knowledge they generate they will participate in the knowledge management platform that will operate through the Resilient Aquaculture Observatory

11.8 While currently there is no project actively intervening in the same space, the project recognizes that cooperation between stakeholders will strengthen the impact of all participants. This project has been able to take advantage of some of PNIPA's experience in designing its intervention, and it is expected that PNIPA, in turn, should the program be renewed will be able to learn from the initial execution of this project's activity. Through RORA, experiences will be shared, and the common platform will enable opportunities for different actors to learn and cooperate to the benefit of trout farmers in these regions.

H. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

12.1. Capacity development is a core tenant of the project and is this is reflected across the board in all project components.

12.2. The project will support the development of institutional capacity through the review and drafting of new governance tools, such as plans and regulations, to improve articulation, coordination, and cooperation between officials from different institutions working in the aquaculture sector. These public policy instruments will also contribute to the sustainability of different initiatives.

12.3. The project aims for farmers to learn and master the resilient technologies and infrastructures that will be implemented as part of the project, ensuring that they acquire technical knowledge to manage and maintain the solutions provided and learn about the impact, vulnerabilities and risks of climate change for aquaculture.

12.4. Different tools such as demonstration sessions, workshop proceedings, technical guides, manuals and others, will serve to share with the entire aquaculture community information and knowledge on technological solutions, resilient infrastructure, structuring funding requests, management of information provided by EWS and implementation of appropriate responses as part of contingency plans.

12.5. The project also, through the construction of a network of institutions that act as an observatory of the impact of climate change, tries not only to facilitate access to updated and relevant information on good productive practices that increase resilience to climate change, it also seeks to involve more actors in the collection of relevant local information on the situation of hydrobiological resources to improve research inputs, and also to strengthen the bases of relevant public policies.

12.6. Training centers and universities will play a key role in sharing valuable information with all aquaculture producers and ensuring that lessons learned are properly communicated and disseminated. The project also considers publishing a document systematizing the results and lessons learned to sensitize institutions, funders, fish farmers and society in general about the importance of the aquaculture sector for the development of Peru, the value of trout as a nutritious food and, especially, the sustainability and replication potential of this initiative in other regions. Additionally, in cooperation with the communications area of MINAM and CAF, audiovisual material will be produced so that it can be shared on social networks and the internet in general and can be presented at universities and training centers.

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

13.1 The participatory process was divided into multiple stages, coinciding with the stages of the FA process. In consideration and respect for the expectations of the eventual beneficiaries and impacted populations, they have been approached progressively, to obtain the greatest participation in each stage of the process while managing expectations of populations. The first phase focused on conceptualizing the intervention preparing a concept note to submit to the Adaptation Fund. The findings of such process were documented in the concept note and its annexes. The second stage is

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aligned with the preparation of the project that is submitted for FA review. Should the project be approved, a third stage in this participation process will focus on ensuring a successful launch to the implementation of the project.

13.2 The participative process associated with the preparation of the project proposal consisted of four desktop analysis of the secondary information available on the project theme and its political, economic, social, and ethical impacts[113]

- Desk top review
- Mapping of the actors, direct and indirect, involved in rainbow trout aquaculture.
- Outreach via virtual and face-to-face interviews, focus groups, and email exchanges.
- Validation of the project proposal and its activities.

Desk Review

13.3 The objective of the desk review was to obtain information on the circumstances of each region, provinces, and districts in the project's areas of action. The information obtained has allowed us to develop hypotheses that were considered in the definition of the mapping of actors. Among them:

- The need to proceed with a geolocation of the actors to identify ecosystems within the regions and focus participatory action on these ecosystems.
- The need to know the specific circumstances of potential beneficiaries AREL and AMYPES, to focus and customize interventions.
- The need to identify local influencers to facilitate the participatory process.
- The need for a longer approach process than had originally been considered, with respect to academia, to identify possible actors that can facilitate the process of production and socialization of information on trout aquaculture resilient to climate change.

Actor mapping

13.4 Stakeholder mapping consisted of identifying all actors who would be involved in the participatory process. The identification of actors consisted of updating the preliminary data, used to define the concept note. On the one hand, in the period between the beginning of the preparation of the concept note and the preparation of the proposal, the number of potential beneficiaries has changed. In Peruvian aquaculture, for the categories of AREL and AMYPES, variations occur very dynamically and frequently. Thus, producers that were previously informal have been formalized, and other producers and companies have disappeared. On the other hand, the process of preparing the proposal has needed to review and refine hypotheses and information received, regarding the level of interest of all actors in the value chain, as well as hypotheses on how each actor could participate in the context of project activities. At the end of the stakeholder identification process, lists were produced disaggregated according to the role of each actor within the value chain. Figure 4 below describes the relevant actors identified:

[113] By ethical impacts, the authors of this report refer to elements associated with respect for human rights and the dignity of people, considering the implementation of due safeguards.

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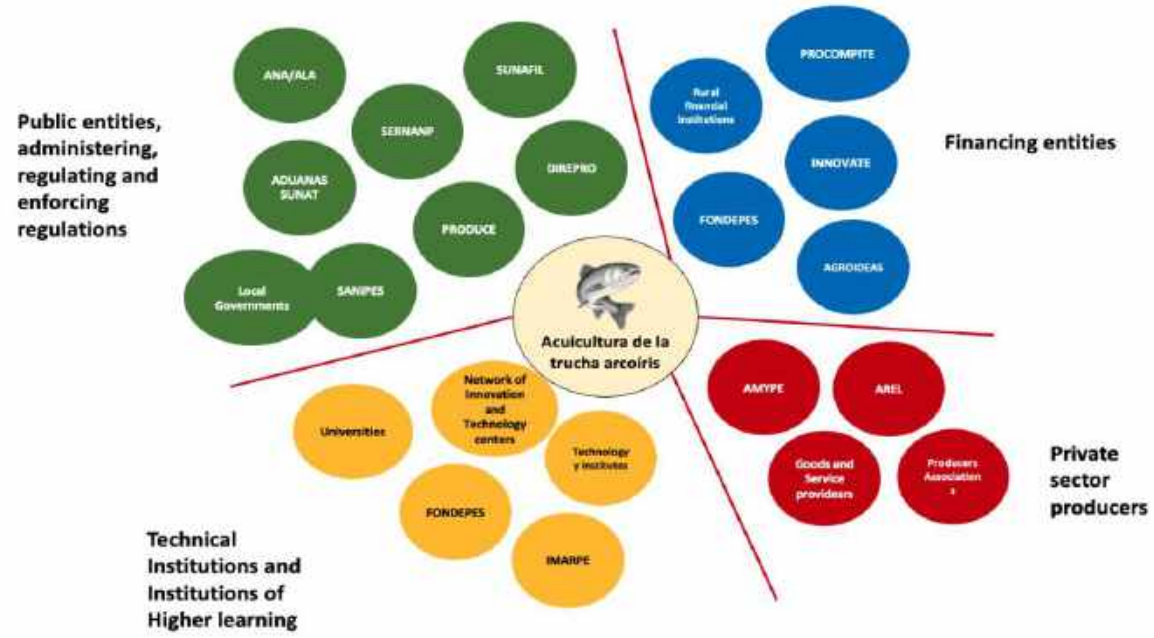

Figure 15: Actor Mapping

13.5 Secondly, a geolocation of the actors was carried out, focusing particularly on potential beneficiaries, that is, the producers AREL or AMYPES that could receive the technologies financed by the project. These actors were mapped geographically, considering their volume of production, and relevant social elements, such as the level of poverty and the participation of women in aquaculture activities. Lastly, we identified influencers, namely those stakeholders who hold clout and social respect within the community. Their involvement is important to ensure that the information regarding the project will be effectively shared with all those who are impacted by the project and, if necessary, prioritize actors to ensure their proactive participation in the proposal preparation process.

13.6 The mapping of actors allowed to identify the key actors within the ecosystem of the value chain, registering eventual entry points for an approach and allowing to anticipate elements of resistance to the project proposal and its activities. The information has also made it possible to define a typology of actors and prioritize those who can provide a positive impact to the project and its socialization. With this knowledge, a strategy was defined for the process of rapprochement and the construction of instruments to facilitate it. Also, it was possible to determine the most propitious places for the preparation and realization of the validation workshops.

Outreach

13.7 The outreach process consisted of establishing direct contact between potential beneficiaries and representatives of the institutions that could be involved in the proposal preparation process, with the aim of obtaining relevant information for the definition of project activities.

13.8 The intention of the preparation team was to approach the largest number of participants, regardless of their potential level of interest or influence. In the first round, an attempt was made to talk to all the identified actors. In a second round, influencer groups, allies and fans were prioritized.

13.9 The contact was conceived as an opportunity for the free exchange of ideas, actively listening to the actors. To facilitate the collection of information that we consider relevant from these interviews and interactions, the team designed questionnaires, which represented a guide to the conversation. At the methodological level, to ensure the participatory process, the actors must dictate the thread of the conversation.

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13.10 Within the ecosystem of identified actors, there are some who will support the implementation of the project and others who will be its beneficiaries. Attentive to these considerations, the approach had multiple axes:

13.10.1 Approach to the DIREPROS, as public entities responsible for the implementation of activities.

13.10.2 Approach to beneficiary entities.

13.10.3 Approach to public entities.

13.10.4 Approach to women and analysis and evaluation of gender inclusion and equity.

13.10.5 Approach to academic institutions.

Outreach to the entities responsible for project execution.

13.11 The approach to the executing entities focused on two main actions; The first was to familiarize the staff selected as the focal point of proposal preparation within each region with the content of the concept note, its scope, and any remaining information gaps at the end of the concept stage.

13.12 This accompaniment made it possible to direct the attention of the institutions to the expectations of the Adaptation Fund on the work of the implementing entities and the needs of human and financial resources necessary to ensure it. The approach to the responsible entities is essential to ensure continuity in the process of preparing the proposal. Although the project has been prepared with the direct participation of the DIREPROS, there were changes in personnel and change of leadership within the regions and their institutions; Consequently, it was important to ensure that potential implementing entities were informed of the content of the proposal and involved in the definition of implementation activities and modalities. This action also made it possible to identify weaknesses within the institutional environment and ensure that they were considered within the project. The second action consisted of ensuring that the entities in charge of the implementation of the project facilitate the work of approaching other relevant actors for the project, creating a cooperative dynamic from the preparation stage.

13.13 The approach to the entities responsible for execution was developed as a weekly interaction process between the DIREPROS and the proposal preparation team, made up of CAF officials and the CGA consultancy. The meetings were guided by a graphical presentation describing the content of the concept note.

13.14 In total, 16 working meetings were held with the DIREPROS, equivalent to 50 meeting hours, organized according to the following work plan:

13.14.1 Confirmation of the diagnosis of problems and needs of the actors in terms of improvements to the sustainability of rainbow trout aquaculture production towards climate change through the introduction of new technologies.

13.14.2 Challenges in institutional cooperation on issues associated with the development of sustainable rainbow trout production.

13.14.3 Analysis of the institutional environment, its problems and challenges, and preparation of activities that can respond to these challenges.

13.14.4 Responding to the needs of aquaculture producers through improvements and technological innovation.

13.14.5 Responding to the marketing needs of aquaculture producers.

13.14.6 Relevant elements on environmental, social and gender safeguards.

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Responsibilities regarding the implementation of the activities of a project, if approved by the FA. In general, these meetings involved the members of the DIREPROS directly linked to the accompaniment of aquaculture production. This usually included their directors, principal engineers and consultants who regularly cooperate with the DIREPROS.

Outreach private sector entities and beneficiaries

13.15 The objective of the approach to the beneficiary entities is to ensure the relevance and viability of the activities included in the proposal. The project preparation team included aquaculture professionals with solid knowledge of the environment and circumstances of each region and familiarity with local producers as field staff. Field experts made more than fifty visits to fish farmers in the 3 regions. During the approach process, the challenges of climate change for their production were analyzed in depth with the farmers. The field expert used the questionnaire as a guide.

On 6/16/23, we visited the farms of Mr. Eduardo Alarcón Cabrera and Ms. Dina Liberato Carmín Maraipata, Ambo, Huanuco.

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Lastly, on 6/20/23, our team visited the farms of Mr. Juan Carlos Yucra, Ms. Betsabe Torres Cruz, and Ms. Oswalda Maquera Llano in Chucuito, Puno.

On 6/14/23, our team visited El Ingenio Aquaculture Center in Junin and on 6/21 the technical center in Juli.

Outreach to other public sector entities

13.16 During the outreach process, the need to facilitate cooperation between public entities involved in aquaculture activity was recognized. In the context of the fieldwork, efforts were made to incorporate the largest number of institutions, sensitizing them to the objectives of the project and involving them in the participatory process. The entities that were tried to involve more systematically include the Regional Governments (GORE), which, in addition to the DIREPRO, interact with the aquaculture producer through other services and local governments.

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Outreach to Women

13.17 In the context of the outreach work, and as part of the gender analysis and evaluation, [114]emphasis was placed on ensuring that the challenges faced by women in their participation in aquaculture productive activity are considered, with the aim that this project can be a vehicle to address these difficulties and reduce gender gaps.

13.18 The outreach to women was carried out in several different ways, taking advantage of all the means that allow an interaction between these women, the institutions, and the team responsible for producing the FA proposal. Consequently, semi-structured virtual and face-to-face interviews were conducted with aquaculture producers and workers, and representatives of relevant public institutions; Field experts also visited the homes of women fish farmers as well as focus group interviews.

13.19 In the context of this focus group, information was collected and incorporated into the definition of the proposal – in particular:

13.20.1 The involvement of women occurs relatively more frequently at the level of product marketing, thus supporting the marketing of the product implies facilitating the involvement of women within the value chain.

13.20.2 At the production level, women have input in discussions regarding food prices.

13.20.3 The need to promote associativity on the part of women to have a greater impact on decisions that affect aquaculture producers.

13.20.4 Women are involved in decision-making in the face of crises of their productive capacity, in this sense they would be very involved in climate change issues.

13.20.5 It is difficult for women to access finance, since banks do not grant bank credit, with a reasonable interest rate, and this limits the opportunities for growth of their productive activity.

[114] The gender assessment is an annex to the proposal submitted.

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13.21 The following needs are reflected at the level of its sectoral activity:

13.21.1 Have more training to be able to better manage your company.

13.21.2 Use better information technologies to have better quality control and monitoring of your production.

13.21.3 Increased access to information on any eventuality that facilitates or endangers their work.

Outreach to Academia

13.22 Academia can play a central role in ensuring the sustainability of sustainable rainbow trout production in the regions of Junín, Huanuco, and Puno, generating, maintaining and socializing current and accurate information on the impact of climate change, rainbow trout aquaculture production and water quality, among others. The project recognizes this potential and advances an innovative proposal that consists of the creation of a Regional Observatory of Resilient Aquaculture, which is supported by existing structures and institutions. In the same sense, it facilitates cooperation to allow fish farmers, the community in general, to access recent and actionable information on the possible challenges associated with aquaculture resilient to climate change.

13.23 The objective of the outreach process was, on the one hand, to understand the relationships between universities, technology centers and CITES and local producers, and on the other to introduce and choose ways to maximize the impact of the creation of a regional observatory on resilient aquaculture (ORAR).

13.24 This outreach was carried out in two ways, on the one hand, through the interaction of the team and in particular the expert with institutions that have aquaculture support programs. In this case too, a questionnaire focused on academic institutions was developed to guide the field specialist, and meetings were held with members of the academy in each of the regions. In Juno, the meeting, was chaired by the dean of the Zootechnics faculty, joined by several members of the academic staff of the university and representatives of the University Peruana Los Andes, another private University focused on environmental studies and climate change[115]. Those present debated animatedly for a space of two hours, with a break of 10 minutes of relaxation for a snack. The main issues raised by the representatives of the UNCP were the need for quality scientific research and a common repository for the data that are collected in the different academic years. The need for information in Spanish was mentioned, [116]since most of the quality academic papers are in English, and the possibility for students

[115] The meeting was also attended by representatives of the Universidad Peruana Los Andes (UPLA), in the person of Eng. Wendi Guadalupe Llatance Ollarte, coordinator of the Environmental Protection Section.

[116] In the context of the reform of university institutions in Peru, the state has emphasized the need for academic institutions to present peer-reviewed research that is published in renowned specialized journals. Although this is an important element that allows to value the quality of

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to carry out internships in the fish farms of the beneficiaries of the project.

Figure 18: Meeting with Academia in Junin - 13 june 2023

13.25 Eng. Wendi Guadalupe Llatance Oyarte, coordinator of the Environmental Protection Section at the Universidad Peruana Los Andes (UPLA), highlighted the importance of building working synergies between the different universities present in the region, and expressed her institution's willingness to cooperate with joint academic development spaces, such as the initiative proposed in the project. The representatives of the academic institutions present expressed their interest in the project, which was transferred in the remise of letters of intent in support of the establishment of a Resilient Aquaculture Observatory for the region.

13.26 In Huanuco, the outreach was made during a meeting in the presence of representatives of the National University of Hermilio Validazal (Veterinary Faculty), University of Huanuco, the CITE Agroindustrial UT of Ambo, the Higher Institute of Public Technology Aparicio Pomares of Food Industries, as well as representatives of PRODUCE and DIREPRO, as well as representatives of the proposal preparation team at the DIREPRO offices in Huanuco. The meeting was interactive, as information relevant to the proposal was shared. In general, all participants recognized on the one hand the accuracy of the diagnosis and the possibility that the responses proposed by the Project could respond to the need of trout farmers within the region and could contribute to improving the resilience of this production to the present and future challenges of climate change. In general, the participants were positively impacted by the proposal, and indicated their individual availability and in terms of the institutions they represented in participating in the initiative.

13.27 In this circumstance also, the meeting was very participatory, and elements were identified that will be taken into account in the definition of the structure, governance and definition of programs of the Regional Observatory of resilient aquaculture.

research by university institutions, this reveals a limitation since most of these journals require research to be presented in English. To allow the results of research to be useful to the producer, they must be in Spanish. During the meeting, they discussed how, through the Regional Observatory of Resilient Aquaculture, it can be possible to favor the production of research universities in Spanish with sufficient quality to be peer-reviewed and prepared by publication.

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Figure 20: Participants in Outreach Focus Group in Huanuco

Figure 21: Officials of the Technological institute of Juli deliver statement declaring their intention to participate in project implementation.

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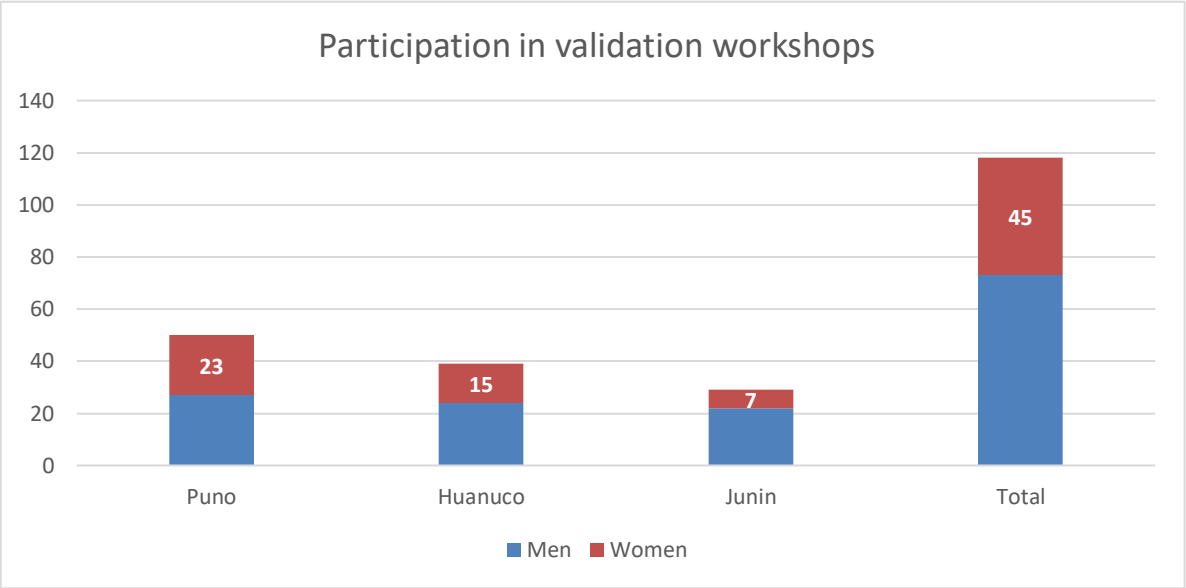
Validation

13.28 In the context of proposal preparation, the validation workshop was used to review, adjust and confirm the relevance and relevance of the proposal prior to its initial submission for Adaptation Fund review. Consequently, the main objective was to ensure that the proposed strategies were considered by the beneficiaries and parties involved by this proposal as effective, viable and adequate for the changing conditions of the climate and for the needs and capacities of the communities.

13.29 The specific objectives of these validation workshops were to reach the following results in a participatory manner:

- Ensure that the views and perspectives of all involved are reflected in the proposal. Confirm that the proposed strategies effectively address the specific challenges related to climate change in the region or geographical area concerned.
- Ensure Sustainability: Evaluate that the proposed solutions are sustainable in the long term, both from the environmental, economic, and social point of view.
- Facilitate Communication: Create a space for dialogue between different actors to generate a common understanding and align objectives. Identify potential gaps: Recognize areas where there may be gaps in information or strategy, and work together to find solutions.
- Confirm Stakeholder Commitment: Ensure that all parties involved are committed to the proposal and willing to contribute to its implementation.
- Ensure Cross-Cutting Integration: Validate that aspects such as gender, equity and community participation are adequately integrated into the proposal.

13.30 At the end of the validation workshop, minutes were written on the outcome of the workshop, and the inputs were incorporated into the climate change resilient aquaculture project proposal. Chapter three describes the work carried out during the validation workshops and their results. In total 123 individuals participated in the three workshops, of which 45 (35% were women). Most participants represented ARELES or AMYPES, although the public sector and academia were also significantly represented.



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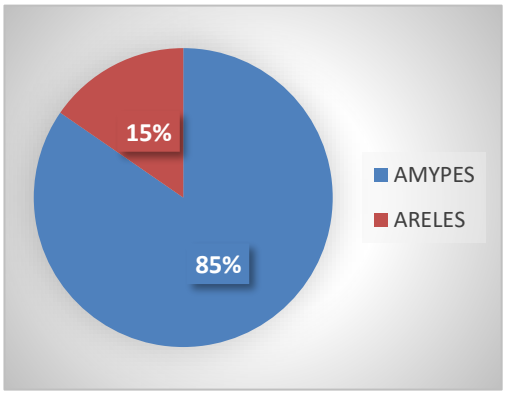
13.31 The workshops in Junin were attended by 29 people. The figures below provide the breakdown.



13.32 Women accounted for 27% of participants.

13.33 The list below includes the names and positions of those who participated.

Table 4: List of Attendees to the Validation workshop in Junin - June 13th 2023 in Ingenio

NAME	INSTITUTION	DNI
Andy Aspajo Ospinal	Serfor ATFFS Sierra Central	20026277
Yanina Casas Oré	Acuícola CyM S.A.C.	40685269
Julio Lujan Cárdenas	DRAJ Concepción	41438862
Wilder Huayaltos C.	CIP-Junín-Zootecnia	20112316
Jose Ore Velasquez		20401729
Paul Avila M.		19908575
Rosa Abad Suarez	GORE Junín GRRNGMA	19843015
Omar Salazar Laureano	Acuícola Andina Perú S.A.C.	72719724
Henry Victor Arauco Torres	Pis Valle Azul	10054562
Ronald Mariño Obregón	Director de Producción	41149827
Feliciano Gutarra de la O	Acuícola San Francisco de Asis GC S.A.C.	41089378
Jesús Torres Suazo	Cooperación Turística del Centro Virgen del Pilar	21263174
Pedro Torres Suazo	Acuícola San Pedro	21287344
Lizbeth Raymundo Mayta	Director Técnico	45343516
Fabián Calderón Gaspar		19947764

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13.34 In Huanuco, the workshop was attended by 44 people (including 5 from the project team). Among them 24 men and 15 women (38%). To facilitate the participation of women, in an environment where the distance is long and therefore it is difficult to leave children without care for long periods, a childcare service was therefore organized. It was carried out, hiring two people, in order to allow both parents and children to feel free to participate fully in the activities.

13.35 In Huanuco, producers are a limited number, around Ambo, divided equally between ARELES and AMYPES. The practice of aquaculture is familiar, where it is the entire family nucleus that participates in its entirety in the activity. The distances between the places are important, from the place of production to the market, for example, for fish farmers delay in transport can be more than an hour. Similarly, the distance between production sites and public institutions, whether they are DIREPROS offices or technology centers where production processing can be facilitated, is also remote.

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Table 5: List of attendees in validation workshop in Huanuco, June 15, 2023, in Maraypata

NAME	INSTITUTION	DNI
Emeterio Elías Rojas	Persona natural- AREL	22648883
Rober Inocente Castañeda	Persona natural- AMYPE	44037342
Humberto Inocente Granizo	Persona natural- AREL	22660078
Magdalena Placido Chamorro	AREL	80350051
Mariluz Rodríguez Cabrera	Persona natural- AREL	22597648
Joel Inocente Falcon	AMYPE	48533743
Víctor Manuel León Noreña	Persona natural- AMYPE	80386146
Nicanor Inocente Malpartida	AREL	22640516
Gonzalo Consternación Falcaz	Formalizing	22674872
Miller Nieves Alarcón	Formalizing	22666366
Eulogio Cesar Nieves Granizo	AMYPE	72161866
Guillermo Espinoza Inocente	Persona natural- AREL	22660028
Girmon Dilmer Estacio Loreña	Persona natural- AMYPE	46504325
José Antonio Carhuaricra Falcón	AMYPE	40223085
Domingo Figueroa Segovia		22665304
Tomás Inocente Aldava	Asoc. Agropecuaria de Productores El Ave Fénix de Urambiza- AMYPE	41615871
Mario Medrano Villanueva	Asoc. Acuícola Huampo- AMYPE	41145643
Gilder Granizo Sandoval	AMYPE	22665165
Héctor Enrique Alania Inocente	AREL	71312339
Honorio Inocente Castañeda	AREL	46778204
Eduardo Alarcón Gonzales	AMYPE	76208462
Rosmel José Carhuaricra Palacios	AREL	71304787
Miguel Anibal Duran Inocente	AMYPE	76088410
Antonio Vidal Manihuari Silvano	AREL	75072752
Yamira Justina Aguirre Aranda	AREL	72589615
Albina Burroneo Alarcón	AMYPE	42879535
Marilia Vanessa Hilario Falcón	AREL	46335821
Ledy Elizabeth Nieves Granizo	AREL	71305767
Eulalia Nieves Alarcón	AREL	43535016
Richar Roy Blanco Álvarez	AREL	46846812
Dina Liliana Liberato Carmín	Persona natural- AMYPE	43109284
César Inocente Granizo	AMYPE	42739071
Josefina Elida Medrano Villanueva	AMYPE	42890716
Yeny Aldava Espinoza	Persona natural- AREL	47043460
María Mendoza Pari	AREL	45405013
Judith Neyma Fernández Condori	AMYPE	75320644
Oswalda Maquera Llano	AREL	01221601
Angélica Eva Condori Cruz	AREL	46465685
Margarita Condori Zapana	AMYPE	01857059
Nicolasa Mamani De Quispe	AREL	01867415
Mariluz Chara Galindo	AREL	41660622
Catherine Ruth Otiniano Quispe	AREL	46220728
Yeny Blanca Quispe Torres	AMEL	44855018
Maritsa Monja Elorreaga	AMYPE	45541786
Erika Rosa Contreras Cruz	AMYPE	70053968
ILLEGILBE NAME		4003596?
Tania Veronica Chino Mamani	AMYPE	45591443
Bacilia Condori Qqenta	AMYPE	44185865
Emerson Alexis Gambetta Montalvo	AREL	40670454
Liliana del Pilar Baldeón Damián	ISTAP	
Carlos Alberto Pineda Castillo	UNHEVAL	
Erika Paola Calixto Ramírez	PRODUCE	
Lud Rojas Castañeda	DIREPRO	
Ronald Acuña Sobrados	DIREPRO	41062063
Efraín C. Mendoza		
Huayanay Ostos	PRODUCE DGA	
Oscar Arturo Reyes C.	CITE	
Roberto Reyes Albino	DIREPRO	22518986

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NAME	INSTITUTION	DNI
Frank Cámara Llanos	Universidad de Huánuco	
Wilmer Quispe Ramos		

13.36 In Puno, 50 people participated, 27 men and 23 women, equivalent to 46% of total participants. Of the fifty participants, forty (or 80% were producers). The rest represented public institutions. The vast majority of participants defined themselves as AMYPES. This information is consistent with the information available in the aquaculture cadastro, in which a prevalence of ARELES is identified in Puno. Public sector representatives came from a multitude of institutions, including, PRODUCE, PNACP, FONDEPES, SANIPES, IMARPE, and the Lake Titicaca Binational Authority. All these institutions were involved in the preparation of the proposal, and their views were received by the proposal preparation team in writing. The variety of participation of public institutions demonstrates the cooperative spirit that developed during the participatory process around this proposal and the perception of parts of the actors of its relevance to the region. Geographical representation is highlighted below.

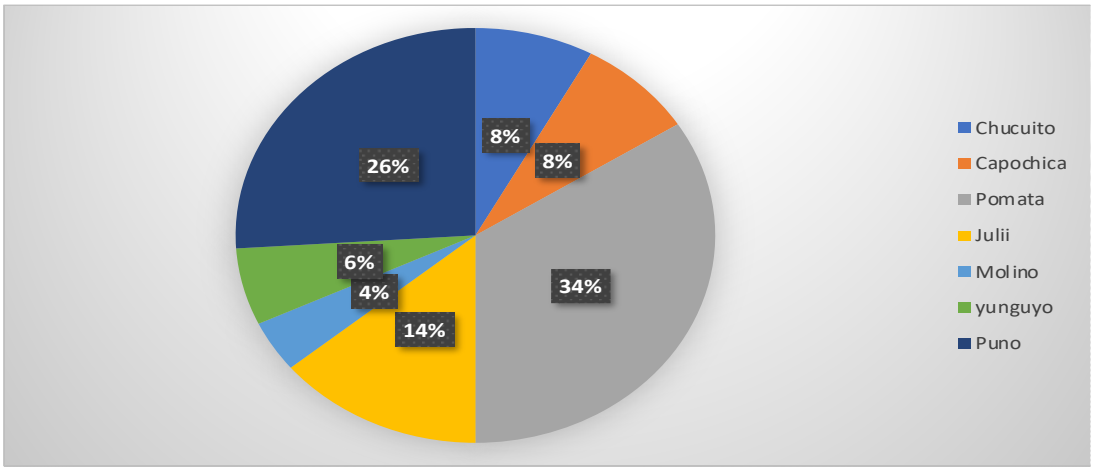





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Table 6: Participants to Validation Workshop in Puno, June 20, 2023

NAME	INSTITUTION	DNI
Humberto Arana Loza	AMYPE	01845512
Ignacio Quispe Choque	AMYPE	01777251
Guido Amaro Chambilla	AMYPE	41417010
Lizbeth Zelma Ramos Quispe	AMYPE	71488246
Lizet Verónica Mamani Márquez	AMYPE	74440568
Meerson Radymir Manrique Puelles	AMYPE	44358184
Juan Alfredo Loza Calizaya	GORE	01223288
Raúl Chambi Paredes	EMPRESA PESQUERA MIKI AMYPE	02398932
Raúl Pedro Rojas Vargas	GORE	01322150
Silvia Olimpia Galindo Huallpa	AMYPE	01845557
Sacarías Luve Jaliri	AMYPE	01864766
Edwin Orlando Tupez Tapia	AMYPE	40575507
Hipólito Mollocondo Hualpa	DIREPRO	01221602
Elizabeth Ccopa Gordillo	AMYPE	01334159
Erik Elvis Soto Navarro	AMYPE	44260899
Carlos Alberto Cuéllar Flores	AMYPE	42518827
Nancy Montesinos Condo	APEJAFLO- AMYPE	01286353
Ericka Contreras Cruz	AMYPE	70053968
Silvia Arana Coaquira	AMYPE	95591786
Yenny Quispe Torres	AMYPE	44855018
Nicolasa Mamani de Quispe	AMYPE	01867415
Sonia Mulluni Loquiluanaco	AMYPE	40033596
Oswalda Maquera Llano	AMYPE	01221601
Betzabé Torres Cruz	AMYPE	40670459
Tania Chino Pando	AMYPE	45591443
Justina Malle Cervantes	AMYPE	91243240
Margaret Coadon Zapata	AMYPE	01857059
Yenni Karine Atencio Llauco	AMYPE	44735865
Sonia Choque Ocama	AMYPE	45748169
Angelica Condori Cruz	AMYPE	46465685
Mary Siccori Alonzo	AMYPE	46226778
Yudith N. Fernández Contori	AMYPE	75320644
Mariluz Chaca Galindo	AMYPE	41660522
Nury Mutrascade	AMYPE	01286353
Fernando Cruz Arucatipo	AREL	42598827
Zacarias Luve Jaliri	AMYPE	01864766
Leonicio Quispe Silloaco	AMYPE	44358284
Juan Carlos Ibáñez Villegas	AMYPE	44718521
Guido Amaro Brambilla	AMYPE	41417010
Henry Maquera M	AMYPE	46101374
Aydee Quispe Meneses	AMYPE	70042606

Additional information is included in Annex 3 of the proposal.

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

14.1 As described in section F when explaining the non-duplication and complementarity of the project with other funding sources, the formulation of this proposal has considered the present and planned investments in aquaculture and has carefully identified the activities that are complementary to the country's efforts and planning and has ensured that the project activities can deliver adaptation results by themselves. None of the proposed activities depend on any other investments to be made by other sources or stakeholders.

The proposed activities focus on targeted groups and areas to ensure that the adaptation results are verified. When addressing issues with the national institutions, the proposed activities have a precise and stringent scope so that the objectives of the project are clear, and their outputs and outcomes can be monitored.

To implement Protection technology to foster the resilience Aquaculture in the regions of Huanuco, Junin and Puno to strengthen food security in the context of extreme events associated with climate change the project activities were divided into three distinct components.

Component 1: Governance, Knowledge Management and Access to finance for sustainable aquaculture

Baseline: The legal and regulatory framework is both outdated and has substantive gaps. Additionally, institutional oversight of productive aquaculture is relatively limited on account of conflicting mandates on the part of multiple institutions, lack of capacity and limited financial resources to ensure enforcement and provide technical assistance. Despite the presence of multiple academic institutions and technical center, human capacity both in the public and private sector is limited, applied research is lacking in both quantity and quality and the interaction between the trout farmer and its local academic institution is limited. Outreach and networking opportunities available to producers is also limited.

With AF funds: The project will strengthen legal and regulatory framework by improving the relevance, scope and breadth of existing norms and regulations. These new norms and regulations take into account requirements associated with the mitigation of climate change in particular in terms of better regulating the impact of productive activity on water quality and water usage efficiency. The project will create Resilient Aquaculture Observatories in each of the regions, this virtual platform will coalesce and organize existing academic institutions to collect primary and secondary recent regarding the trout farming allowing stakeholders to have consistent, reliable, time-bound information on trout aquaculture. Finally, the project will provide improved access to information regarding good practices in climate-resilience trout farming practices and improved understanding and knowledge of sources of financing for investments in technology climate-resilient aquaculture, their procedures and requirements as well as develop trout farmers to network financial institutions and lobby for conditions more suitable to small trout farmers, especially female.

Component 2: Innovation and technology transfer mechanisms are improved and/or implemented to promote resilient aquaculture activity in Huanuco, Junin and Puno.

Baseline: Trout Farmers rely on outdated and often inadequate technology to carry out aquaculture production. The infrastructure on which public institutions rely on, is equally obsolete and inadequate. There is a marked, consistent, and ongoing absence of available fundings to allow producers and public institutions alike to acquire such technology. This limits producers' capacity to maximize efficient trout production and for local authorities to be unable to provide the necessary information and guidance require to anticipate a climate crisis, mitigate its potential impact, and manage its aftershock in the selected areas of intervention.

With AF funds: The project will help to enhance infrastructure for small and medium sized formal producers, in the AREL and AMYPE categories in the regions of Huanuco, Junín and Puno. This will lead to increasing the quality and volume of trout production, which in turn will impact the nutritional safety of the communities in the region. Additionally, early warning systems and contingency plans for local populations to cope with the impact of a climatic event, ensuring more resilience to the effects of climate change on arcoiris trout aquaculture.

Component 3. Value and production chains of resilient aquaculture activities will help diversify aquaculture producers' livelihoods and improve their food security.

Baseline: processing capacity is limited by lack of investment to enable producers to carry out primary processing of their trout productions. This represents a bottleneck in terms of improving the quality and quantity of trout produced in the region and affects the availability of healthy nutritious food staple to local populations and the country. Marketability of aquaculture production is limited, reducing the capacity of the producer to get competitive pricing for their product.

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With AF funds: The project will create new primary processing plants or operationalize existing plants. Trout marketing will be improved, mostly through the incorporation of quality certification, increasing both the quality of the trout produced through aquaculture and the price that can be charged for the product emanating from it. Producers will be assisted to develop more precise and focused business plans which will strengthen their capacity to attract financing to expand their climate-conscious aquacultural activity and open opportunities for strategic alliances with academia and other producers.

K. Provide an overview of the environmental and social impacts and risks identified as relevant to the project.

15.1 During the preparation of the concept note, a preliminary environmental and social analysis was carried out for each Adaptation Fund safeguard at a concept note stage of the project. This proposal expanded the risks identified and the actions needed to mitigate them and will include an Environmental and Social Management Framework. During the preparation of the proposal, these risks were studied in even greater depth. The table below describes these risks.

Table 19: Environmental and Social Risks

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
1. Compliance with the Law		National legislation does not require limited resource aquaculture farmers (AREL) to have an Environmental Management Instrument (IGA, per its acronym in Spanish) to carry out aquaculture activities. However, the General Aquaculture Law and its regulation D.L. No. 1195 require that their activities be aligned and regulated within the framework of applicable environmental legislation, mainly in the sectoral and general waste and effluent management regulations. Likewise, Supreme Decree No. 012-2019-PRODUCE, which approves the Environmental Management Regulations for the Fishing and Aquaculture Subsectors, establishes an Environmental Technical Sheet (TLC) complementary to the National Environmental Impact Assessment System. (SEIA) However, the FTA preparation format has yet to be approved by the environmental authority, so this requirement still needs to be enforceable. The Project has prepared an Environmental and Social Management Framework (MGAS, per its acronym in Spanish) for the beneficiaries, which includes an Environmental Technical Sheet to ensure the environmental management measures of the AREL beneficiaries. In the case of micro and small aquaculture companies (AMYPE), current regulations require the preparation of an Environmental Impact Statement (DIA), which must be approved by the Regional Governments within their jurisdiction and prepared following the National System of Environmental Impact Assessment (SEIA), establishing environmental management actions necessary to mitigate and control environmental impacts. Based on the information collected in the consultative workshops in Huanuco, Junin, and Puno, the Project mandates that the AMYPE beneficiaries update their DIA. The MGAS includes measures to prevent, mitigate and control the environmental and social impacts of the beneficiaries' activities, and a Manual of Good Aquaculture Practices, which provides for the Hygiene and Biosafety section.
2. Access and Equity		Guaranteeing access and equity of the project's benefits has been a constant concern throughout the design and preparation stages of the proposal and during the workshops. The project scope mainly includes aquaculture with limited resources, subsistence farmers (AREL), and micro and small business farmers (AMYPE). During the preparation of the project, workshops were held in Huanuco, Junin, and Puno to define the criteria for selecting final beneficiaries with an intersectional and gender approach.

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Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
		The project does not anticipate a negative impact on access or equity.
3. Marginalized and Vulnerable Groups		The project has defined criteria for selecting beneficiaries that consider marginalized and vulnerable groups within the aquaculture sector. Consequently, women aquaculture producers, male producers below the poverty line, and farm operations handled mainly by women are first in line in the selection criteria. The project has a defined redress mechanism, which is described in the Environmental and Social Management Plan Framework, annexed to this proposal. The project does not anticipate a negative impact on other marginalized and vulnerable society groups.
4. Human Rights		The Universal Declaration of Human Rights proclaimed and adopted by the General Assembly of the United Nations on December 10, 1948, was approved in Peru by Legislative Resolution No. 13282, dated December 9, 1959. In addition, Peru is a signatory of the main human rights treaties and has robust legislation for the protection and promotion of human rights. The design and formulation of the project and workshops are in line with the protection of human rights under human rights law and have taken a human rights approach. The project has no negative impact on human rights.
5. Gender Equality and Women's Empowerment		Peru has a National Gender Equality Policy D.S. 008-2019-MIMP, as well as Law No. 28983 on equal opportunities between men and women, which establishes the regulatory, institutional, and public policy framework at the national, regional and local levels, to guarantee women and men their rights to equality, dignity, free development, well-being, and autonomy, preventing discrimination in all public and private spheres of their lives, tending to full equality. Peru also signed the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW). The project considers gender equity under the regulations and agreements signed and ratified by Peru and the principles of the Adaptation Fund. Furthermore, the project developed a detailed gender evaluation of the three regions of intervention and prepared a Gender Action Plan providing for measures that address and promote the participation of women in aquaculture and incorporate a gender approach in the various technical and regulatory climate change instruments and technologies to be developed
6. Core Labour Rights		Peru has been a member of the ILO since 1919, having ratified 76 conventions (67 in force) on fundamental principles and rights at work. The design and components of the project include the establishment of good environmental and occupational safety practices to ensure compliance with ILO standards and the country's labor and occupational safety standards. Within the framework of the project, an Occupational Health and Safety Plan (PSST, for its acronym in Spanish) has been prepared in order to safeguard workers by preventing accidents and avoiding the transmission of diseases.
7. Indigenous Peoples		No indigenous peoples have been identified in the project intervention sites, nor prospective beneficiaries who have communicated their belonging to indigenous peoples. However, both the design of the project and the workshops and interviews carried out during its preparation, an intercultural approach has been considered, providing translation into the Quechua language in Huanuco and respecting the Aymara vision and cosmogony in Puno.

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Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
8. Involuntary Resettlement		The project proposes no activities requiring resettlement.
9. Protection of Natural Habitats		The beneficiaries located in Junin and Huanuco are not in Natural Protected Areas (NPAs) or legally protected sensitive habitats. The project beneficiaries in Puno are in Lake Titicaca, possibly in RAMSAR site areas, authorized by the Regional Production Directorate and the Ministry of Production. The Titicaca National Reserve is in Lake Titicaca; however, there are no aquaculture activities in this area, and no beneficiaries will be located there. The Lake Titicaca RAMSAR site was created in Puno on January 20, 1997. Within the classification of wetlands proposed by the RAMSAR Convention, Lake Titicaca is considered a complex of inland wetlands of types 4 (Riparian plains), 5 (Permanent freshwater lake), and 10 (Herbaceous marshes: shrubby). A little more than 14,000 hectares of Lake Titicaca's aquatic surface are authorized and used for aquaculture. Trout farming in floating cage systems is intensive and carried out in some areas of Lake Titicaca. Once Puno's final beneficiaries are selected, it is assessed if they are inside or outside NPA or ANP or its buffer zones (zoning of activities in ANP). In case they are inside, the project must be aligned with the NPAs Master Plan and ensure the RAMSAR site is compatible with aquaculture through guidelines for biodiversity conservation. The project has developed a Biological Diversity Management Plan-PDGB providing management measures to protect natural habitats.
10. Conservation of Biological Diversity		Rainbow trout is a priority species for biosecurity in Peru because when introduced into a natural environment without any analysis or control, it can significantly impact native biodiversity. Peru has signed and ratified the Convention on Biological Diversity (CBD), and the sector has standards and manuals for sustainable aquaculture management. The project considers the exploration service for distributing naturalized trout in prioritized areas of the Junin and Huanuco regions within Law 29811 – Moratorium Law (2015) framework. Also, it ensures proper trout management to prevent the escape of individuals from earthen ponds or cages to the natural environment (provided for in the PGDB developed for the project).
11. Climate Change		The project has focused on reducing the vulnerability of the population to the effects of climate change and will not significantly or unjustifiably increase greenhouse gas emissions or other drivers of climate change.
12. Pollution Prevention and Resource Efficiency		The project establishes guidelines for the prevention and minimization of environmental impacts and the efficient use of resources, such as minimizing waste generation, energy efficiency (equipment or other), and emissions, and provides for a solid waste minimization and management plan.
13. Public Health		Only chemical products authorized as sanitary products by the National Fisheries Health Agency *(*SANIPES), which is the competent authority responsible for monitoring and controlling hydrobiological resources' diseases from aquaculture or the natural (wild) environment to ensure their sanitary condition, or the General Directorate of Environmental Health (*Direccion General de Salud Ambiental*, DIGESA), for cleaning products, will be used, following the recommendations of the sanitary authorities. The project has developed a manual of good aquaculture practices that provides for hygiene and biosafety measures to be implemented.
14. Physical and Cultural Heritage		No physical and cultural heritage has been identified in the project's intervention

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Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
		territories.
15. Lands and Soil Conservation		The project will ensure the conservation and preservation of soil and land by preparing a baseline and guidelines that ensure their sustainable use. A soil conservation plan has been developed explicitly for this project.

15.2 According to the categorization criteria described in the Environmental and Social Policy of the Adaptation Fund, the project has been classified as having medium environmental and social risk (category B). The identified risks can be mitigated through the components defined in the project, mainly component 2, item "d" (good environmental and occupational safety practices), as well as with the environmental and social risk management measures described in part III of the document, in line with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund.

The Environmental Social Management Plan

15.3 The Environmental and Social Management Plan (ESMP) ensures that the Principles (safeguards) required by the Adaptation Fund are properly adhered to, and also that they comprehensively cover all aspects of project implementations and appropriately complement each other, so that the health, safety, rights of individuals are protected, and their environmental conditions are maintained or improved, biological diversity is preserved, and sustainable economic development is promoted.

15.4 Accordingly, ESMP provides Project beneficiaries with mandatory compliance guidelines that are easy and correct to apply for the preparation, execution, and monitoring of their activities to:

- Identify the environmental and social impacts an activity has been causing or could cause.
- Propose and establish the mitigation, control, remediation, or environmental rehabilitation measures that must be implemented so that the operation has the optimal parameters established and compliance with current environmental regulations is ensured.
- Design and implement the ESMP considering the planning, operation, and closure stages, considering the specific plans proposed to ensure environmental, social, and gender safeguards.

Methodology

15.5 Identifying and evaluating the environmental, social, and gender impact is crucial for decision-making and developing the Project's activities correctly. This allows the proposal and implementation of corrective and mitigation measures, ensuring compliance with current regulations.

15.6 To identify and evaluate the impact of Project activities, it is necessary:

- Know the characteristics of the execution zone and the area of influence of the activity.
- Identify the impacts caused directly and may or may not be controlled by the same activity.
- Identify the activities that cause positive and negative impacts of the activity on natural ecosystems.
- Determine the direct and indirect impacts of the activity, its magnitude, and importance which allow the beneficiary to identify critical aspects that must be considered when planning and executing their productive activities.
- Determine appropriate prevention and mitigation measures for adverse impacts and measures that maximize positive effects.

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- Based on the prevention measures, the mechanisms are defined to monitor the impacts caused by the productive system's activities and evaluate the behavior, efficiency, and effectiveness of the designed prevention, mitigation, correction, or compensation measures.

15.7 Considering that the activities will, directly and indirectly, affect the existing ecosystems, it is vital to consider the safeguards and their specific plans to ensure compliance.

Monitoring and compliance with the Adaptation Fund's safeguards

Table 20: Monitoring and compliance with the Adaptation Fund's safeguards

Environmental and social principles	Control measures to avoid negative impacts	ESMP indicator	Compliance date/milestone
Principle 1: Compliance with legislation	Selection criteria proposed for the beneficiaries of the AREL and AMYPE categories.	Beneficiaries selected	Before the start of activities
	The AREL beneficiaries will fill out an Environmental Technical Sheet (already developed, annexed to proposal) to ensure the environmental management measures regarding the impacts that could be generated.	Environmental Technical Sheet (FTA, for its Spanish acronym)	Before the start of activities
	AMYPE beneficiaries must have a DIA, which will be updated as per Project requirement.	Environmental Impact Statement updated. (DIA, for its Spanish acronym)	Before the start of activities
	The Manual of Good Aquaculture Practices will be implemented, which includes the Hygiene and Biosafety section (already developed, annexed to proposal)	Good practices manual implemented	Before the start of activities
Principle 2: Access and equity.	Selection criteria proposed for the beneficiaries of the AREL and AMYPE categories.	Beneficiaries selected	Before the start of activities
Principle 3: Marginalized and vulnerable groups	Selection criteria proposed for the beneficiaries of the AREL and AMYPE categories.	Beneficiaries selected	Before the start of activities
Principle 4: Human rights	No negative impact on Human Rights.	NA	NA
Principle 5: Gender equality and women's empowerment	Evaluation and Gender Action Plan (annexed)	Gender Action Plan	Proposal
Principle 6: Fundamental labor rights	Occupational Health and Safety Plan, in order to safeguard workers by preventing accidents and avoiding the transmission of diseases (annexed).	Occupational Health and Safety Plan (PSST, for its Spanish acronym)	Before the start of activities
Principle 7: Indigenous people	No indigenous peoples have been identified in the territories of the beneficiaries, neither beneficiary identified as indigenous peoples.	NA	NA
Principle 8: Involuntary resettlement	No activities requiring resettlement have been proposed.	NA	NA
Principle 9: Protection of natural habitats	Once the beneficiaries are selected, it is assessed that they are outside any ANP or its buffer zones (zoning of activities in ANP). In case they are inside, the Project must be aligned to the ANP Master Plan.	Sonification	Before the start of activities
	Ensure that the RAMSAR site is compatible with aquaculture, through guidelines for biodiversity conservation.	BDMP	Proposal
	Biological Diversity Management Plan -PDGB (annexed)	BDMP	Proposal
Principle 10: Biodiversity conservation	The Exploration Service for the distribution of naturalized trout in prioritized areas of the Junín and Huánuco regions is taken into account within the framework of Law 29811 – The Moratorium Law (2015).	BDMP	Proposal

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Environmental and social principles	Control measures to avoid negative impacts	ESMP indicator	Compliance date/milestone
	Proper management of trout is ensured to prevent the escape of individuals from earthen ponds or cages into the natural environment (included in the BDMP annexed)	BDMP	Proposal
Principle 11: Climate change	The project has focused on reducing the vulnerability of the population to the effects of climate change, and will not significantly or unjustifiably increase greenhouse gas emissions or other drivers of climate change.	Project proposal	Proposal
Principle 12: Pollution prevention and resource efficiency	The project will emphasize the reasonable reduction in the use of resources, for which the development of a baseline and formats to be used by the beneficiaries are proposed.	GRE	Proposal
	Guidelines for resource efficiency (annexed)	GRE	Proposal
	Solid waste minimization and management plan (annexed)	Solid waste minimization and management plan (PMMRS, for its Spanish acronym)	Before the start of activities
Principle 13: Public health	Solo se utilizarán productos químicos autorizados por SANIPES como productos sanitarios o DIGESA para productos de limpieza, siguiendo todas las recomendaciones de las autoridades sanitarias.	MBPA	Before the start of activities
	Se implementarán las medidas de Higiene y bioseguridad que son parte del Manual de BPA (Anexo 2).	MBPA	Before the start of activities
Principle 14: Patrimonio físico y cultural	No physical and cultural heritage has been identified in the territories of the beneficiaries.	NA	NA
Principle 15: Land and soil conservation	The project will ensure the conservation and preservation of soils and land, through the preparation of a baseline and guidelines that ensure their sustainable use.	Soil conservation plan (PCS, for its Spanish acronym)	Before the start of activities
	Soil conservation plan (PCS) (annexed)	Soil conservation plan (PCS, for its Spanish acronym)	Before the start of activities

The cost of the Project's Grievance Redress Mechanism

Table 15: Cost of ESMP execution over the life of the project

Item	Estimated Budget (USD)
I. Execution ESMP Framework	
Component 1	108,333
Component 2	366,698
Component 3	104,510
Subtotal Execution	**$579,541**
II. Monitoring and Evaluation	
A. ESS	$134,400[1]
B. Other human resources and management costs[2]	29,748
Subtotal	**$182,398**
III. Other ESMP related Strategies, Plans and Mechanisms	
A. Implementation of Gender Action Plan	$95,000
B. Redress[3]	$91,000
Subtotal ESMF Strategies	**$186,000**
TOTAL ESMP	**$875,525**

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Complaints and Grievances Mechanism

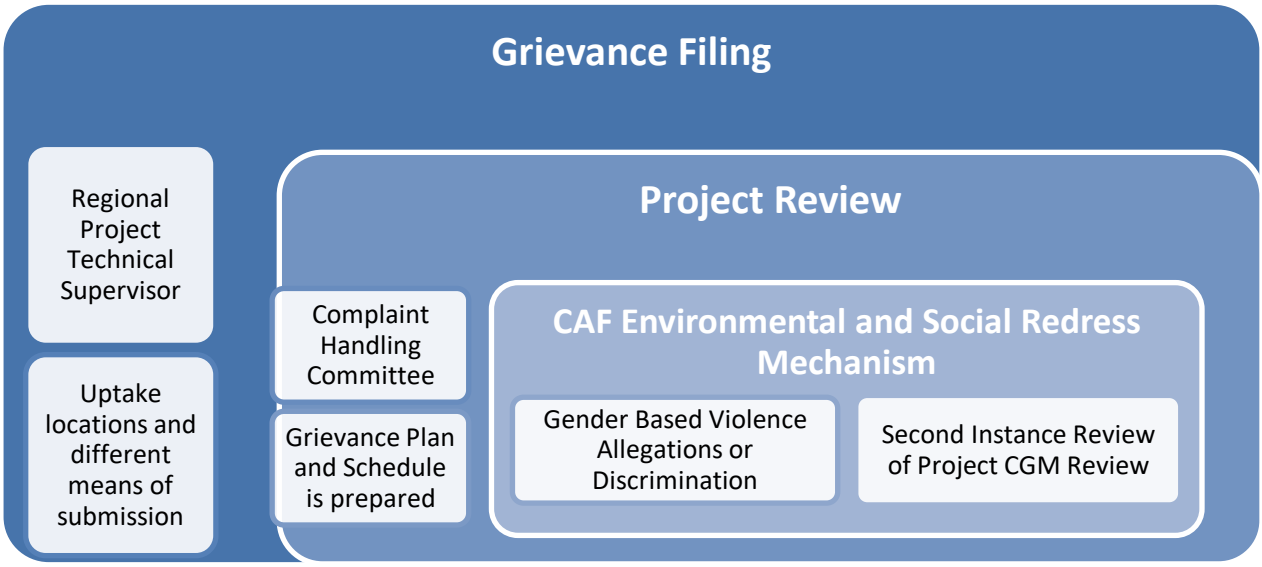
15.8 The project has adopted a redress mechanism to ensure that aggrieved stakeholders have a way to voice their objections. The project establishes a Complaints and Grievances Mechanism (CGM), to ensure that the project's beneficiaries and all citizens impacted by the intervention have access to adequate and timely attention to their claims and grievances. Besides providing sufficient and timely attention to situations affecting stakeholders within the project's scope, the CGM seeks to generate trust and contribute to the continuous improvement of the project and its components.

15.9 The CGM mechanism addresses the management of complaints and concerns during project implementation. This mechanism does not replace due legal process in all applicable cases. It is intended to handle complaints, claims, and grievances in such a way that they are resolved promptly, preventing conflict escalation. The principles that must be followed during the grievance resolution process include impartiality, respect for human rights, compliance with national regulations, equality, inclusivity, accessibility, confidentiality, responsiveness, effectiveness, transparency, honesty, mutual respect, and continuous improvement.

Phases of the Complaints and Grievances Mechanism

15.10 The Redress mechanism conceived specifically for the proposed project is organized around different phases, consistently with good international practices. Its objective is to ensure that citizens receive prompt a prompt, thorough fair hearing of their complaints and grievances in a timely manner and includes an opportunity to appeal decisions, if the complainant choses to do so. Figure 1 below provides describes the process.

Figure 19: The Multi-tiered Grievance and Redress Mechanism



15.11 The objective of this phase is to provide the aggrieved person an easily accessible way to file its complaint and to ensure that this complaint is properly documented and recorded. Table 1 below identifies the different steps in this process. To this end, in the first instance, an ad-hoc Complaint Handling Committee (CHC) has given the mandate to independently review claims that cannot or should not be resolved at another level. The CHC will be composed by:

- The Project General Coordinator (PGC),
- The Project Environmental and Social Specialist (PESS), and
- a rotating member of the Project Steering Committee.

15.12 Concerns received through any channels should be addressed at the appropriate level closest to the

implementation of the project and to the person who raised the matter, orally or in writing. Consequently, the CGM provides several uptake locations in the three regions (Junin, Huanuco, and Puno), as well as nationally, through multiple means (physical letter, email, phone calls, complaint boxes, and SMS texts) including orally to the region's Project Technical Supervisor (PTS) who, in the case, will register the complaint in writing.

15.13 Each region's Project Technical Supervisor (PTS) will be responsible for gathering, sorting, registering, and processing the claims, as well as activating the Complaint Handling Committee (CHC). The CHC will define a course of action which may require further investigation and dialogue with the complainant until a satisfactory solution is found. If the proposed solution requires monitoring and follow-up, the PESS will oversee the task and a plan will be developed accordingly. The CHC will issue a final written decision which will be notified to the complainant in writing.

15.14 The Complaints and Grievances Mechanism will respect confidentiality and any existing indigenous or traditional dispute resolution mechanisms and will not interfere with an indigenous community's organizing system, should the case arise. Contact information and information about how to file a complaint will be disclosed at all meetings, workshops, and other project events. All material to be distributed will include information about the contacts and the complaint process. Each regional PTS will be responsible for documenting and reporting any complaints received in his/her region and how they were addressed.

15.15 Should an environmental and/or social grievances could not be resolved to the complainant's satisfaction through consultation and action at the project management level—and at any time when the complaints are related to Gender-Based Violence (GBV) or any discrimination—CAF's Environmental and Social Grievance Redress Mechanism (CAF's ESGRM) is readily available; a complaint may be filed with the CAF's ESGRM following the established guidelines.

Phases of the Complaints and Grievances Mechanism

Table 22: Phase 1: Receipt of a complaint or grievance

During project implementation	**Step 1. Reception of Complaint or Grievance** Individuals or a group who may file a Complaint or Grievance should consider: • The Complaint or Grievance may relate to any stage of the project implementation. • The complaint or grievance may be received by email, physical letter delivered to the PTS or PGC's office or project boxes, or presented orally to the PTS. • Confidentiality will be respected but the complaint cannot be anonymous.
Within 10 working days after receiving the complaint or claim (maximum of 20 working days in justified special cases)	**Step 2. Registration and Acknowledgement of the Complaint or Claim** • The PTS acknowledges receipt of the Complaint or Grievance to the complainants and verifies the complainants' information and request. • The PTS registers the complaint on the project CGM record system. • The PTS may defer the complaint or grievance until sufficient information and documentation is filed. • The PTS ensures confidentiality of complainants' identities upon request. • The PTS activates the Complaint Handling Committee.

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Table 23: Phase 2 - Conflict Resolution

Within 20 working days after receiving the complaint or claim (maximum of 30 working days in justified special cases)	**Step 1. Determine eligibility.** • The PTS submits the information to the Complaints Handling Committee. • Complaint Handling Committee reviews and decides how to proceed. • Complaint Handling Committee refers the complaint to the appropriate CAF departments or area offices, if the nature of the complaint or grievance matches the scope limitations.
Within 5 working days after CHC decides course of action	**Step 2. Whistleblower Update** • The PTS informs the complainants about the process.
The time required depends on the specific conditions, context, nature and complexity of the problems.	**Step 3. Conflict Resolution** • The PTS coordinates with complainants their participation in problem-solving activities through consultative dialogue, information exchange, a mediation mechanism or other problem-solving methods, as decided by the CHC. • If a satisfactory solution is found and an agreement is reached the Complaints Handling Committee will issue a Problem Resolution Report and approve the Follow-up and Monitoring Plan submitted by the PESS. • The PTS will notify the solution to the complainants in written. • If no agreement is reached, the problem resolution process ends.
The time required depends on the specific conditions of the Plan and the Project.	**Step 4. Implementation and Monitoring.** • The Implementation Plan is executed by the project implementers, while the PESS follows the Monitoring Plan and its reporting schedule.
Within 10 working days after completion of the Implementation Plan (maximum of 20 working days in justified special cases)	**Step 5. End of the problem-solving process.** • When the Implementation Plan and Monitoring Plan have been completed, the PTS completes a Final Closure Report. • The Complaint Handling Committee approves the Final Closure Report. • The PTS sends the Final Closure Report to the complainants.

CAF's Environmental and Social Grievance Redress Mechanism

15.16 The CAF website describes in detail the steps and process to file a complaint related to possible adverse environmental and social impacts on people, communities, or the environment caused during the implementation of programs, projects, or activities (Operations) financed by the CAF. This applies to all projects where CAF acts as Implementing Agency and thus applies to this project.

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15.17 Consistently with the communication and outreach strategy of the project, the complaints lodged and the findings of the review that was carried out will be posted in the project's webpage available from the PRODUCE website.

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

16.1 The design of the Project includes several elements to ensure actions and benefits of the intervention continue after it ends. The main sustainability and replicability considerations aim to ensure that the local population, the institutions, and the policy environment are supportive of an effective adaptation of aquaculture to the challenges associated with increasingly frequent and harsh climatic events.

16.2 The main elements that will contribute sustainability include:

- **Participatory process**: Extensive effort has been deployed to ensure a participatory approach is embedded to the project from the design stage and will be applied throughout project implementation will contribute to enhanced stakeholders' ownership, which is expected to reinforce the sustainability of the results and longer -term impact of investments. The experience, thus far, confirms the need and willingness of stakeholders to provide feedback and guidance to ensure the successful implementation of project activities and maintaining this effort will prove an important tool in ensuring successful implementation and sustained outcomes over the medium to long term.
- **Capacity building for key government institutions to strengthen capacity to regulate, monitor and enforce climate conscious norms and regulations.** The improvement of the regulatory framework is one element that is likely to endure beyond the end of the project period. The project also focuses on building the capacity of these institutions to enforce climate-conscious norms and regulations. This is done on the one hand by encouraging inter-agency cooperation in ways that can ensure economies of scale, thus allowing public sector institutions to "do more with less" and expand their enforcement activity. It is also noteworthy that the project will review instruments used for monitoring and evaluation to ensure that only the most relevant information is captured efficiently reducing the level of effort associated with enforcement of the legal and regulatory framework and permitting these agencies to refocus their time and energy towards providing technical advice to producers and expanding outreach.
- **Capacity building for key government staff:** dedicated capacity building for key national and local government staff from different institutions related to environmental and social management systems, gender perspective, social and environmental monitoring of the project-related activities and investments, the grievance mechanism will contribute to guarantee the key stakeholders are aware of potential social and environmental impacts of the proposed technologies, and strengthen their skills in the appropriate monitoring and social and environmental compliance assurance. The project appropriately recognizes that one of the elements which contributes to lack of capacity of key government staff is associated with high level of turnover. Accordingly, the project not only focuses on developing the capacity of staff currently in the employ of the public sector, but instead focuses on developing a menu of instruments which can be readily and cost-effectively deployed to train and bring up to speed staff at any time. This is expected give continuity to the action of government agencies and their staff, and thus improve the likelihood of the sustainability of project outcomes.
- **Capacity building and awareness raising for the local population:** the project considers different strategies targeting the local population, among which, awareness raising campaigns, capacity building activities for the implementation of the adaptation measures, incorporation of climate change and disaster risk reduction. All these strategies will strengthen capacities in vulnerable populations, enhancing their knowledge about climate change, main impacts, and efficient measures to prevent and manage flooding, efficient use and harvesting of water, and promote cultural change.

- **Development of recent reliable data and information regarding climate-resilient aquaculture**. The project recognizes that unless collection and distribution of recent, reliable information is required by all stakeholders to develop suitable climate adaptation strategies for their productive activity. Rather than relying on financing one off data collection and analysis exercise, the project looks at the issue from a systemic perspective, leveraging existing resources, and bringing closer together trout farmers and aquaculture producers with local academia and technical institutes in a Regional Observatory of Resilient Aquaculture. This cooperative dynamic, focuses on making sure that all that partake in the endeavor take out from their participation what they need for their development, thus creating win-win scenario. This cooperative arrangement is not only cost effective, but more easily maintained, and allows different organization to showcase their unique talents and relevance to stakeholders in the value chain.
- **Strategic deployment of environmentally friendly technology to support the strengthening of the value chain**. The project provides technology to private sector trout farmers to improve the efficiency and effectiveness of their productive activity. It additionally provides technology to key institutions to address bottlenecks, thus enhancing the access of a larger number of beneficiaries. Sustainability is ensured by leveraging existing infrastructure to ensure maximum value for money. Additionally, the project invests in providing technical assistance to local beneficiaries to ensure that they are appropriately trained to use the new technology as intended, and likely extending its shelf-life.
- **Focus on enhancing access to finance.** Unless the technology that is financed by the project is maintained and updated, it will become obsolete. The project recognizes that and provides for some technical a modicum of support in the first years for operation and maintenance, it looks at this issue from a systemic perspective and works to open opportunities for local producers to network with financing agencies so that each is more comfortable doing business with the other. The program, through its communities of practice and the provision of longer-term technical assistance will improve the likelihood that local producers have a more systematic and transparent path to obtaining finance. The table below highlights that in Peru there are some programs and institutions that could provide financing to invest in technological maintenance and innovation, although these sources have proven difficult to access.

Table 24: Sources of Funding -National

Funding Source	Description
Government Programs	
National Fisheries Development Fund – FONDEPES	The National Fund for Fisheries Development – FONDEPES is an Executing Agency, attached to the Ministry of Production PRODUCE with legal personality under domestic public law and constitutes a Budget Specifications, operates with technical, economic, and administrative autonomy and acts in accordance with the policy, objectives and goals approved by the Sector. The purpose of FONDEPES is to promote, execute and support technically, economically and financially the development of maritime and continental artisanal fishing activity, as well as fishing and aquaculture activities, mainly in the provision of basic infrastructure aimed at the development and distribution of hydrobiological resources, strengthening of capacities of regional and local governments, artisanal fishermen, aquaculture farmers; as well as generating and providing incentives provided for in the legal provisions in force. In its *Virtual Platform of Credit Applications – FONDEPES, the* institution grants credits to fish farmers of the productive category AREL and AMYPE; to improve the development of production, product quality or aquaculture unit. This appropriation is used to: 1. Acquisition of balanced feed for the fattening stage and / or acquisition of materials and equipment. 2. Expansion of aquaculture infrastructure 3. Hatchery and/or purchases of eggs and/or fry. For aquaculture credits of level I is up to 10 Tax Units (UIT), will be paid in 10 installments with a grace period of 4 installments and an interest of 3%, and will be guaranteed by a joint guarantor

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Funding Source	Description
Government Programs	
	For loans greater than 10 UIT of up to 22 UIT will be paid in 10 installments with a grace period of 4 installments and an interest of 7% and will be guaranteed with a real guarantee Source: 1. https://www.gob.pe/13253-solicitar-creditos-para-acuicultura 2. https://cdn.www.gob.pe/uploads/document/file/2276690/ROF-2012-FONDEPES.pdf?v=1634745553
PROINNOVATE	El programa cofinancia proyectos de innovación empresarial, desarrollo productivo, emprendimiento e instituciones del ecosistema, a través de concursos nacionales agrupados en cuatro portafolios: (i) emprendimiento; (ii) innovación empresarial; (iii) desarrollo productivo; (iv) actores del ecosistema; y, (v) innovación frente al cambio climático. The program co-finances projects of business innovation, productive development, entrepreneurship and ecosystem institutions, through national competitions grouped into four portfolios: (i) Entrepreneurship; (ii) business innovation; (iii) productive development; (iv) ecosystem actors; and, (v) innovation in the face of climate change. In the portfolio of innovation against climate change, ProInnóvate presents the first package of bankruptcy funds for the co-financing of technological, productive and innovative projects, which allow companies, entrepreneurs and support entities to mitigate the effects of climate change and / or adapt to the new challenges that it imposes today. The aim is to contribute to increasing the country's competitiveness, achieving national and global climate goals and raising ambition towards carbon neutrality and resilience. The competition has the following climate action approaches: Sustainable Forests and Agriculture, Clean Energy, Sustainable Buildings, Resilient Fisheries, Circular Economy and Resilient Well-being. Source: 1. https://www.proinnovate.gob.pe/ 2.https://www.proinnovate.gob.pe/convocatorias/por-tipo-de-concurso/concursos-para-actores-del-ecosistema/632-innovacion-frente-al-cambio-climatico
PROCOMPITE	PROCOMPITE supports strengthening the competitivity of the private sector. This is a government strategic priority, which the government supports through a Competitive Fund which co-finance productive proposals (business plans). It aims to improve the competitiveness of production chains through the development, adaptation, improvement or transfer of technology. It can consider the transfer of equipment, machinery, infrastructure, inputs, materials and services to organized economic agents, exclusively in areas where private investment is insufficient to achieve competitive and sustainable development of the production chain. PROCOMPITE is aimed at Organized Economic Agents (AEO), who can be: (i) producers; (ii) suppliers; (iii) conservators; (iii) transformers; (iv) industrializers, etc. AEOs may belong to the agricultural sectors; Livestock; fishing; tourism; industry; services; etc. The prioritized sectors and chains will be the result of a study of prioritization of productive zones and chains carried out by the Economic Development Management of the Subnational Government that implements PROCOMPITE.

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Funding Source	Description
Government Programs	
	CLASIFICACIÓN PROCOMPITE  (*) Constituido bajo la forma de personas jurídicas, conforme a Ley General de Sociedades o el Código Civil. Source: 1. https://procompite.produce.gob.pe/index.php/fondo-concursable/categorias-de-procompite
Financial Institutions which offer agricultural credits (including for aquaculture)	
MI BANCO **CAJA AREQUIPA**	Source: 1. https://www.cajaarequipa.pe/negocios/credito-agropecuario/ 2. https://www.mibanco.com.pe/categoria/produccion-agricola
Other national sources of Financing	
CONCYTEC	The National Council of Science, Technology and Innovation is the governing body of SINACYT, responsible for directing, promoting, coordinating, supervising and evaluating State actions throughout the country in the field of science, technology and technological innovation; You guide the actions of the private sector and execute support actions that promote the scientific and technological development of the country. In this sense, CONCYTEC launches the Horizon Europe – Peru portal with opportunities for international cooperation offered by the European Union, through its Horizon Europe Program Source: 1. https://www.gob.pe/institucion/concytec/noticias/700678-el-concytec-lanza-el-portal-horizonte-europa-peru-con-oportunidades-de-cooperacion-internacional-para-la-cti 2. https://horizonteeuropaperu.concytec.gob.pe/

CATEGORIAS	Nº DE SOCIOS	MONTO DE COFINANCIAMIENTO	PORCENTAJE DE COFINANCIAMIENTO (%)
Categoría A	Mínimo 10	≥ 80 mil y ≤ 160 mil	≥ 80%
Categoría B	Mínimo 2	≥ 80 mil y ≤ 350 mil	≥ 70%
Categoría C	Mínimo 20	≥ 110 mil y ≤ 1 mil	≥ 50%

Table 25: Sources of Funding - International Development Partners

Institution	Description
Ibero-American Program of Science and Technology for Development – CYTED	CYTED's main objective is to contribute to the harmonious development of the Ibero-American region through cooperation mechanisms that seek scientific and technological results transferable to production systems and social policies. The beneficiaries of CYTED funding instruments can be universities, R+D centers and innovative companies in the member countries.

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M. Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

Table 26: Detailed Budget Direct Costs - Component 1

USD

Project Components	Expected Outcomes	Expected Concrete Outputs	Activities	Targets	Budget account description	Notes and assumptions	Quantity	Unit Cost	Year 1 Total Year 1	Year 2 Total Year 2	Year 3 Total Year 3	Year 4 Total Year 4	TOTAL COST
COMPONENT 1: Governance, knowledge management and access to finance for sustainable and climate change resilient aquaculture are strengthened.	Stakeholders operate within a more coherent regulatory framework in which measures are adapted to local circumstances and contradictions between legal texts have been revoved	1.1. Strengthened Governance Sector: Legal and Regulatory Framework and Instruments are improved	1.1.1. Policy instruments are strengthened and/or developed to improve governance in the context of climate change.	Direct beneficiaries: 3900 Indirect beneficiaries: 11700	Professional Services – Companies/Firm	A1	50	250	1,875	3,750	6,875	0	12,500
			1.1.2. Regulations and procedures on egg importation and water quality	Direct beneficiaries:3900 Indirect beneficiaries: 11700	Professional Services – Companies/Firm	A2	50	250	0	4,375	5,000	3,125	12,500
			1.1.3. Interagency Coordination for oversight	Direct beneficiaries: 3900 Indirect beneficiaries: 11700	Professional Services – Companies/Firm	A3	120	250	0	0	6,000	24,000	30,000
	Employees within government administrations both at local and central government level are better informed and capacitated on matters of climate change resilience and gender.	1.2. Strengthened Institutional Sector	1.2.1. Self-paced Capacity Development Modules about adaptation to climate change and gender equality and sensitivity perspective	Direct beneficiaries: 4000 Indirect beneficiaries:12000	Professional Services – Companies/Firm	A4	3	15,000	0	6,750	15,750	22,500	45,000
			1.2.2. Two (2) Capacity Building Workshops (6 or 2-day workshops) per region, about adaptation to climate change and innovation for resilience	Direct beneficiaries:150 Indirect beneficiaries:3900	Workshops/Training	A5	6	7,000	0	14,000	14,000	0	28,000
			1.2.3. Two (2) Capacity Building Workshops (6 or 2-day workshops) per region, about gender	Direct beneficiaries:180 Indirect beneficiaries:3900	Workshops/Training	A6	6	7,000	0	14,000	14,000	0	28,000
	The quality and quantity of data about the impact of climate change on aquaculture in the regions of interest to the project are improved	1.3. Enhance the quality of the Knowledge Base: Observatory of Resilient aquaculture	1.3.1. Development of one (1) virtual knowledge and data platform for each region.	Direct beneficiaries:4200 Indirect beneficiaries: 13000	Professional Services – Companies/Firm	A7	3	70,000	0	63,000	84,000	63,000	210,000
			1.3.2. Design of a Management Model for the sustainability of each Regional Platform.	Direct beneficiaries: 4200 Indirect beneficiaries: 13000	Professional Services – Companies/Firm	A8	3	5,000	0	0	9,750	5,250	15,000
			1.3.3. Strengthening decentralized training infrastructure	Direct beneficiaries: 3900 Indirect beneficiaries: 11700	Equipment	A9	3	5,000	7,500	7,500	0	0	15,000
			1.3.4. Gender empowerment training workshops	Direct beneficiaries: 90 Indirect beneficiaries: 3900	Workshops/Training	A10	3	5,500	3,300	13,200	0	0	16,500
			1.3.5. Webinars for university and academic institution faculty on resilient aquaculture and climate change adaptation	Direct beneficiaries:4200 Indirect beneficiaries: 13000	Workshops/Training	A11	3	3,400	0	10,200	0	0	10,200
	Good practices in climate-resilient trout aquaculture are mainstreamed.	1.4. Enhanced the quality of the Knowledge Base of Aquicultures Communities: Thematic Knowledge is improved	1.4.1. Organization of communities of practice and self paced Capacity Development Modules in technical areas	Direct beneficiaries: 3900 Indirect beneficiaries: 11700	Workshops/Training	A12	3	15,000	0	5,000	20,000	20,000	45,000
			1.4.2. Gender-focused workshop on improved practices for women	Direct beneficiaries:3900 Indirect beneficiaries: 11700	Workshops/Training	A13	3	5,000	3,067	4,822	4,822	2,288	15,000
			1.4.3. Data and Research quality improved	Direct beneficiaries:4200 Indirect beneficiaries: 13000	Professional Services – Companies/Firm	A14	1	49,226	0	0	24,613	24,613	49,226
	Knowledge about available sources of funding for trout aquaculturers is mainstreamed.	1.5. Enhanced capacities of aquiculture communities about public policies, data and researchs	1.5.1. Enhancing and transfer of capacities to aquiculture communities - Huánuco	Direct beneficiaries:104 Indirect beneficiaries:1300	Local consultant	A16	0.20	8,210	9,852	19,848	20,143	20,293	70,137
			1.5.2. Enhancing and transfer of capacities to aquiculture communities - Junín	Direct beneficiaries:36 Indirect beneficiaries:1300	Local consultant	A17	0.20	8,210	9,852	19,848	20,143	20,293	70,137
			1.5.3. Enhancing and transfer of capacities to aquiculture communities - Puno	Direct beneficiaries:124 Indirect beneficiaries:1300	Local consultant	A18	0.20	8,350	10,020	20,191	20,500	20,657	71,368
								Sub-total Component 1	45,466	206,485	265,596	226,020	743,568

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Table 27: Detailed Budget Costs: Component 2

USD

Project Components	Expected Outcomes	Expected Concrete Outputs	Activities	Targets	Budget account description	Notes and assumptions	Quantity	Unit Cost	Year 1 Total Year 1	Year 2 Total Year 2	Year 3 Total Year 3	Year 4 Total Year 4	TOTAL COST	Total amount per output (USD)
COMPONENT 2: Innovation and technology transfer mechanisms are improved and/or implemented to promote resilient aquaculture activity in Huanuco, Junin and Puno, Peru.	Trout Aquaculturer are better prepared to confront climate-change related emergencies	2.1. Improved Risk Prevention and Management	2.1.1. Three (3) Early Warning Systems (SAT) for extreme events for the aquaculture sector are designed and implemented, one for each of the prioritized regions Huanuco, Junin and Puno. This amount includes designing and installation by USD 100,000, and equipments by USD 50,000.	Direct beneficiaries: 3,900 Indirect beneficiaries:7124	Professional Services - Companies/Firm and Equipment	A19	3	150,000	0	0	225,000	225,000	450,000	521,000
			2.1.2. Three (3) Contingency Plans are developed for extreme climate change events. One for each region of Huanuco, Junin and Puno, including training and demonstrations.	Direct beneficiaries: 3,900 Indirect beneficiaries:7124	Professional Services - Companies/Firm	A20	3	17,000	0	10,200	25,500	15,300	51,000	
			2.1.3. Integrated Statistical Information System	Direct beneficiaries: 3,900 Indirect beneficiaries:7124	Professional Services - Companies/Firm	A21	1	20,000	0	0	3,000	17,000	20,000	
	Aquaculture practices are improved to enable increased productive efficiency and improved use of hydrological resources	2.2.Promoted technologies to help adapt production systems to climate change and Infrastructure built and improved in areas highly vulnerable to climate change	2.2.1. Three (3) Water recirculation systems, together with a solar panel. The estimated unit cost is US $185,000, including design, adaptation, installation and maintenance.	Direct beneficiaries: 3,900 Indirect beneficiaries:7124	Equipment	A22	3	185,000	0	555,000	0	0	555,000	1,850,076
			2.2.2. Sixty nine (69) Probiotics, including research and testing, for 27 fish farmers in Huanuco; 10 in Junin and 32 in Puno, at a unit cost of US $2,700.	Direct beneficiaries: 274 Indirect beneficiaries: 3900	Equipment	A23	69	2,700	0	93,150	93,150	0	186,300	
			2.2.3. Eighteen (18) Microbubble aerators, together with a solar panel. The estimated unit cost is US $3,900, including design, adaptation, installation and maintenance. 14 aerators will be delivered in Huanuco, 2 in Junin, and 2 in Puno.	Direct beneficiaries:72 Indirect beneficiaries:3900	Equipment	A24	18	3,900	0	35,100	35,100	0	70,200	
			2.2.4. Twenty one (21) Oxygenators. 11 will be delivered in Huanuco; 9 in Junin and 1 in Puno, with a unit cost of US $3,900, including design, adaptation, installation and maintenance.	Direct beneficiaries: 84 Indirect beneficiaries: 3900	Equipment	A25	21	3,900	0	40,950	40,950	0	81,900	
			2.2.5. Thirty-four (34) Climate resistant cages. 3 cages will be installed in Huanuco and 31 in Puno, at a unit cost of US$ 12,000.	Direct beneficiaries: 136 Indirect beneficiaries: 3900	Equipment	A26	34	12,000	0	204,000	204,000	0	408,000	
			2.2.6. Sixty-seven (67) Sensors for on-farm water quality monitoring. 27 in Huanuco, 9 in Junin and 31 in Puno, at a unit cost of US $4,900.	Direct beneficiaries: 268 Indirect beneficiaries: 3900	Equipment	A27	67	4,900		328,300	0	0	328,300	
			2.2.7. Water harvesting and reforestation projects. One in each region of Huanuco, Junin and Puno.	Direct beneficiaries: 3,900 Indirect beneficiaries:7124	Professional Services - Companies/Firm	A28	3	30,000	0	27,000	27,000	36,000	90,000	
			2.2.8. Technology transfer service, training and coaching in the use of technologies, including a user and maintenance manual.(Fee of 8% of the cost of each technology).	Direct beneficiaries: 264 Indirect beneficiaries: 3900	Workshops/Training	A29	1	130,376	0	100,520	29,856	0	130,376	
	Knowledge about efficient use of new technologies is mainstreamed	2.3. Enhanced capacities of aquiculture communities about innovation and technologies for adaptation	2.3.1. Enhancing and transfer of capacities to aquiculture communities - Huanuco.	Direct beneficiaries: 104 Indirect beneficiaries: 388	Local consultant	A30	0.60	8,210	29,556	59,545	60,430	61,349	210,880	636,355
			2.3.2. Enhancing and transfer of capacities to aquiculture communities - Junin.	Direct beneficiaries: 36 Indirect beneficiaries: 960	Local consultant	A31	0.60	8,210	29,556	59,545	60,430	61,349	210,880	
			2.3.3. Enhancing and transfer of capacities to aquiculture communities - Puno.	Direct beneficiaries: 124 Indirect beneficiaries: 2108	Local consultant	A32	0.60	8,350	30,060	60,574	61,499	62,461	214,594	
	Improved aquaculture practices which enable women to more easily partake in the activity	2.4. Improved and implemented an Environmental and Social Management with a Gender Perspective	2.4.1. Monitoring on environmental and social management with a gender perspective.	Direct beneficiaries: 264 Indirect beneficiaries: 3900	Local consultant	A33	0.80	8,000	38,400	77,338	78,434	79,575	273,747	298,247
			2.4.2. Programs for good environmental management.	Direct beneficiaries: 264 Indirect beneficiaries: 3900	Equipment	A34	0.80	25,000	0	4,000	8,000	8,000	20,000	
			2.4.3. Instruments and accessories for compliance with biosafety and occupational safety protocols.	Direct beneficiaries: 264 Indirect beneficiaries: 3900	Equipment	A35	3.00	1,500	0	4,500	0	0	4,500	
								Sub-total Component 2	127,572	1,659,722	952,349	566,035	3,305,677	

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Table 28: Detailed Budget Costs - Component 3

USD

Project Components	Expected Outcomes	Expected Concrete Outputs	Activities	Targets	Budget account description	Notes and assumptions	Quantity	Unit Cost	Year 1 Total Year 1	Year 2 Total Year 2	Year 3 Total Year 3	Year 4 Total Year 4	TOTAL COST	Total amount per output (USD)
COMPONENT 3: Value and production chains of resilient aquaculture activities will help diversify aquaculture producers' livelihoods and improve their food security.	Increased quality of trout aquaculture	3.1. The aquaculture sector's value chains are strengthened, and climate related losses are reduced.	3.1.1. Primary processing plant: Modular design and construction for primary processing, instruments and equipments, photovoltaic power system, Flake ice production factory, Vacuum sealing equipment, Coolers and boxes for distribution, Adjustments on the ground (hydraulic, land clearing, among others) Studies and procedures for licenses and qualifications - Junin.	Direct beneficiaries: 36 Indirect beneficiaries: 960	Equipment	A36	1	125,500	0	25,100	62,750	37,650	125,500	374,500
			3.1.2. Primary processing plant: Modular design and construction for primary processing, instruments and equipments, photovoltaic power system, Flake ice production factory, Vacuum sealing equipment, Coolers and boxes for distribution, Adjustments on the ground (hydraulic, land clearing, among others) Studies and procedures for licenses and qualifications - Huanuco.	Direct beneficiaries: 104 Indirect beneficiaries: 388	Equipment	A37	1	125,500	0	25,100	62,750	37,650	125,500	
			3.1.3. Primary processing plant: Photovoltaic power system, Flake ice production factory, Vacuum sealing equipment, Coolers and boxes for distribution, Adjustments on the ground (hydraulic, land clearing, among others) Studies and procedures for licenses and qualifications - Puno.	Direct beneficiaries: 124 Indirect beneficiaries: 2108	Equipment	A38	1	89,000	0	17,800	44,500	26,700	89,000	
			3.1.4. Three (3) silage areas to improve the final product presentation.	Direct beneficiaries: 264 Indirect beneficiaries: 3900	Equipment	A39	3	4,000	0	0	3,600	8,400	12,000	
			3.1.5. Gender focused certification for primary processing plant.	Direct beneficiaries: 264 Indirect beneficiaries: 3900	Professional Services – Companies/Firm	A40	3	2,500	0	0	0	7,500	7,500	
			3.1.6. Management model.	Direct beneficiaries: 264 Indirect beneficiaries: 3900	Professional Services – Companies/Firm	A41	3	5,000	0	0	0	15,000	15,000	
	Increased quality of trout aquaculture	3.2. Designed and implemented marketing strategies	3.2.1. Market research for competitiveness.	Direct beneficiaries: 264 Indirect beneficiaries: 3900	Professional Services – Companies/Firm	A42	3	2,000	0	0	3,000	3,000	6,000	42,000
			3.2.2. Development of the collective brand.	Direct beneficiaries: 264 Indirect beneficiaries: 3900	Professional Services – Companies/Firm	A43	3	1,500	0	0	2,250	2,250	4,500	
			3.2.4. Inclusion of products in online shops.	Direct beneficiaries: 264 Indirect beneficiaries: 3900	Professional Services – Companies/Firm	A44	3	10,500	0	0	0	31,500	31,500	
	Marketing practices are improved	3.3. Enhanced capacities of aquaculture communities about commercial and marketing activities	3.3.1. Enhancing and transfer of capacities to aquaculture communities - Huanuco.	Direct beneficiaries: 104 Indirect beneficiaries: 388	Local consultant	A45	0.20	3,010	3,612	7,368	7,663	7,970	26,613	81,078
			3.3.2. Enhancing and transfer of capacities to aquaculture communities - Junin.	Direct beneficiaries: 36 Indirect beneficiaries: 960	Local consultant	A46	0.20	3,010	3,612	7,368	7,663	7,970	26,613	
			3.3.3. Enhancing and transfer of capacities to aquaculture communities - Puno.	Direct beneficiaries: 124 Indirect beneficiaries: 2108	Local consultant	A47	0.20	3,150	3,780	7,711	8,020	8,340	27,851	
	Ethical and gender-sensitive practices are used to increase the profile of climate-resilient aquaculture in Junin, Huanuco and Puno	3.4. Improved and implemented an Environmental and Social Management with a Gender Perspective	3.4.1 Monitoring on environmental and social management with a gender perspective.	Direct beneficiaries: 264 Indirect beneficiaries: 3900	Local consultant	A48	0.20	8,000	9,600	19,334	19,609	19,894	68,437	77,937
			3.4.2. Programs for good environmental management.	Direct beneficiaries: 264 Indirect beneficiaries: 3900	Local consultant	A49	0.20	25,000	0	1,000	2,000	2,000	5,000	
			3.4.3. Instruments and accessories for compliance with biosafety and occupational safety protocols.	Direct beneficiaries: 264 Indirect beneficiaries: 3900	Equipment	A50	3.00	1,500	0	4,500	0	0	4,500	
							Sub-total Component 3		26,604	115,283	223,865	215,824	575,515	575,515

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Table 29: Detailed Budget Costs – Total Project Costs

				Total Project Components (1+2+3) or Direct Costs	193,642	1,981,490	1,441,750	1,007,878	4,624,760
Activities	Targets	Quantity	Unit Cost	Year 1 Total Year 1	Year 2 Total Year 2	Year 3 Total Year 3	Year 4 Total Year 4	TOTAL COST
4. Project Execution Cost or Indirect Costs	4.1. Project General Coordinator	1	4,060	24,360	49,694	51,682	53,749	179,486
	4.2. Travel Costs	57	Prom.	6,990	11,650	11,650	11,650	41,940
	4.3. Fiduciary and Administrative Cost	1	100,000	25,000	25,000	25,000	25,000	100,000
				Total Project Execution Cost or Indirect Costs	56,350	86,344	88,332	90,399	321,426
				TOTAL DIRECT + INDIRECT COSTS	249,992	2,067,834	1,530,082	1,098,278	4,946,186
								IMPLEMENTATION FEE (8,4%)	415,480
								Amount of Financing Requested	5,361,666.00

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Table 30: Detailed Budget Notes

Note	Description	Gender Action Plan Budget	GAP comment	ESMP Budget (excluding GAP)	ESMP Comment	Activity	Budget account	Quantity	Unit Cost	Total Year 1	Total Year 2	Total Year 3	Total Year 4	TOTAL COST
A1	Cost of Professional Fees USD 250 per day for 50days. Consultancy aims to identify possible legal and regulatory improvements that can be made either through the adaptation, update of existing norms and regulations as well as the design of new policies addressing notable gaps.	10% of the cost dedicated to focus on gender aspects (5 days @$250/day), $1250	Gender perspective is applied in the strengthetening and developing of public policy instruments.	10% to identify elements that will facilitate compliance with legislation and formalization of trout farming activity, 10% fr design and norms consistent wth the Biological Diversit Development Plan and design and enforcement of zonification norms being developed (USD2500)	Principle 1 and Principle 9 (Zonification)	1.1.1. Policy instruments are strengthened and/or developed to improve governance in the context of climate change.	Professional Services - Companies/Firm	50	250	1,875	3,750	6,875	0	**12,500**
A2	Cost of Professional Fees USD 250 per day for 50days	10% of the cost dedicated to focus on gender aspects (5 days @$250/day), $1250	Mainstreaming gender in drafting new regulations. The process focuses on systematically reviewing existing norms and regulations to highlight gender perspective. Additionally, similar review process envisaged for new regulations, norms and strategies supported by the project.	25 % of the cost dedicated to adjusting the the hygiene and biosafety section.	Principle 1 - This component will finance the drafting of the manual of good Aquaculture practices and the update/adjustment of the l which higiene and biosaftey norms and regulations (drafted during project preparation). Principle 13 (public health)	1.1.2. Regulations and procedures on egg importation and water quality	Professional Services - Companies/Firm	50	250	0	4,375	5,000	3,125	**12,500**
A3	Cost of Professional Fees USD 120 per day for 50days	10% of the cost dedicated to focus on gender aspects (5 days @$120/day), $600	Focus on mainstreaming gender sensitivity in the oversight and enforcement process	10% to focus on ehnancing the capacity of public sector agencies to enforce norms and regulations (USD 600), 20% for enforcement of the framework of law 29811 - The mortaorium law (2015) - (USD 1200), Initial implementation of solid waste minimization and management plan (1200)	Principle 10 -Biodiversity conservation, Pollution prevention and	1.1.3. Intaragency Coordination for oversight	Professional Services - Companies/Firm	120	250	0	0	6,000	24,000	**30,000**
A4	A learning module (theoretical compact or thematic block) will be developed for extension workers on climate change adaptation and gender, as part of the Institutional Strengthening Programme.	33% of the budgeted costs is expected to relate specifically to gender module ($15000)	Targeted to public sevants, training includes gender-sex diversity and issues affecting the LGBTIQ+ community.	50% focused on climate change.	Principle 11 - Climate Hange	1.2.1. Self placed Capacity Development Modules about adaptation to climate change and gender equality and sensitivity perspective	Professional Services - Companies/Firm	2	15,000	0	6,750	15,750	22,500	**45,000**
A5	Costs associated with the preparation of learning material and logistics (transport, room and board for presenters, mobility for participants, childcare, etc) for two workshops which will be held - at the beginning of the implementation and at mid-term, in each region (Huánuco, Junin and Puno) on climate change adaptation and innovation for climate resilience. Expected number of participants: 50.	16.6% of budgeted costs will be dedicated to addressing gender dimensions within the treated themes ($ 4,668)	Gender elements included in design of the training module	50% directly related to implementation of BDMP	Principle 11 - Climate change prevention	1.2.2. Two (2) Capacity Building Workshops (6 or 2-day workshops) per region, about adaptation to climate change and innovation for resiliance	Workshops/Training	6	7,000	0	14,000	14,000	0	**28,000**

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Note	Description	Gender Action Plan Budget	GAP comment	ESMP Budget (excluding GAP)	ESMP Comment	Activity	Budget account	Quantity	Unit Cost	Total Year 1	Total Year 2	Total Year 3	Total Year 4	TOTAL COST
A6	Costs associated with the preparation of learning material and logistics (transport, room and board for presenters, mobility for participants, childcare, etc) for two workshops which will be held - at the beginning of the implementation and at mid-term, in each region (Huánuco, Junín and Puno) on gender equality, sensitivity and perspective, with an emphasis on gender-sex diversity and issues affecting the LGBTIQ+ community. Expected number of participants: 30.	100% gender related ($28000)	Facilitation of women participation through the use of innovative arrangements and recognition of work-life balance needs	NA	NA	1.2.3. Two (2) Capacity Building Workshops (6 or 2-day workshops) per region, about gender	Workshops/Training	6	7,000	0	14,000	14,000	0	**28,000**
A7	Cost associated with the development of an online platform.	No specific budget earmarked for gender,	NR	10% for development and population of norms and regulations and instructions on how to where to them	Platform will include relevant principles and norms as well as recommendations for adherence with policies	1.3.1. Development of one (1) virtual knowledge and data platform for each region	Equipment	3	70,000	0	63,000	84,000	63,000	**210,000**
A8	Professional fees: lump sum estimate	No specific budget earmarked for gender,	NR	NA	NA	1.3.2. Design of a Management Model for the sustainability of each Regional Platform.	Professional Services – Companies/Firm	3	5,000	0	0	9,750	5,250	**15,000**
A9	Equipment (internet connectivity if needed) and installation costs to enable training spaces in each of the 3 regions (Huánuco, Junín y Puno).	While there is no specific gender allocation, it is expected to have a significant impact on capacity developent opportunities for women	Decentralized training delivery centers allow women to attend training near their location.			1.3.3. Strengthening decentralized training infrastructure	Equipment	3	5,000	7,500	7,500	0	0	**15,000**
A10	Costs associated with the preparation of learning material and logistics (transport, room and board for presenters, mobility for participants, childcare, etc) for one workshop in each region (Huanuco, Junin and Puno) on gender equality and women empowerment. Expected number of participants: 30.	100% gender related ($16500)	Training includes exercising labor rights and undertaking the formalization process of the aquaculture productive operation.	10% Focus on development of climate change and resilience from a gender perspective (USD1650)- Note this not included ESMP budget to avoid overcounting.	Principle 11 - Climate change prevention	1.3.4. Gender empowerment training workshops	Workshops/Training	3	5,500	3,300	13,200	0	0	**16,500**
A11	Professional fees, twinning arrangements -	10% of budget earmarked to raise gender issues associated with the different dimensions treated in modules	Focus on expanding gender-specific material of use to stakeholders through cooperation with similar organizations within the region.	10% on biodiversity conservation best practices educational material	Principle 11 - Climate change prevention	1.3.5. Webinars for university and academic institution faculty on resilient aquaculture and climate change adaptation	Workshops/Training	3	3,400	0	10,200	0	0	**10,200**
A12	Costs associated with managing communities of practice include but are not limited to (dissemination costs, logistics for the preparation of events, production of informational material, management of an online messaging board, etc)	No gender specific budget earmarked	NR	10% Safeguards	All	1.4.1. Organization of communities of practice and self paced Capacity Development Modules in technical areas	Workshops/Training	3	15,000	0	5,000	20,000	20,000	**45,000**
A13	Professional fees, logististics	100% gender related (US$15000)	Targeted to people involved in the RORA; benefiting directly rainbow trout producers and indirectly the entire aquaculture sector.	10% related to climate change	Not included in ESMP budget to avoid double counting.	1.4.2. Gender-focused workshop on improved practices for women	Workshops/Training	1	5,000	3,057	4,822	4,822	2,288	**15,000**
A14	Peer reviewers will evaluate the quality research. Only the work that passes the peer review will be uploaded. This will ensure that the available research is of acceptable quality. Similar quality control arrangements will be implemented for any data made available through the Regional Observatories for resilient aquaculture.	No gender specific budget earmarked	NR	10% development of material to promote principles	All	1.4.3. Data and Research quality improved	Professional Services – Companies/Firm	1	49,226	0	0	24,613	24,613	**49,226**
A16	Professional fees for field-based technical assistance	TA to focus on improving capacity of stakeholders to apply for available funds.	Focus on identifying specific hurdles for women in the region in completing application.	15% for assistance in compliance with norms and regulations	All - Addressubg tge beed to educate and mentor producers on how to navigate the institutional complexities of compliance.		Local consultant	0.20	8,210	9,852	19,848	20,143	20,293	**70,137**

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Note	Description	Gender Action Plan Budget	GAP comment	ESMP Budget (excluding GAP)	ESMP Comment	Activity	Budget account	Quantity	Unit Cost	Total Year 1	Total Year 2	Total Year 3	Total Year 4	TOTAL COST
A17	Professional fees for field-based technical assistance.	TA to focus on improving capacity of stakeholders to apply for available funds.	Focus on identifying specific hurdles for women in the region in completing application.	15% for assistance in compliance with norms and regulations.	All -25 % of the cost dedicated to adjusting the the hygiene and biosafety section.	1.6.2. Enhancing and transfer of capacities to aquiculture communities - Junin.	Local consultant	0.20	8,210	9,852	19,848	20,143	20,293	**70,137**
A18	Professional fees for field-based technical assistance	TA to focus on improving capacity of stakeholders to apply for available funds.	Focus on identifying specific hurdles for women in the region in completing application.	15% for assistance in compliance with norms and regulations.	All - 25 % of the cost dedicated to adjusting the the hygiene and biosafety section.	1.6.3. Enhancing and transfer of capacities to aquiculture communities - Puno.	Local consultant	0.20	8,350	10,020	20,191	20,500	20,657	**71,368**
A19	Currently the SATs of the meteorological stations operate with a general focus. This cost includes the design and implementation of an EWS with a focus on aquaculture.	No gender specific budget earmarked	NR	15% to ensure inclusion of relevant early warning indicators to mitigate risks in the aftermath of climate shocks.	Principle 11 - Climate Change prevention, Principle 12 Pollution prevention and resource Efficiency.	2.1.1. Three (3) Early Warning Systems (SAT) for extreme events for the aquaculture sector are designed and implemented, one for each of the prioritized regions Huanuco, Junin and Puno. This amount includes design and implementation by USD 100,000, and equipments by USD 50,000.	Equipment	3	150,000	0	0	225,000	225,000	**450,000**
A20	Professional fees for development of of contingency plans, logistics for preparation of stakeholders.	5% to determine whether specific measures aimed at women entrepreneurs are equired (US$2550)	Focus on identifying gender specific measures in contingency plans, including measures to combat gender-based violence during emergency period.	15% to address adherence to principles.	Principle 10 - Biodiversity Conservation, Principle 11 Climate Change.	2.1.2. Three (3) Contingency Plans are developed for extreme climate change events. One for each region of Huanuco, Junin and Puno, including training and demonstrations.	Professional Services - Companies/Firm	3	17,000	0	10,200	25,500	15,300	**51,000**
A21	The cost includes the registration of indicators issued by fish farmers and IMARPE, which are necessary to reinforce the system currently managed by PRODUCE.	No gender specific budget earmarked	NR	5% to develop suitable indicators to monitor compliance and adherance to norms and regulations.	Principle 1: Compliance with legislation.	2.1.3. Integrated Statistical Information System.	Equipment	1	20,000	0	0	3,000	17,000	**20,000**
A22	Equipment and installation of new technology.	No gender specific budget earmarked, although technical assistance is included to ensure appropriate and prompt operability.	These are mainly equipment and TA to ensure installation of material.		These are mainly equipment and TA to ensure installation of material.	2.2.1. Three (3) Water recirculation systems, together with a solar panel. The estimated unit cost is US $185,000, including design, adaptation, installation and maintenance.	Equipment	3	185,000	0	555,000	0	0	**555,000**
A23	Equipment and installation of new technology.	No gender specific budget earmarked, although technical assistance is included to ensure appropriate and prompt operability.	These are mainly equipment and TA to ensure installation of material.	2% for TA on efficient use of bioproducts and 8% on safe operation of new equipment	Principle 2: Fundamental Labor Rights	2.2.2. Sixty nine (69) Probiotics, including research and testing, for 27 fish farmers in Huanuco; 10 in Junin and 32 in Puno, at a unit cost of US $2,700.	Equipment	69	2,700	0	93,150	93,150	0	**186,300**
A24	Equipment and installation of new technology.	No gender specific budget earmarked, although technical assistance is included to ensure appropriate and prompt operability.	These are mainly equipment and TA to ensure installation of material.			2.2.3. Eighteen (18) Microbubble aerators, together with a solar panel. The estimated unit cost is US $3,900, including design, adaptation, installation and maintenance. 14 aerators will be delivered in Huanuco, 2 in Junin, and 2 in Puno.	Equipment	18	3,900	0	35,100	35,100	0	**70,200**
A25	Equipment and installation of new technology.	No gender specific budget earmarked, although technical assistance is included to ensure appropriate and prompt operability.	These are mainly equipment and TA to ensure installation of material.			2.2.4. Twenty one (21) Oxygenators. 11 will be delivered in Huanuco; 9 in Junin and 1 in Puno, with a unit cost of US $3,900, including design, adaptation, installation and maintenance.	Equipment	21	3,900	0	40,950	40,950	0	**81,900**
A26	Equipment and installation of new technology.	No gender specific budget earmarked	These are mainly equipment and TA to ensure installation of material.			2.2.5. Thirty-four (34) Climate resistant cages. 3 cages will be installed in Huanuco and 31 in Puno, at a unit cost of US$ 12,000.	Equipment	34	12,000	0	204,000	204,000	0	**408,000**
A27	Equipment and installation of new technology.	No gender specific budget earmarked	These are mainly equipment and TA to ensure installation of material.			2.2.6. Sixty-seven (67) Sensors for on-farm water quality monitoring. 27 in Huánuco, 9 in Junin and 31 in Puno, at a unit cost of US $4,900.	Equipment	67	4,900		328,300	0	0	**328,300**
A28	Equipment and installation of new technology.	No gender specific budget earmarked	These are mainly equipment and TA to ensure installation of material.	50% to ensure implementation of relevant norms and principles	Principle 9 - Protection of natural habitats	2.2.7. Water harvesting and reforestation projects. One in each region of Huanuco, Junin and Puno.	Professional Services - Companies/Firm	3	30,000	0	27,000	27,000	36,000	**90,000**

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Note	Description	Gender Action Plan Budget	GAP comment	ESMP Budget (excluding GAP)	ESMP Comment	Activity	Budget account	Quantity	Unit Cost	Total Year 1	Total Year 2	Total Year 3	Total Year 4	TOTAL COST
A29	Professional fees - field based TA.	No gender specific budget earmarked.	NR			2.2.8. Technology transfer service, training and coaching in the use of technologies, including a user and maintenance manual.(Fee of 8% of the cost of each technology 8%)	Professional Services – Companies/Firm	1	130,376	0	100,520	29,856	0	**130,376**
A30	Professional fees - field based TA.	No gender specific budget earmarked.	NR			2.3.1. Enhancing and transfer of capacities to aquiculture communities - Huanuco.	Local consultant	1	8,210	29,556	59,545	60,430	61,349	**210,880**
A31	Professional fees - field based TA.	No gender specific budget earmarked.	NR			2.3.2. Enhancing and transfer of capacities to aquiculture communities - Junin.	Local consultant	1	8,210	29,556	59,545	60,430	61,349	**210,880**
A32	Professional fees - field based TA.	No gender specific budget earmarked.	NR			2.3.3. Enhancing and transfer of capacities to aquiculture communities - Puno.	Local consultant	1	8,350	30,060	60,574	61,499	62,461	**214,594**
A33	A Specialist based in Puno will track the ES management plan and gender action plan. This Specialist will be based in Puno, with occasional secondments to Huánuco and Junín. The responsibility of this team member addresses the monitoring of the Environmental and Social Management Plan and the Gender Action Plan. He/she will issue biannual evaluation reports on environmental, social and gender management, providing recommendations in a corrective action plan, when necessary. This Specialist will build on the monitoring of compliance with the Adaptation Fund safeguards and CAF safeguards. A CAF specialist will evaluate the work of this specialist. The cost includes recruitment, plus social benefits in accordance with Peruvian law, including labour insurance.	33% budget earmarked for gender-related issues (US$91,249)				2.4.1. Monitoring on environmental and social management with a gender perspective.	Local consultant	1	8,000	38,400	77,338	78,434	79,575	**273,747**
A34	Prof					2.4.2. Programs for good environmental management.	Equipment	1	25,000	0	4,000	8,000	8,000	**20,000**
A35	Equipment and installation of new technology.	No gender specific budget earmarked	NR			2.4.3. Instruments and accessories for compliance with biosafety and occupational safety protocols	Equipment	3	1,500	0	4,500	0	0	**4,500**
A36	Primary processing plant: Modular design and construction for primary processing, instruments and equipments, photovoltaic power system, Flake ice production factory, Vacuum sealing equipment, Coolers and boxes for distribution, Adjustments on the ground (hydraulic, land clearing, among others) Studies and procedures for licenses and qualifications - Junin.	No gender specific budget earmarked	NR			3.1.2. Primary processing plant: Construction, instruments and equipments - Junin	Equipment	1	125,500	0	25,100	62,750	37,650	**125,500**
A37	Primary processing plant: Modular design and construction for primary processing, instruments and equipments, photovoltaic power system, Flake ice production factory, Vacuum sealing equipment, Coolers and boxes for distribution, Adjustments on the ground (hydraulic, land clearing, among others) Studies and procedures for licenses and qualifications - Huanuco.	No gender specific budget earmarked	NR			3.1.3. Primary processing plant: Instruments and equipments - Huanuco.	Equipment	1	125,500	0	25,100	62,750	37,650	**125,500**
A38	Primary processing plant: Photovoltaic power system, Flake ice production factory, Vacuum sealing equipment, Coolers and boxes for distribution, Adjustments on the ground (hydraulic, land clearing, among others) Studies and procedures for licenses and qualifications - Puno.	No gender specific budget earmarked	NR			3.1.4. Primary processing plant: Construction, instruments and equipments - Puno.	Equipment	1	89,000	0	17,800	44,500	26,700	**89,000**

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Note	Description	Gender Action Plan Budget	GAP comment	ESMP Budget (excluding GAP)	ESMP Comment	Activity	Budget account	Quantity	Unit Cost	Total Year 1	Total Year 2	Total Year 3	Total Year 4	TOTAL COST
A39	Areas annexed to the Processing Plant for waste management.	No gender specific budget earmarked.	NR			3.1.5. Three (3) silage areas to improve the final product presentation	Equipment	3	4,000	0	0	3,600	8,400	12,000
A40	Professional Fees/Logistics.	100% gender related (US $10,200).	Enhancing the perception of the quality of product throguh gender certification.			3.1.6. Gender focused certification for primary processing plant	Professional Services – Companies/Firm	3	2,500	0	0	0	7,500	7,500
A41	Business Plan and Magenement Plan of Processing Plant.	No gender specific budget earmarked.	NR			3.1.7. Management model	Professional Services – Companies/Firm	3	5,000	0	0	0	15,000	15,000
A42	Professional fees.	5% earmarked to review market sensitivity to gender-related dimensions for marketing purposes (US $300).	Focus on examining special competitive opportunities for female-owned ARELES AND AMYPES			3.2.1. Market research for competitiveness	Professional Services – Companies/Firm	3	2,000	0	0	3,000	3,000	6,000
A43	Professional fees.	5% Earmarked to review market sensitivity to gender-related dimensions for marketing purposes (US $275).	Special focus on enhancing the maketability of women producers by changing perceptio nand image.			3.2.2. Development of the collective brand	Professional Services – Companies/Firm	3	1,500	0	0	2,250	2,250	4,500
A44	Professional fees.	5% Earmarked to review market sensitivity to gender-related dimensions for marketing purposes (US $1,575).				3.2.4. Inclusion of products in online shops.	Professional Services – Companies/Firm	3	10,500	0	0	0	31,500	31,500
A45	Professional fees.	TA to focus on improving capacity of stakeholders to apply for available funds.	Focus on identifying specific hurdles for women in the region in completing application.			3.3.1. Enhancing and transfer of capacities to aquiculture communities - Huanuco.	Local consultant	0.20	3,010	3,612	7,368	7,663	7,970	26,613
A46	Professional fees.	TA to focus on improving capacity of stakeholders to apply for available funds.	Focus on identifying specific hurdles for women in the region in completing application.			3.3.2. Enhancing and transfer of capacities to aquiculture communities - Junin.	Local consultant	0.20	3,010	3,612	7,368	7,663	7,970	26,613
A47	Professional Fees- field based TA.	TA to focus on improving capacity of stakeholders to apply for available funds.	Focus on identifying specific hurdles for women in the region in completing application.			3.3.3. Enhancing and transfer of capacities to aquiculture communities - Puno.	Local consultant	0.20	3,150	3,780	7,711	8,020	8,340	27,851
A48	A Specialist based in Puno will track the ES management plan and gender action plan. This Specialist will be based in Puno, with occasional secondments to Huánuco and Junín. The responsibility of this team member addresses the monitoring of the Environmental and Social Management Plan and the Gender Action Plan. He/she will issue biannual evaluation reports on environmental, social and gender management, providing recommendations in a corrective action plan, when necessary. This Specialist will build on the monitoring of compliance with the Adaptation Fund safeguards and CAF safeguards. A CAF specialist will evaluate the work of this specialist. The cost includes recruitment, plus social benefits in accordance with Peruvian law, including labor insurance.					3.4.1.Monitoring on environmental and social management with a gender perspective	Local consultant	0.20	8,000	9,600	19,334	19,609	19,894	68,437
A49	Equipment and installation of new technology.					3.4.2. Programs for good environmental management	Equipment	0	25,000	0	1,000	2,000	2,000	5,000
A50	Equipment and installation of new technology.					3.4.3. Instruments and accessories for compliance with biosafety and occupational safety protocols.	Equipment	3	1,500	0	4,500	0	0	4,500

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N. Include a Disbursement Table with Time Bound Milestones

Table 31:

	Period after launch of the project												
	Sem I Year 1	Sem II Year 1	Total Year 1	Sem I Year 2	Sem II Year 2	Total Year 2	Sem I Year 3	Sem II Year 3	Total Year 3	Sem I Year 4	Sem II Year 4	Total Year 4	TOTAL USD
Component 1	-	45,466	**45,466**	91,685	114,800	**206,485**	108,507	157,090	**265,596**	150,592	75,428	**226,020**	**743,568**
Component 2	-	127,572	**127,572**	651,030	1,008,692	**1,659,722**	414,494	537,854	**952,349**	419,662	146,372	**566,035**	**3,305,677**
Component 3	-	20,604	**20,604**	22,854	92,429	**115,283**	90,179	133,626	**223,805**	163,926	51,898	**215,824**	**575,515**
Total Direct Costs	**-**	**193,642**	**193,642**	**765,569**	**1,215,921**	**1,981,490**	**613,179**	**828,570**	**1,441,750**	**734,180**	**273,698**	**1,007,878**	**4,624,760**
Indirect Cost	2,330	54,020	**56,350**	29,020	57,324	**86,344**	29,994	58,338	**88,332**	31,008	59,392	**90,399**	**321,426**
Implementing Agency Fees	38,085	38,085	**76,170**	34,410	34,410	**68,820**	40,635	40,635	**81,270**	94,610	94,610	**189,220**	**415,480**
Grand Total	**40,415**	**285,747**	**326,162**	**828,999**	**1,307,655**	**2,136,654**	**683,809**	**927,543**	**1,611,352**	**859,798**	**427,700**	**1,287,498**	**5,361,666**

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PART III: IMPLEMENTATION ARRANGEMENTS.

A. Describe the provisions for the implementation of the project, in accordance with the gender policy.

17.1. The project was developed through a participatory process in close collaboration between MINAM, PRODUCE and CAF.

17.1.1. At the central government level, PRODUCE will act as the Technical Executing Entity through the General Directorate of Fisheries and Aquaculture Environmental Affairs (DGAAMPA), and will coordinate with other aquaculture sector agencies related to the Project, as well as with the Regional Directorates of Production (DIREPROS). These institutions, which are part of the regional government, share with PRODUCE the responsibility for the oversight micro and small-scale aquaculture (AMYPE) and limited resource aquaculture (AREL).

17.1.2. Regional Governments (GORE), through their relevant specialized agencies will be actively involved in the implementation of project activities since their responsibilities include the oversight, promotion, and strengthening of governance in their territory. GOREs will additionally be involved in project-related coordination mechanisms such as working groups and governing councils.

17.1.3. In its role as the Implementing Entity, CAF will carry out the required supervision, monitoring, and coordination to ensure the successful implementation of the project and compliance with its technical, administrative, accounting, and fiduciary regulations. CAF will guarantee the application of internationally accepted fiduciary standards, which translates into complete transparency in the handling of received resources. CAF will also apply its procurement standards for the evaluation and selection of an entity that certifies its fiduciary capacity to fulfill the role of Administrative Executing Organization. In this process, representatives from MINAM and PRODUCE will be invited to the Evaluation and Selection Committee of an Administrative Executing Entity.

17.1.4. Binding agreements will be signed between CAF, MINAM, PRODUCE, and the Administrative Executing Organization to define roles and responsibilities and ensure compliance with respective regulations, the environmental and social management plan, the development of best practices, audits, inventory control, and biosafety plans, among other parameters.

17.2. The emphasis of the project is to strengthen and improve coordination among multiple institutions, academia, and civil society that are involved in supporting rainbow-trout farmers. To do so, the project emphasizes and encourages the proactive involvement of all concerned parties and develops a solid framework for coordination and cooperation.

17.2.1 In Component 1, will involve several public sector agencies as well as academic institutions. Within the public sector, concerned institutions include the General Directorate of Fisheries and Aquaculture of PRODUCE (DGAAMPA) as Technical Executing Entity, FONDEPES, the Marine Institute of Peru (IMARPE), ITP, and the network of Innovation and Technical institutions (CITE), SANIPES and the Regional Directorates of Production (DIREPROs) of the Regional Governments of Huanuco, Junin, and Puno. Moreover, various academic and technological institutions located in the respective regions have indicated their interest and intention to participate in the Regional Observatories for Resilient Aquaculture. Together, these institutions will strengthen the development of a suitable enabling environment for climate-resilient aquaculture in the regions of interest.

17.2.2 Component 2 will involve the participation of the General Directorate of Fisheries and Aquaculture of PRODUCE as the technical implementing agency, the Regional Directorates of Production (DIREPROs), IMARPE, ITP, and the CITE network, as well as SANIPES. This component aims to promote the creation of an innovation agenda and strengthen a network of actors involved in trout farming, research, production, marketing, and value chain management.

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The interventions implemented will support adaptation to climate change in aquaculture activities.

17.2.3 Component 3 will include the participation of the DGA of PRODUCE, FONDEPES, SANIPES, ITP and the CITE network, PNIPA[117]*, and the National Program to Eat Fish* (PNACP), all key actors in the promotion of the adoption of technologies for production processes, the strengthening of value chains and the consumption of fisheries and / or aquaculture resources.

17.3. An **Advisory Steering Committee** will be formed to provide advice, offer guidance and supervision for the proper development of the project and the fulfillment of its objectives. Its recommendations will be addressed to the Technical Executing Entity – DGAAMPA of PRODUCE. The main function of this Committee is to provide guidance to the Project Team regarding project execution. Its function also includes a periodic review of the project's risk profile and the implementation of eventual corrective measures aimed at mitigating risks as they arise. The Advisory Steering Committee will also exercise a quality control function evaluating the project execution assistance and the quality and thoroughness of the reports submitted by the Implementing Entity. The Advisory Steering Committee will be composed of:

- Representatives of MINAM, Peru's focal point to the Adaptation Fund and Designated National Authority.
- Representatives of PRODUCE, Technical Executing Agency.
- Directors of the DIREPROS of the Regional Governments of Huanuco, Junin and Puno.
- Representatives of the Administrative Executing Agency (to be defined).
- Representatives of CAF, the Implementing Entity.
- Representatives of regional authorities.

17.4 The project foresees contracting the services of a Project Team (PT), that will report directly to the Advisory Steering Committee, Executing Entities, and the Implementing Entity. To ensure the implementation sustainability, DIREPROS officials from Huanuco, Junin and Puno, entities that share functions with PRODUCE and are part of the Regional Governments, will be actively involved in the implementation and of the project. The idea is that as the progress evolves, the project team will gradually reduce its footprint, while DIREPRO take on a progressively larger role. This dynamic will ensure that PT members contribute to the capacity development of DIREPRO staff. Similarly, technical coordination of each component will be the responsibility of DIREPROS, PRODUCE, staff. The PT will also be endowed with a project-funded Technical Specialist with the responsibility of assisting the DIREPROs and PRODUCE with the technical oversight of the project and providing technical assistance to producers on specific subjects such as access to finance.

17.5 The Administrative Executing Entity (AEE) will have a General Coordinator in charge of overseeing all dimensions of project implementation, both technical and administrative. The General Coordinator will be responsible for the production and the quality of all reports that may be required by PRODUCE, the Administrative Executing Entity, the Advisory Steering Committee, and CAF. Her/His responsibility also include the preparation and update of procurement plans, controlling the implementation of the budget; the prepare project monitoring reports such as Project Progress Reports (PPR); reviewing the project's Environmental and Social Management Monitoring Reports; accounting, performance, and external audit reports; ensuring compliance with CAF regulations and procedures.

17.6 The General Coordinator will be supported by an Environmental and Social Specialist (ESS) and three Technical Supervisors which reports directly to the DIREPRO in each region.

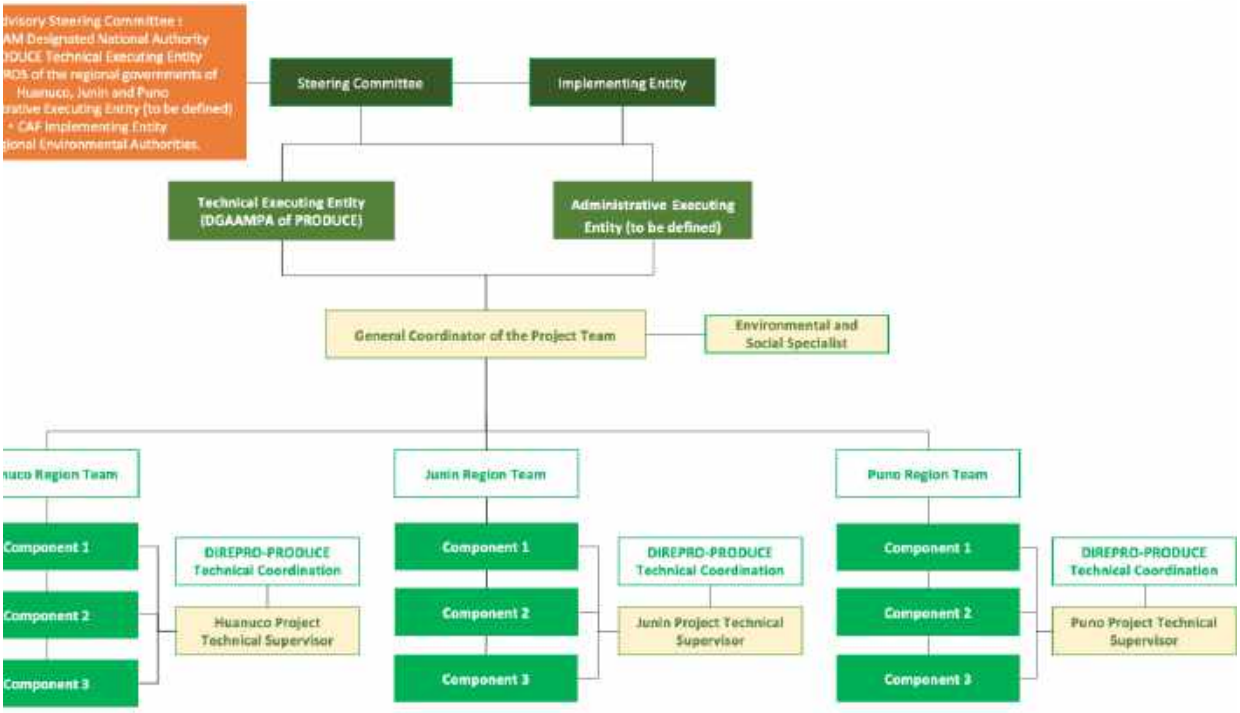
17.6.1 The Environmental and Social Specialist will be responsible for on-the-ground supervision, the documentation and monitoring of appropriate environmental and social management issues. Her/His responsibilities include assisting clients on matters related to environment, social and the inclusion of a gender perspective. In the context of her/his field duties, she/he will also be responsible for oversight of these dimensions and be required to issue alerts and

[117] PNIPA, is a world-bank financed program focused on facilitating the development of the fishing and aquaculture industry in Peru. The project has completed phase 1 and there is a general expectation, that a follow-on operation will be prepared in short order.

provide recommendations to ensure compliance with the project's environmental and social management plan, as well as all environmental and social policies from CAF and the Adaptation Fund. Social, Environmental, and Gender Specialists from CAF will supervise and evaluate the work of the ESS.

17.7 The following graphic shows the structure of the Administrative Executing Entity. The project members who will be contracted with the resources provided by the Adaptation Fund are highlighted in yellow:

Figure 16: Organization chart and Project Structure. In yellow, the members whose salary will be paid from the project budget are highlighted.



B. Describe measures for financial and project risk management.

17.8 There are financial, operational, technical, and political risks that may affect the success of the project. The risks and mitigation measures for the project are described below.

Table 32: Risks identified for the Project.

Type of risk	Risk	Risk mitigation measures
Financial	Fish farmers have limited budgetary and administrative capacity.	The project will address this risk by: - Improving trout farmers management capacity by providing producers training and technical assistance in sustainable aquaculture. The project will also finance the introduction of climate-resilient friendly technology. - Encourage fish farmers to engage in circular economy activities that reduce waste and improve profits. - Provide project beneficiaries with ongoing technical assistance on matters related to funding and management. - Help producers develop sustainable business plans and help them during the life of the project to identify strategies and instruments to improve their financial situation. - Promote, where possible, the development of producer associations in clusters, cooperatives or other types of associations that help them share the financial risk associated with the incorporation of innovative practices

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Type of risk	Risk	Risk mitigation measures
		and technology in their productive activity. - Assist governments at the central and local levels in reviewing administrative and legal processes which increase compliance costs. - Facilitate trout farmers access to finance.
	The upfront costs of green technologies are generally higher than for traditional technologies.	Mitigating this risk is addressed by: The project is financing the creation of a Regional Observatory for Resilient Aquaculture, a platform where aquaculture producers can access reliable and up-to-date information on available competitive funds offering reduced rates and/or technical cooperation resources. - The project provides training and longer-term technical assistance and support to help aquaculture producers apply for such competitive funds. - The Project, through its communities of practice will promote the closer cooperation and institutions with resources and/or program which could finance the inclusion of new climate-resilient technology.
Operational	Delays in the implementation of project activities.	Operational risks are mitigated as follows: - A project implementation plan, procurement plan and disbursement plan will be prepared and regularly updated to ensure maximum efficiency in the implementation of project activities. - Following the approval of the project, by the AF, an operations manual detailing implementation modalities, expectations and standards will be developed and distributed to all interested parties. - Disbursement will be staggered to consider the learning curve associated with implementing a new project. Consequently, the annual disbursement will be expected to be heavier in years 3 or 4 of the project to take into account potential start-up delays. - A project launch workshop will be organized to familiarize all relevant stakeholders with the operational modalities of the project. In addition, a workshop will be held with beneficiary groups to ensure that their understanding of the project, its objective and tools is clear, and that their concerns are addressed. Similar activities will be undertaken at the MTR. - Terms of reference shall be prepared for all activities implemented by the project that the project will implement during the first three months of project activity. - Preparation for the procurement process will begin as soon as legally possible to ensure that delays associated with procurement are limited. - During the first three months the project team staff will be trained to ensure that the management of the activities under their preview is executed according to plan. Operational training updates will be provided annually during the life of the project.
Technician	Resistance to change and the use of new infrastructures, tools and technologies.	- The project will include the dissemination of the project to academia and the technological institute to increase the quality and availability of the aquaculture-related curriculum. - The identified technology has been selected with special considerations to its environmental adequacy, including its impeccable introduction in the context of existing production practices. - One component of the project focuses on training fish farmers and improving the infrastructure and human capacity of technical centres and academic institutions.

Politician	High turnover caused by government changes affecting project implementation.	- To ensure policy oversight, a project steering committee will be established that will include policy-level representatives from all interested public agencies. Its role will be to provide policy leadership. - The project will focus on developing the relevant understanding of mid-level managers and technical specialists of the project, its components and its implementation strategy. - In order to limit the impact of possible turnover, the preparation of procurement activities and the development of the necessary tools to facilitate the implementation of the project activity shall be completed during project preparation. - A project management team will be created to maintain operational oversight of the project.
	Corruption	- The implementing entity shall ensure that the objectives of the project are met and shall also ensure effective financial management due diligence. - As part of the management support provided to the beneficiary, the project will help conduct an anti-corruption compliance audit, highlighting the potential risks that AMYPE or AREL could face in carrying out their day-to-day activities. - Ongoing support will also be provided to ensure that project beneficiaries are aware of all relevant regulations that could increase systemic and individual corruption risks. - Anti-corruption will be one of the areas of the sector-specific academic curriculum that will be strengthened to make the incoming workforce aware of the potential risks faced by AMYPE and AREL in the sector.
Governance	Weak governance systems could affect the project.	- The project will address legal and regulatory weaknesses and gaps to ensure that an enabling environment exists to address current and future climate risk adaptation challenges. - The project will focus on providing capacity building support to public officials and other public sector actors to improve their capacity to support and monitor aquaculture production in the aforementioned regions. - The project will focus on carrying out outreach activities aimed at civil society organizations and including them in improving the monitoring and evaluation of project outputs and results through regular interaction during project implementation. - The project will develop protocols and tools aimed at improving the quality of cooperation between stakeholders in the

C. Describe the measures for the management of environmental and social risks, in line with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund.

Table 33: Measures for environmental and social management in line with FA policy

Adaptation Fund Policy	Risk	Risk management measure	Means of verification	Compliance date/milestone
Principle 1: Compliance with legislation	Risk of lack of sufficient environmental and social management measures.	1. Develop and/or strengthen Environmental and Social Management Plans (ESMP) for beneficiaries. These LDCs will integrate country regulations and the Adaptation Fund Policies.	1.PGAS of the beneficiaries	1.Before starting activities
		2. Implement the measures established in the ESMP.	2.Evidence of ESMP implementation	3.Environmental and social monitoring report

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Adaptation Fund Policy	Risk	Risk management measure	Means of verification	Compliance date/milestone
Principle 3: Marginalized and vulnerable groups	Risk of establishing insufficient guidelines for the identification of vulnerable groups.	1. Develop criteria for the identification of vulnerable groups in Huanuco, Junin and Puno.	1. Report on vulnerability criteria and identification of vulnerable groups	1.Before starting activities
Principle 5: Gender equality and women's empowerment	Risk of insufficient guidelines for gender equality and women's empowerment.	1. Develop a Plan to encourage women's participation in decision-making spaces in relation to project planning, and the design and implementation of programs and plans.	1.Plan to promote women's participation in employment opportunities and decision-making spaces.	1.Concept note and full proposal
Principle 6: Fundamental labor rights	Risk of having insufficient measures for occupational safety and labor issues.	1.Develop an Occupational Health and Safety Plan, including hazard identification and risk assessment.	1.Occupational Health and Safety Plan	1.Before starting activities
Principle 9: Protection of natural habitats	Risk of not having specific management measures for the protection of natural habitats.	1.Develop a Biodiversity Management Plan (BMP), including an analysis of critical habitats and conservation measures.	1.Biodiversity Management Plan (BMP)	1.Concept note and full proposal
Principle 10: Biodiversity conservation	Risk of not having sufficient management measures for the conservation of biodiversity.	1.Develop a biosecurity plan for aquaculture crops, identifying specific controls.	1.Biosecurity plan	1.Concept note and full proposal
Principle 12: Pollution prevention and resource efficiency	Risk of not having sufficient pollution management and resource efficiency measures.	1.Develop a Resource Efficiency Plan that includes measures to mitigate GHG emissions from fossil fuels.	1.Resource efficiency plan	1.Concept note and full proposal
Principle 13: Public health	Risk of not having sufficient public health management measures.	1. Develop a Community Health and Safety Management Plan	1.Community health and safety management plan	1.Before starting activities
Principle 15: Land and soil conservation	Risk of not having sufficient soil conservation measures	1. Develop a Soil Conservation Plan in the areas of influence of the beneficiaries.	1.Soil conservation plan	1.Before starting activities
Other aspects:		1.Define the environmental and social team of the project, describing all environmental, social, and occupational health and safety responsibilities that will be covered during the project.	1.Organization chart and definition of environmental, social, and occupational safety and health of the project team	1.Before starting activities
		1. Develop a Citizen Participation Program (PPC), which includes at least: (i) participatory mechanisms; (ii) mechanisms to disseminate queries, complaints, claims and social conflicts; (iii) define the timing and frequency of proposed activities; (iv) specify the timetable, and frequency of proposed activities.	1. Citizen Participation Plan (PPC)	1.Before starting activities

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D. MONITORING AND EVALUATION ARRANGEMENTS, INCLUDING THE BUDGETED M&E PLAN

Monitoring and Reporting Plan

Background

18.1 This section contains guidelines that will guide the Monitoring and Reporting processes, in addition to the evaluation processes of the Project " Implementing Protection Technologies to Foster the Resilience of Aquaculture in the Regions of Huanuco, Junin, and Puno to Strengthen Food Security in the Context of Extreme Events Associated with Climate Change.", hereinafter "the Project".

18.2 Rainbow trout aquaculture represents the principal source of livelihoods for communities living in the regions of Huanuco, Junin and Puno and by increasing its adaptive capacity, reducing its vulnerability to climate change and seizing opportunities to strengthen its productivity, the project will contribute to a more efficient use of hydrobiological resources and enhance food security. Without resources from the Adaptation Fund, vulnerable households dependent on aquaculture are unlikely to achieve climate resilient development in their economic, remaining therefore vulnerable to the impact of climate change events and risking a further deterioration of their already precarious economic situation. The Project will increase adaptive capacity and reduce the vulnerability of aquaculture activity to the risks of climate change, taking advantage of opportunities to strengthen aquaculture productivity, the use of hydrobiological resources and food security. Without funding from the Adaptation Fund, vulnerable families who depend on aquaculture for their livelihoods would have a low chance of achieving resilient development and strengthening their adaptive capacity, exacerbating their economic situation, food insecurity and the vulnerable conditions of the aquaculture system.

18.3 For the monitoring and reporting process, the Project will rely on a Project Team, headed by a General Coordinator, who will be responsible for presenting follow-up reports required by the Adaptation Fund, guaranteeing total alignment between CAF's procedures, and procedures carried out by the Technical Executing Entity and by the Administrative Executing Entity. This PT and its General Coordinator will work hand in hand with officials of the DGAAMPA of PRODUCE, and with CAF's Responsible Executive. In addition, it will be responsible for ensuring the follow-up of the monitoring and evaluation plan of the Project, analyzing the progress of results and the work plans or Annual Operational Plans (AOP). The PT is also responsible to monitor and analyze the different plans associated with environmental, social and gender safeguards that correspond to the principles of the Adaptation Fund and the CAF. Moreover, the PT will continuously review and update the Project's Risk Matrix (PRM) making recommendations, coordination and adjustments. In case of delays or occurrence of other implementation-related problems, The PT is expected to propose operational solutions for PRODUCE, CAF, and, if it is necessary, this will request the approval of the Advisory Steering Committee.

18.4 In terms of monitoring, the implementation of the following instruments that the project will have should be monitored and evaluated:

- Environmental and Social Management Plan.
- Manual of Good Aquaculture Practices.
- Biodiversity Management Plan.
- Resource Efficiency Plan.
- Gender Action Plan.

These plans must have been approved before the beginning of the project implementation period. Further explanation of these instruments can be found in the annexes of this proposal.

Project Risk Matrix

18.5 During the preparation of the proposal, a risk matrix has been developed that identifies key elements

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of risk. This allowed to include elements of risk mitigation and could allow the best execution of the project. For a good follow-up of the implementation of the project, this risk matrix needs monitoring and adaptation. Inputs from this monitoring will need to be explicitly included in monitoring reports.

18.6 During the mid-term evaluation, implementation risks will have to be reviewed as part of the mid-term external evaluation. The capacity of the project management unit as well as PRODUCE in anticipating/identifying and measuring risks will also be evaluated. If necessary, the possibilities of strengthening the capacity of these institutions through training or reorganization of responsibilities will be evaluated.

Results framework of the project and its planned activities.

18.7 The objectives of the Monitoring Plan and reports are:

- Generate mechanisms for reporting progress and accountability to the CAF implementing agency, the Adaptation Fund and the institutions that are part of the Project, as well as to the beneficiary community, strategic partners, and other relevant actors of the Project.
- Give continuous follow-up to the execution of the activities of the Project with respect to its operational planning.
- Monitor the achievement of Project objectives with respect to its results framework.
- Follow up on emerging risks that can be identified throughout the implementation, raising timely alerts.
- Catalyze the lessons learned and recommendations in the management and decision-making processes of the set of projects implemented by CAF and other agencies.
- Have quality information for the dissemination and communications actions of the Project.
- Develop the different project information tools requested by the Adaptation Fund, such as the PRPs.
- Facilitate the realization of the mid-term evaluation and the final evaluation of the Project.

18.8 During the life cycle of the Project, a series of critical milestones take place that must be considered when designing and adjusting the Plan, since they constitute the formal instances in which the different institutional actors can plan the intervention, report progress, account for results, evaluate performance and make strategic decisions in the context of adaptive management.

E. MONITORING AND EVALUATION MILESTONES

Planning

18.9 At the end of each calendar year, the preparation of the work plan and its budget, also known as the **Annual Operation Plan (AOP),** is prepared. This plan will be used:

18.9.1 Report the Project's progress towards achieving its objectives, communicating the levels of achievement of its result indicators in relation to the goals set, and proposing actions for those results in which progress is insufficient.

18.9.2 Report the progress in terms of project activities undertaken during the previous Adaptation Fund's fiscal year of the Adaptation Fund must be reported in accordance with the AOP.

18.9.3 Provide an overall assessment of the implementation during the period, analyze the main challenges experienced, review the effectiveness of the risk mitigation measures identified, propose possible strategic adjustments, identify opportunities for further stakeholder involvement, assess progress in the plans prepared, account for knowledge development activities and gather information regarding the adoption of innovative approaches.

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Progress Reports

18.10 Progress Reports describe monthly development in terms of work plan execution and the associated impact on the project's budget. PR also follow-up on the expected results, communicating the main achievements and pointing out the problems encountered, together with the measures adopted and their forms of follow-up. In addition to these reports, the presentation of **Quarterly Reports** by the Technical Specialists is also contemplated. Quality reports represent a valuable input for the subsequent preparation of the annual report and as well as periodic progress reports requested by the Fund.

Strategic management Evaluations

18.11 The **Project Advisory Steering Committee (ASC), which** is the governing body of the project, is responsible for promoting and improving cooperation between the institutions that support the project both at the policy and technical levels.

Evaluation

18.12 Two independent evaluations are planned over the life cycle of the Project. These are carried out by external consultants to assess the relevance of the design and actions implemented by the project, its effectiveness in achieving the desired, its efficiency in the use of resources, among other dimensions. They occur as follows:

18.13 A mid-term evaluation (MTE) will evaluate project performance after the initial two years of implementation, record successes and identify weakness. The MTE is an opportunity to formally refocus and restructure the project if needed to address execution deficiencies in the execution of the project. Accordingly, it will focus on the effectiveness, efficiency, and timeliness of project implementation; highlight issues that require decisions and action; and present initial lessons learned on project design, implementation and management. The results of this review will be incorporated into a mid-term report. The MTE conducted when 40% of FA resources have been disbursed, or twenty-four months after the entry into force of the project contract (whichever comes first), will determine progress towards achieving results, level of stakeholder involvement, any changes in beneficiary practices due to the intervention, well as identify changes to be made.

18.14 The Final Evaluation (FE), which must occur three months before its completion has the objective of documenting the project from identification to the end of the implementation phase. It will assess the project logic, its design and the quality of the implementation. To do so, it will especially focus on documenting effectiveness in achieving results, efficiency in the use of resources, exhogenous and endogenous factors that influenced project execution, the incorporation of cross-cutting perspectives and the sustainability of the effects obtained. The FE will further seek to extract lessons learned and recommendations aimed at scaling its impact and replicate in other climate or environment related areas or in other ecosystems relevant to aquaculture AREL and AMYPE in Peru.

Monitoring and Evaluation System

18.15 To guarantee the quality and timeliness of the project's follow-up and monitoring mechanisms, as well as to facilitate its Mid Term and Final evaluations by independent consultants and decision makers, the project team will develop a set of procedures and monitoring instruments.

Instruments

18.16 The Project Team will prepare a M&E matrix instruments to cover project implementation in the same way across all three regions. It is expected to be a matrix designed in some platform, including Excel, that allows to record and visualize in the same spreadsheet detailed information on the achievement of result indicators and the execution of the Project, both physical and financial, based on what is committed in the Logical Framework Matrix, the Operational Plan, and the Budget. The coordinator and his team will be responsible for collecting the necessary information with the Project Management Unit

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(National and Regional Coordination), processing the data and keeping the different modules updated, generating recommendations from their analysis.

Risk Matrix

18.17 During preparation, a **Risk Matrix** was developed during its concept note and to identify risks to project execution or risks generated by the project and indicating their impact potential, probability of occurrence and identifying mitigation measures. The Project Team should monitor these, and other emerging risks identified during implementation as needed to ensure their mitigation.

Lessons Learned Matrix

18.18 To facilitate learning and adaptation to climate change, a Lessons Learned Matrix will be created by the Project Team and shared widely with all relevant stakeholders. This tool allows lessons to be drawn from the relationship between actions and results, translating them into recommendations to improve the implementation of the ongoing project and other initiatives.

Strategic Information Management Platform for internal management

18.19 To ensure that all relevant information is adequately stored and remains available to CAF and other key stakeholders, the Project Team will be required to maintain an Information Management Platform, in which project information is securely centralized and organized. The information will be stored in the cloud (in the SharePoint of the Project or CAF), which guarantees its traceability and facilitates its access to different actors during the supervision and evaluation[118].

Procedures

Follow-up and monitoring sessions

18.20 To facilitate the annual planning cycle, there will be multiple regular instances of communication and formal articulation between the coordinator, his team, and the different Project managers. Twice a month, Follow-up and Monitoring Sessions will be held. These sessions aim to gather information in a participatory manner on the progress in the implementation of the Project at its different scales (local, regional and national), in order to follow up on the execution of the operational plan, monitor the achievement of result indicators and identify lessons learned. Strategic Feedback Meetings

18.21 On a quarterly basis, **Strategic Feedback Meetings** will also be held. During these instances, the General Coordinator will present an analysis of the achievement of goals and results of the Project, detecting possible deviations and identifying their possible causes in the different dimensions and scales of intervention, in order to guide strategic decision-making about the Project. It is recommended that this body have the participation of CAF and members of the Executing Entities.

Presentation to the Steering Committee and Regional Coordination

18.22 During the annual planning cycle there will also be two formal instances of delivery of inputs for the evaluation of the progress of the project and the strategic decision making regarding it, by the General Coordinator. During these instances, the analysis of the main difficulties, lessons learned, and recommendations will be presented to the strategic management bodies of the Project. These are:

- **Presentation to the Regional Coordinators**, which will be held during the month (to be defined) of each year and will focus on the areas of action of the Executing Entities (technical and administrative) and CAF as Implementing Entity, based on the reports.

[118] The architecture of the platform should make it possible to group information into large categories that are mutually exclusive, i.e. clearly distinct from each other. Within each category there are subcategories that represent a higher level of specificity, and so on. This allows, on the one hand, to easily find specific files, and on the other, to prevent the existence of duplicate files in different locations. In terms of documents and means of verification related to the implementation of the Project, the subcategories would correspond to the successive levels of results of the theory of change and its operationalization, from the components to the tasks.

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- **Presentation to the Steering Committee**, to be held in (months to be defined) of each year, which will be focused on the critical nodes of the project related to the roles and possibilities of intervention of the executor and the co-executing partners.

Information and communication protocol

18.23 In addition to these periodic instances of articulation, there will be continuous flows of information between the representatives of different government agencies, for which it is necessary to define an appropriate workflow.

18.24 The person responsible for a task and/or activity whose execution has been completed must notify the General Coordinator by means of a simple email, copying the assigned officials of PRODUCE, DIREPRO and CAF. The subject of the message will indicate the code and name of the task and / or activity ("X.X.X.X ..."), as it appears in the Work Plan, and in the body will be included the links to its documents and means of verification, which must be stored in the corresponding path within the information management platform.

18.25 To maintain an orderly and standardized structure of information in the Information Management platform, the folders will be named starting with a digit ("X"), which allows them to be sorted according to their relevance, frequency of access or some temporal criterion. As for the files, they will be named starting with their creation date ("ddmmaaaa_"), so that the system automatically sorts them by age and the temporal relationship between them can be easily established. Likewise, in the case of documents with multiple review processes, it must be finalized by indicating the number of its version ("_vX").

18.26 When the delivery of a product is completed or a project result goal is met, the follow-up manager will send all relevant information by email to the Project team General Coordinator, for the timely dissemination of the achievement within the framework of the Communications Plan. Similarly, to the extent that substantive contributions of the project are generated to the Aquaculture Adaptation Plans to Climate Change, or in general, to any of the strategic achievements of MINAM, PRODUCE or CAF, this information will be channeled to the CAF counterpart of the Project. In addition, contributions to comply with the indicators of the principles of safeguards of the Adaptation Fund and CAF.

Tracking schedule and reporting

18.27 The General Coordinator shall submit annually detailed schedule of follow-up activities and the dates of the different Project reports.

Table 34: Monitoring and Evaluation Process Budget and Milestones

	Activity	Responsible Party	Amount	Timing	Milestone
1	Project launch (workshop)	Project Coordinator / DGAAMPA of PRODUCE / DIREPROs / MINAM / CAF	12,900	Year 1	Two months after signature of financing agreement between CAF and the Adaptation Fund and once the Administrative Executing Agency has been selected and contracted.
2	Measure of Means of Verification for Project Progress and Performance	Project Coordinator / DGAAMPA of PRODUCE / DIREPROs / CAF	N/A[119]	Years 1 through 4	Monthly
3	Follow-up and monitoring sessions	DGAAMPA of PRODUCE / DIREPROs / CAF[120]	N/A[121]	Years 1 through 4.	Frequency is determined by Technical Executing Agency and reflected in its yearly planning, although follow up should occur

[119] This is considered part of the responsibilities of the Administrative Executing Team's duties and its staff, as such cost associated are considered reflected in the General Coordinator and Project Technical Specialists salaries, No further budgeting is required for this activity.
[120] This is considered part of the responsibilities of the Responsible parties regular duties, as such no further budgeting is required for this activity.
[121] This is considered part of the responsibilities of the Responsible parties regular duties, as such no further budgeting is required for this activity.

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	Activity	Responsible Party	Amount	Timing	Milestone
					no less than four times yearly in each of the regions.
4	Strategic Feedback Meetings	DGAAMPA of PRODUCE / DIREPROs / CAF.	N/A	Years 1 through 4	These meetings are part of the regular and ongoing dialogue between the executing agencies and the Implementing agency. Contact should occur frequently, on average twice monthly, and no less than 12 times per year.
5	Information and communication protocol	DGAAMPA of PRODUCE and Administrative Executing Team	N/A	Year 1, with review at Midterm.	One time activity which is
6	Tracking schedule and reporting	Coordinator Project / DGAAMPA of PRODUCE / CAF	N/A	Year 1	Within the first month after project launch.
7	Semestral Reports (PPR)	Coordinator Project/ DGAAMPA of PRODUCE / CAF	N/A	Years 1-4	Twice yearly and once yearly respectively consistently with the AF Project Progress Report usual procedures and consistently with the provisions of the agreement signed between CAF and the Adaptation Fund.
8	Annual reports of the AOPs	Coordinator Project / DGAAMPA of PRODUCE / Administrative Execution Entity	N/A	Years 1 through 4	Once a year, no later than 15 days before the end of the fiscal year.
9	Meetings of the steering committee	All its Steering Committee Members	N/A	Years 1 through 4	At least quarterly. Special sessions to be convened in the event of circumstances requiring feedback from SC.
10	Mid-term evaluation	External Consultant / CAF	15,000	Beginning Year 3	24 months after the launch of project execution, consistently with the financing agreement between the adaptation fund and CAF. .
11	Workshop and Final Report and webinar and lessons learned[122]	Coordinator Project / DGAAMPA of PRODUCE / Administrative Execution Entity / CAF	92,900	Year 4+	Between three and six months after the finalization of project execution consistently with agreements in financing agreement between CAF and the Adaptation Fund.
12	Final External Evaluation	External Consultant / CAF	20,000	Year 4	Between three and six months after the finalization of project execution consistently with agreements in financing agreement between CAF and the Adaptation Fund.
13	Audits	External Consultant / CAF	132,000	Years 1-4	Consistently with good auditing practices. Additionally, there will be an external audit at the end of the project, as well as any other audit which may be determined to be necessary consistently with the provisions of the financing agreement signed between CAF and the Adaptation Fund. The

[122] The total amount reflected includes all end of project expenses associated with communication and outreach, including the dissemination videos, final workshops and the drafting of final reports.

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	Activity	Responsible Party	Amount	Timing	Milestone
					Administrative executing agency will be responsible for the management of the external audit.
14	Monitoring visits	Coordinator Project / DGAAMPA of PRODUCE / CAF	89,940[123]		Ongoing monitoring and evaluation on the part of the DIREPROS and Project Team; and on a bimonthly basis by PRODUCE located in Lima.
15	Evaluation and Fiduciary Monitoring by CAF	CAF	51,320[124]		Ongoing monitoring and evaluation on the part of the CAF team and the Administrative Executing Agency.
15	Report translations	Coordinator Project / external consultants / CAF	15,000		
		TOTAL USD	**429,060**		

F. Include a results framework for the project proposal, including milestones, targets and indicators, including one or more core outcome indicators of the Adaptation Fund Results Framework, and in compliance with the Gender Policy of the Adaptation Fund.

Project Strategy		**Objectively Verifiable Indicators**				
Objective: To reduce the vulnerability of aquaculture activity to climate change and climate variability, the main livelihood of communities in the regions of Huanuco, Junin and Puno, Peru;		**Indicator**	**Baseline**	**Goal**	**Means of verification**	**Risks and assumptions**
Component 1: Governance, knowledge management and access to finance for sustainable aquaculture are strengthened.		Number of fish farmers adapting to climate change % of women	0 fish farmers	3,900 rainbow trout breeders (AMYPE and AREL) and their families benefited from strengthened institutions. 7,124 other species farmers and their families benefit from strengthened institutions	Reporting and Baseline	(See below)
Outcome 1.1.1 Stakeholders operate within a more coherent regulatory framework in which measures are adapted to local	**Output 1.1.1** Programs to strengthen the staff of PRODUCE and Regional Directorates.	•Number of public officials and academic representatives are trained in climate change.	0	150	List of staff participating in training courses	Impossibility to participate or unwillingness on the part of officials to be trained.

[123] This cost includes 41,940 for travel costs to regions on the part of Project General Coordinator (Indirect Costs) and 48,000 for project oversight (included in IE Fee).
[124] Included in IE Fee.

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Project Strategy		Objectively Verifiable Indicators				
Objective: To reduce the vulnerability of aquaculture activity to climate change and climate variability, the main livelihood of communities in the regions of Huanuco, Junin and Puno, Peru;		**Indicator**	**Baseline**	**Goal**	**Means of verification**	**Risks and assumptions**
circumstances and contradictions between legal texts have been removed.	**Output 1.1.2** Policy instruments to improve governance in the context of climate change are strengthened and/or developed.	• Number of instruments and/or regulations include governance in the context of climate change	0	2	Document supporting the regulations and/or instruments	No agreement is reached to define the instruments. No governance instance (technical committees) is generated
Outcome 1.2: Employees within government administrations both at local and central government level are better informed and capacitated on matters of climate change resilience and gender.	**Output 1.2.1:** Thematic knowledge has been improved.	Established communities of practice	0	At least 2 for each region	Reports	No will to establish the centers
Outcome 1.3. The quality and quantity of data about the impact of climate change on aquaculture in the regions of interest to the project are improved.	**Output 1.3.1:** Virtual platforms are developed to facilitate the dissemination of information from a Regional Resilient Aquaculture Observatories (RORA)	Number of Observatory of Resilient aquaculture	0	3	Acts of creation of the centers and their statutes	There is no will to establish the centers. (Existing centers may be strengthened)
Outcome 1.4. Good practices in climate-resilient trout aquaculture are mainstreamed.	**Output 1.4.1:** Communities of practice are organized, and asynchronous training modules are created focused on developing and strengthening the technical knowledge of fish farmers	Number of rainbow trout farmers (AMYPE and ARE) their have stronger capacities	0	3,900	Reports	Fish farmers do not participate in the technical assistance program.
Outcome 1.5. Knowledge about available sources of funding for trout aquaculture is mainstreamed.	**Output 1.5.1:** Enhanced capacities of aquiculture communities about public policies, data and researches.	Number of users assisted	0	414	Reports	Impossibility to participate or unwillingness on the part of officials to be trained and aquacultures
Component 2: Innovation and technology transfer mechanisms are improved and/or implemented to promote resilient aquaculture activity in Huanuco, Junin and Puno, Peru.		• Number of rainbow trout farmers (AMYPE and AREL) and their families have stronger capacities to respond to	The indicator will be established in the first year of the project.	3,900	Reports	Fish farmers do not participate in the technical assistance program.

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Project Strategy		Objectively Verifiable Indicators				
Objective: To reduce the vulnerability of aquaculture activity to climate change and climate variability, the main livelihood of communities in the regions of Huanuco, Junin and Puno, Peru;		**Indicator**	**Baseline**	**Goal**	**Means of verification**	**Risks and assumptions**
		climate change events. •Number of fish farmers working with other species and their families are better prepared to respond to climate change events. • % mortality of rainbow trout fry is reduced • Improvement of productive performance in the fattening stage of rainbow trout. •Productivity growth leads to an increase in the incomes of vulnerable fish farmers.		7,124 By 20% (preliminary). It will be defined in the first year of the project. It will be defined in the first year of the project	Statistical information on producers' production and income Production records Marketing records	There is no interest from other fish farmers to become aware of the effects of climate change. Producers do not take statistical information properly. The selling price is reduced, production is NOT increased.
Outcome 2.1. Trout Aquacultures are better prepared to confront climate-change related emergencies	**Output 2.1.1** Design and implementation of Early Warning Systems (EWS) for extreme events in the aquaculture sector. One for each of the prioritized regions of Huanuco, Junin and Puno.	SAT designed and implemented.	0	3 SAT	Design of systems and outcomes and mechanism used for early warning action	It is not possible to design the systems due to lack of institutional interest.
	Output 2.1.2. Contingency Plans are developed for extreme climate change events. One for each region.	Number of Contingency Plans developed.	0	3	Document with contingency plans	Fish farmers are reluctant to use contingency plans. Fish farmers should be sensitized.
	Output 2.1.3 . An Integrated Statistical Information System is being developed.	Design of an Integrated Statistical Information System	0	1 system	System designed and operational delivering adequate information for decision making.	The integration of the system to make it operational is not achieved.
Outcome 2.2. Aquaculture practices are improved to	**Output 2.2.1** Resilient infrastructure in areas most	• System Recirculating water for ponds	0	03 RAS systems with renewable energy	Quarterly reports and M%E report	Fish farmers are not interested in incorporating

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Project Strategy		Objectively Verifiable Indicators				
Objective: To reduce the vulnerability of aquaculture activity to climate change and climate variability, the main livelihood of communities in the regions of Huanuco, Junin and Puno, Peru;		**Indicator**	**Baseline**	**Goal**	**Means of verification**	**Risks and assumptions**
enable increased productive efficiency and improved use of hydrological resources	vulnerable to climate change and adoption of technologies to adapt production systems to climate change.	• Probiotics	0	69 production units adopt the technology.	Field visit logs.	new technologies. An efficient technical assistance system supported by an extension system to fish farmers is required.
		•Aerators	0	18 renewable energy aeration systems implemented.	Field visit logs.	
		• Oxygenators.	0	21 system of oxygenators with renewable energy	Field visit logs.	
		• Climate-resistant HDPE cages	0	34 climate-resistant cages equipped.	Field visit logs.	
		• Sensor systems for on-farm water quality monitoring	0	67 water quality monitoring sensor systems installed.	Field visit logs.	
		• Number of water harvesting and reforestation projects.	0	3 water harvesting and reforestation projects (review the need for water collection in Puno.	Field visit logs.	
		• Technologies and tools for proper environmental management	0	At least 30 environmentally sustainable solutions	Field visit logs, monitoring reports	
		• Equipment and signage for safety and health (OSH) at work:	0	At least 65 OSH support kits delivered	Field visit logs, monitoring reports	
Outcome 2.3. Knowledge about efficient use of new technologies is mainstreamed	**Output 2.3.1** Strengthening and transfer of capacities to aquaculture communities	• Number of fish farmers assisted and strengthened in new technologies for adaptation to climate change	0	264	Monitoring reports	Fish farmers are not interested in incorporating new technologies.
Component 3: Value and production chains of resilient aquaculture activities will help diversify aquaculture producers' livelihoods and improve their food security.		**Aquaculture producers access sustainable markets**	**0**	**At least 100 producers place their products in sustainable markets**	**Monitoring reports**	**See below**
Outcome 3.1. Increased quality of trout aquaculture	**Output 3.1.1** Trout production chain facilities are improved.	N° of modular primary processing plants with renewable energies	Does not exist (zero)	Three (03) modular primary processing plants with renewable energy implemented.	Monitoring reports	Risk: Not having sanitized land by pub entities
		Number of gender training programs on fish handling, processing,	Does not exist (zero) in the zone.	Three (03) training programs implemented.	Monitoring reports	Risk: Not having the participation of beneficiaries

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Project Strategy		Objectively Verifiable Indicators				
Objective: To reduce the vulnerability of aquaculture activity to climate change and climate variability, the main livelihood of communities in the regions of Huanuco, Junin and Puno, Peru;		**Indicator**	**Baseline**	**Goal**	**Means of verification**	**Risks and assumptions**
		packing, HACCP and silage production Model of management, maintenance and operation of primary processing plant	 Does not exist (zero) in the zone	 A model of management, maintenance and operation of primary processing plant approved and in execution.	 Monitoring reports	 Risk: Beneficiaries do not validate the management, maintenance and operation model of the primary processing plant
	<u>Product 3.1.2</u> Marketing strategies exist for aquaculture products. at each stage of primary processing	Study of channels of commercial channels for trout in the regions of Puno, Junin and Huanuco Trout Collective Mark No. Number of recipe books for the promotion of the consumption of trout from resilient aquaculture N° of virtual platforms where aquaculture trout is promoted. N° of commercial management, logistics and customer service programs	Does not exist (zero) in the zone. Does not exist (zero) in the zone. Does not exist (zero) in the zone. There is no (zero) generated by producers in the area. Does not exist (zero) in the zone.	Study of channels of commercial channels for trout in the regions of Puno, Junin and Huanuco, elaborated. At least one (01) collective mark adopted in Huanuco, Junin and Puno At least one (01) resilient aquaculture trout recipe book based on local cuisine. Presence of resilient aquaculture trout in at least three (03) virtual platforms Three (03) training programs implemented.	Monitoring Report INDECOPI Registration Monitoring reports Monitoring reports Monitoring reports Monitoring reports	Risks: Producers resist meeting sustainable market access requirements Risks: Producers do not meet the conditions to maintain the collective mark Risk: Recipe books are not accepted by consumers Risk: Producers do not manage their virtual trade promotion platforms Risk: Producers do not participate in training programs
<u>Result 3.2.</u> Marketing practices are improved	**<u>Product 3.2.1 .</u>** There are business plans for fish farmers in Huanuco, Junin and Puno	N° of workshops for determination of business idea N° of workshops for the formulation of business plan Number of training workshops for the execution and	Does not exist (zero) in the zone. Does not exist (zero) in the zone. Does not exist (zero) in the zone.	Three workshops held, one for each area. Six workshops held, two for each area. Three workshops held, one for each area.	Monitoring reports Monitoring reports Monitoring reports	Risk: Producers do not participate in workshops Risk: Producers do not participate in workshops Risk: Producers do not participate in

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Project Strategy		Objectively Verifiable Indicators				
Objective: To reduce the vulnerability of aquaculture activity to climate change and climate variability, the main livelihood of communities in the regions of Huanuco, Junin and Puno, Peru;		**Indicator**	**Baseline**	**Goal**	**Means of verification**	**Risks and assumptions**
		management of business plans N° business plans for the economic diversification of the area	Does not exist (zero) in the zone.	At least six (06) business plans for economic diversification and with identified sources of financing	Monitoring reports	workshops Risk: Business plans not adopted by producers
Outcome 3.3 Ethical and gender-sensitive practices are used to increase the profile of climate-resilient aquaculture in Junin, Huanuco and Puno.	**Output 3.3.1** implementation of an Environmental and Social Management with a Gender Perspective	Number of fish farmer to implement an Environmental and Social Management with a Gender Perspective	0	264	Monitoring reports	Risk: Producers do not participate in training programs

G. DEMONSTRATE HOW THE PROJECT ALIGNS WITH THE ADAPTATION FUND RESULTS FRAMEWORK

Project objective(s) [125]	Project objective indicator(s)	Result of the Fund	Performance indicator	Amount (USD)
Project Objective: To reduce the vulnerability of aquaculture to climate change and climate variability, as this is the main livelihood of communities in the regions of Huanuco, Junin and Puno, Peru, through the implementation of innovation mechanisms and technologies, capacity building and the governance system, as well as increase market competitiveness				
Component 1: Governance, knowledge management and access to finance for sustainable aquaculture are strengthened.				
Outcome 1.1. Stakeholders operate within a more coherent regulatory framework in which measures are adapted to local circumstances and contradictions between legal texts have been resolved. **Outcome 1.2.** Employees within government administrations both at local and central government level are better informed and capacitated on matters of climate	• 150 public officials and academic representatives are trained in climate change. •2 instruments and/or regulations include governance in the context of climate change. • 5 new reports associated with resilient aquaculture. • 3,900 rainbow	**Outcome 2: (From FA)** Strengthened institutional capacity to reduce risks associated with climate-induced environmental and socio-economic losses. **Output 1.1.1** Programs to strengthen the staff of PRODUCE and Regional Directorates. **Output 1.1.2** Policy instruments to improve governance in the context of climate change are strengthened and/or developed. **Output 1.1.3** Climate	2.1. (From the Fund) Increased capacity of staff to respond to and mitigate the impacts of climate-related events of selected institutions. Three (3) programs for resilience and climate change strengthening designed and Implemented. Five (5) policy instruments developed or strengthened with risk management and climate change problems.	**USD 156,000** **USD 587,568**

[125] The FA used OECD/DAC terminology for its results framework. Proponents of the project may use different terminology But the general principle must continue to apply.

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Project objective(s) [125]	Project objective indicator(s)	Result of the Fund	Performance indicator	Amount (USD)
change resilience and gender. **Outcome 1.3.** The quality and quantity of data about the impact of climate change on aquaculture in the regions of interest to the project are improved. **Outcome 1.4.** Good practices in climate-resilient trout aquaculture are mainstreamed. **Outcome 1.5.** Knowledge about available sources of funding for trout farmers is mainstreamed.	trout farmers (AMYPE and AREL) and their families benefited from strengthened institutions. •7,124 Fish farmers of other species and their families benefit from strengthened institutions.	Resilient Aquaculture Observatories are established.	Three (3) Resilient Aquaculture Training Centers. At least two (2) collaboration agreements signed with universities.	
Component 2: Innovation and technology transfer mechanisms are improved and/or implemented to promote resilient aquaculture activity in Huanuco, Junin and Puno, Peru.				
Outcome 2.1. Trout farmer are better prepared to confront climate-change related emergencies	•3,900 rainbow trout farmers (AMYPE and AREL) and their families have stronger capacities to respond to climate change events . •7,124 fish farmers working with other species and their families are better prepared to respond to climate change events. •Rainbow trout fry mortality is reduced by 20% (preliminary). • Improvement of productive performance in the fattening stage of rainbow trout. •Productivity growth leads to an increase in the incomes of	**Outcome 4:** Increased resilience within development sector services and development assets Relevant infrastructures **Product 2.1.1** Design and implementation of Early Warning Systems (EWS) for extreme events in the aquaculture sector. One for each of the prioritized regions of Huanuco, Junin and Puno. **Product 2.1.2.** Contingency Plans are developed for extreme climate change events. One for each region. **Product 2.1.3.** An Integrated Statistical Information System is being developed.	4.1. Responsiveness of development sector services to evolving needs in line with climate variability and change Three (3) SATs designed and implemented. For the correct design of the SAT, the construction of a baseline and subsequent surveys of updated information (minimum 2, at the middle term and at the end of the project) of the localities where the project will take place will be required. The baseline will collect information for the development of the ESMP documents: Annex 5 Biological Diversity Management Plan, for Annex 6 Guidelines for Resource Efficiency & Solid Waste Minimization and Management Plan and Annex 7 Soil Conservation Plan, in addition to other relevant information for the SAT. A total of 3 field information surveys. Three (3) Contingency Plans developed. These will include the costs of	**USD 521,000**

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Project objective(s) [125]	Project objective indicator(s)	Result of the Fund	Performance indicator	Amount (USD)
	vulnerable fish farmers.		the following ESMP documents: Annex 2 Manual of Good Aquaculture Practices and Annex 4 Occupational Safety and Health Plan. One (1) Integrated Statistical Information System .	
Outcome 2.2. Aquaculture practices are improved to enable increased productive efficiency and improved use of hydrological resources. **Outcome 2.3.** Knowledge about efficient use of new technologies is mainstreamed. **Outcome 2.4.** Improved and implemented an Environmental and Social Management with a Gender Perspective.	•Rainbow trout farmers (AMYPE and AREL) and their families benefit from climate-resilient infrastructures, which serve as a model and pilot for the rest of the fish farmers in Huanuco, Junin and Puno. •Rainbow trout fry mortality is reduced by 20% (preliminary). • Improvement of productive performance in the fattening stage of rainbow trout. •Productivity growth leads to an increase in the incomes of vulnerable fish farmers.	**Output 8 (FA):** Viable innovations are launched, scaled up, promoted and/or accelerated. **Output 2.2.1** Resilient infrastructure in areas most vulnerable to climate change and adoption of technologies to adapt production systems to climate change.	8.1. Number of innovative adaptation practices, tools and technologies that are accelerated, scaled up and/or replicated. - 03 Systems recirculating water for ponds. - 66 Probiotics - 18 aerators. - 21 Oxygenators. - 34 climate-resistant HDPE cages - 67 water quality monitoring sensor systems installed. - 3 water harvesting and reforestation projects. - Technologies and tools for proper environmental management and OSH •Capacity building for innovation and adaptation of technologies • Improvement and implementation of Environmental and Social Management with a Gender Perspective	**$2,784,677**
COMPONENT 3: Value and production chains of resilient aquaculture activities will help diversify aquaculture producers' livelihoods and improve their food security.				
Outcome 3.1. Increased quality of trout aquaculture **Outcome 3.2.** Marketing practices are improved	•Vulnerable rainbow trout farmers and their families become more competitive in the market. •Vulnerable rainbow trout farmers increase their income. •Women participate in the trout value chain.	**Output 4 (from FA):** Vulnerable development sector services and strengthened infrastructure assets in response to climate change impacts, including variability. **Output 3.1.1** Trout production chain facilities are improved. **Product 3.1.2** Marketing strategies exist for	• Three primary processing plants with silage area are built.	**USD 416,500**

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Project objective(s) [125]	Project objective indicator(s)	Result of the Fund	Performance indicator	Amount (USD)
		aquaculture products. at each stage of primary processing.	• Three (3) marketing strategies developed and implemented.	
Outcome 3.4. Ethical and gender-sensitive practices are used to increase the profile of climate-resilient aquaculture in Junin, Huanaco and Puno	• Rainbow trout producers (AMYPE and AREL) in Huanuco, Junin and Puno have Business Plans to carry out complementary activities to rainbow trout that help them increase their income. •Vulnerable trout farmers increase their income. •Women participate in the trout value chain.	**Output 6: (from FA)** Strengthened individual and community-specific livelihood strategies in relation to climate change impacts, including variability. **Product 3.2.1.** There are business plans for fish farmers in Huanuco, Junin, and Puno	Number and type of adaptation assets (tangible and intangible) created or strengthened in support of individual or community livelihood strategies. At least two (2) Business Plans developed for each region.	**USD 159,015**
			Total Project Components	**USD 4,624,760**

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

Record of endorsement on behalf of the government2Provide the name and position of the government official and indicate date of endorsement. The endorsement letter(s) should be attached as an annex to the project proposal. Please attach the endorsement letter(s) with this template.

Milagros Sandoval Diaz Head of the General Directorate of Climate Change and Desertification Ministry of the Environment Designated Authority	Date: January 09th 2023

Implementing Entity certification Provide: the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project contact person's name, telephone number and email address.

A. Implementing entity certification

I certify that this Full Proposal **"Implementing Protection Technologies to Foster the Resilience of Aquaculture in the Regions of Huanuco, Junin and Puno to Strengthen Food Security in the Context of Extreme Events Associated with Climate Change"** of Perú has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, commit to implementing the project 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.

DocuSigned by:
59C961C8DF6A455...

Martha Castillo
Biodiversity And Climate Technical Advisory Division
Implementing Entity Coordinator

Date: *(July, 12, 2023)*	Tel. and email: mcastillo@caf.com

[6] Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

Project Contact Person: Maria Carolina Torres
Tel. And Email: mctorres@caf.com

ENDORSEMENT LETTER

PERÚ | Ministerio del Ambiente | Viceministerio de Desarrollo Estratégico de los Recursos Naturales | Dirección General de Cambio Climático y Desertificación

"Decenio de la Igualdad de Oportunidades para mujeres y hombres"
"Año de la unidad, la paz y el desarrollo"

Lima, 12 de julio de 2023

LETTER N° 00080-2023-MINAM/VMDERN/DGCCD

Messrs.
The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Washington
United States
Email: Secretariat@adaptation-fund.org
Fax: 202 522 3240/5

Subject : Project proposal "Implementing Protection Technologies to Foster the Resilience of Aquaculture in the Regions of Huanuco, Junin, and Puno to Strengthen Food Security in the Context of Extreme Events Associated with Climate Change".

We will like to thank you for your previous communication dated May 31, 2023 in which you kindly informed us that the project proposal's concept note: "Implementing Protection Technologies to Foster the Resilience of Aquaculture in the Regions of Huanuco, Junin, and Puno to Strengthen Food Security in the Context of Extreme Events Associated with Climate Change" had been endorsed by the Adaptation Fund Board at its fortieth meeting and encouraged us to submit a fully developed project proposal through CAF.

We received the fully developed project proposal and assessed it. First, we would like to underline that the project will contribute to reduce aquaculture's vulnerability to climate change and climate variability in three territories in Peru (Huanuco, Junin and Puno), through innovation mechanisms and technologies, capacity building and governance, as well as market competitiveness opportunities.

Second, the implementing entity (CAF) informed that the total updated amount is USD 5,361,666. This differs from the USD 5,298,180 that was endorsed by the Adaptation Fund Board. This is mainly explained by new technology included in component 2 of the proposal. We would like to ensure that this would not cause any inconvenience.

Finally, I am pleased to endorse the fully developed project proposal mentioned above with support from the Adaptation Fund. If approved, we will ensure that the project is aligned to our climate change adaptation targets, and that is duly coordinated between the Ministry of Environment and CAF.

We appreciate your attention very much and thank you for your kind consideration.

Sincerely yours,

Milagros Sandoval Díaz
Head of the General Directorate of Climate Change and Desertification
Ministry of the Environment
Designated Authority

File Number: 2023266905

This is an authentic printable copy of a document filed in the Ministry of the Environment, applying the provisions of Art. 25 of S.D. 070-2013-PCM and the Third Final Complementary Provision of the S.D. 026-2016-PCM. Its authenticity and integrity can be verified at the website: https://ecodoc.minam.gob.pe/verifica/view with the following password: **98a5c1**

V. ANNEXES

Annex 1: Environmental and Social Management Framework (ESMS) by activity according to the principles of the Adaptation Fund

1. Introduction

1.1 Background

This document describes the guidelines in environmental and social aspects that must be incorporated during the preparation, execution, and closure of the project *"Implementing Protection Technologies to Foster the Resilience of Aquaculture in the Regions of Huanuco, Junin, and Puno to Strengthen Food Security in the Context of Extreme Events Associated with Climate Change."* It aims to ensure that the adverse impacts and risks posed by climate change are addressed in the project's development, ensuring that the project does not give rise to environmental and social damage[126].

1.2 Objective and scope

The objective is to design an environmental and social management instrument for the project, taking into account environmental management procedures, principles, and mechanisms of the fishing and aquaculture sector and the institutional design for the sustainable management of aquaculture, framed in the financing of activities of innovation in the face of climate change and the environmental and social operational policies of the Adaptation Fund.

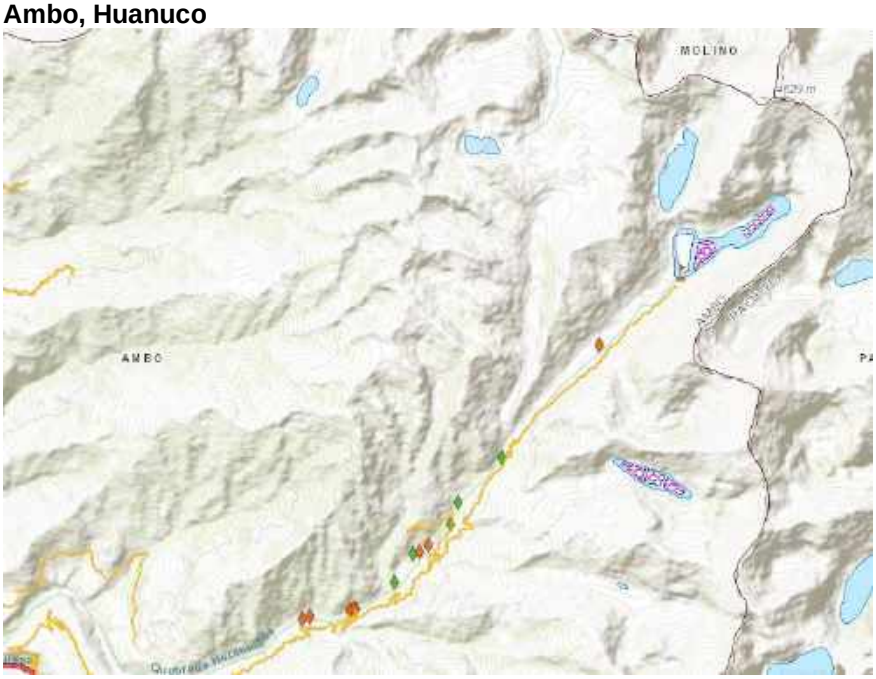
The plan is designed for its use and application in the project, to be implemented in Huánuco, Junín, and Puno regions. The project focuses on fish farmers with limited resources (AREL category) and small and medium-sized fish farmers (AMYPE category) dedicated to rainbow trout (Oncorhynchus mykiss) farming.

Chucuito, Puno

[126] The "Environmental and Social Policy of the Adaptation Fund" (2016) and the "Environmental and Social Management Framework of the National Fisheries and Aquaculture Innovation Program of Peru" (2022) have been used as a reference in the preparation of this document.

Juli, Pomata, Puno

Ambo, Huanuco



Ingenio, Junin

1.3 Project description

The project seeks to reduce the vulnerability of rainbow trout aquaculture to climate change and climate through the implementation of innovation mechanisms and technologies, capacity building, generation of improvements in the governance framework and encouraging increased market competitiveness.

Rainbow trout aquaculture represents the principal source of livelihoods for communities living in the regions of Huanuco, Junin and Puno and by increasing its adaptive capacity, reducing its vulnerability to climate change and seizing opportunities to strengthen its productivity, the project will contribute to a more efficient use of hydrobiological resources and enhance food security.

The project's specific objectives are:

(i) Promoting the development of a regulatory framework conducive to developing sustainable climate-resilient aquaculture and strengthening the public sector's institutional capacity to enforce those rules and regulations effectively.

(ii) Improve the quality and quantity of reliable and up-to-date information regarding the impact of climate change on aquaculture, the quality of hydrobiological resources, and information on the economic and commercial performance of trout farming in the regions.

(iii) Assist in developing climate disaster prediction tools and enhance systemic capacity to manage climate crises.

(iv) Improve the efficiency of aquaculture practices and water resources management by acquiring new clean technologies for resilient aquaculture.

(v) Facilitate access to financing for fish farmers to ensure sustainability towards resilient practices and promote the formalization of aquaculture activity.

(vi) Increase the sustainability of resilient aquaculture through improved marketing of rainbow trout.

The project includes three components:

- Component 1: Governance, knowledge management and access to finance for sustainable aquaculture are strengthened.
- Component 2: Innovation and technology transfer mechanisms are improved and/or

implemented to promote resilient aquaculture activity in Huanuco, Junin and Puno, Peru.

- Component 3: Value and production chains of resilient aquaculture activities diversify aquaculture producers' livelihoods and improve their food security.

1.4 Organization and responsibilities

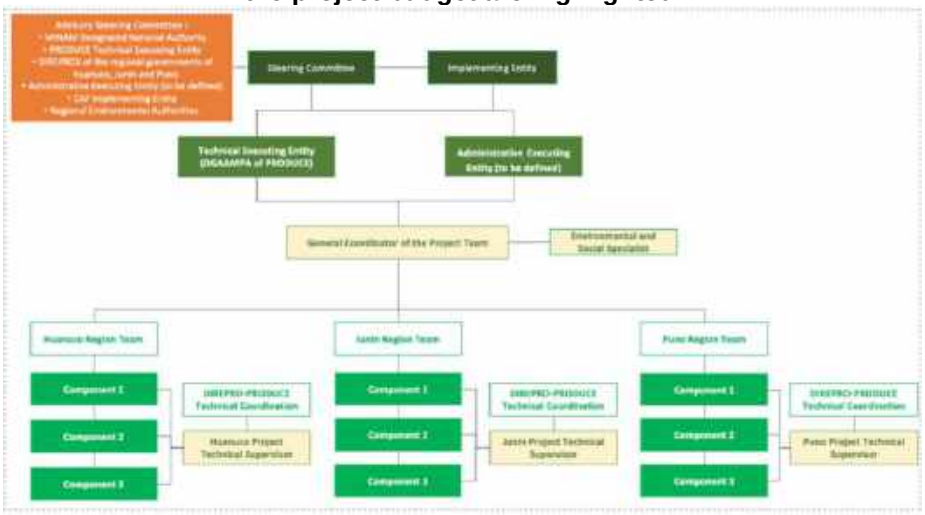
The risk management system will include the commitment and capacity to assess and respond to the environmental and social risks of the projects or programs supported by the Adaptation Fund, in light of its environmental and social policy.

The Implementing Entity (IE) will be responsible for environmental and social risk management, including all risks associated with the environmental and social principles of the Adaptation Fund. The IE must ensure the correct evaluation of the environmental and social impacts of the project, the measures to avoid, reduce or mitigate all environmental and social impacts, as well as the monitoring and evaluation of said measures during the development of all project activities. In addition, the IE must develop an environmental and social management plan and supervise the work carried out by the executing entity or entities (EE)[127].

The project will have a specialist to safeguard the project's environmental, social, and gender management, ensuring sustainable management, implementation of environmental and social management plans, and gender action, with monitoring of all activities. The specialist will be responsible for analyzing and evaluating the possible environmental impacts and risks in the activities of the three components of the project, ensuring their sustainability and recommending, if necessary, mitigation measures or alternatives that increase the environmental benefits and social, documenting and compiling information to demonstrate compliance with the Principles of the Adaptation Fund and national and regional regulations.

In addition, she/he will be responsible for monitoring the beneficiaries of the project, to update and evaluate the sociocultural impacts of the activities, recommend corrective or alternative measures. She must follow up on the GAP, to update and evaluate the gender impacts of the activities, recommending corrective or alternative measures.

***Fig. 1* – Organization chart and Project Structure. In yellow, the members whose salary will be paid from the project budget are highlighted.**



[127] Guidance document for implementing entities on compliance with the Environmental and Social Policy of the Adaptation Fund. Retrieved from https://www.adaptation-fund.org/wp-content/uploads/2021/06/3.-ANNEX-3-Environmental-social-policy-March-2016-SP-FIN.pdf

2. Regulatory framework

2.1. Sectoral regulations

The environmental regulations for aquaculture in Peru have as their main document the Environmental Management Regulations of the Fisheries and Aquaculture Subsector of the Ministry of Production (also referred as PRODUCE, in Spanish).

Table 1. Sectoral regulations applied to Aquaculture Activities

Entity	Norm
PRODUCE	Regulation of Environmental Management of the Fishing and Aquaculture subsector (RGA-P&A) 2019 DS N°012-2019 PRODUCE
	Decree Law No. 25977, General Fisheries Law and its Regulations approved by No. 012-2001-PE
	General Aquaculture Law, approved by Legislative Decree No. 1195 and its Regulations approved by Supreme Decree No. 003-2016-PRODUCE
	D.S. N°040-2001-PE Approve Sanitary Standard for Fishing and Aquaculture Activities
	National Aquaculture Policy. SUPREME DECREE Nº 001-2023-PRODUCE

The National Environmental Impact Assessment System (SEIA, for its Spanish acronym) in its Annex II – List of inclusion of Investment Projects subject to the SEIA, provides that investment projects in the aquaculture subsector must have an environmental management instrument (IGA, for its Spanish acronym). Thus, for aquaculture projects and/or activities categorized as micro and small business (AMYPE), including projects for the production of seeds, eggs and/or fingerlings, and the cultivation (may include the extraction and collection) of aquatic flora, they must submit an Environmental Impact Statement (DIA, for its Spanish acronym) to the Regional Governments (also, GORE in Spanish).

In the limited resource aquaculture category (AREL), national legislation does not require an IGA to carry out its aquaculture activities. However, the General Aquaculture Law and its regulation D.L. No. 1195, requires that its activities be aligned and regulated within the framework of applicable environmental legislation, mainly in sectoral and general regulations on waste and effluent management, in addition to aligning with regional regulations.

It should be taken into account that Supreme Decree No. 012-2019-PRODUCE, which approves the Environmental Management Regulations for the Fishing and Aquaculture Subsectors, establishes the presentation of an Environmental Technical Sheet (FTA, for its Spanish acronym). The FTA is a complementary management instrument to the SEIA, which is currently in the approval process. Within the framework of the project's safeguards, this form has been adapted so that the beneficiaries of the AREL category can identify environmental and social aspects during their activities.

Sustainable production measures established by PRODUCE will be ensured, such as the use of good aquaculture production practices, the strengthening of institutions, the use of local development and management schemes, health certifications, production of safe products, biosafety, vaccination protocols, traceability and the application of the precautionary principle to minimize possible environmental impacts and irreversible changes in the ecosystem.

2.2. Cross-Cutting Regulations

There are environmental regulations applicable to the fishing and aquaculture subsector coming from different entities, such as: the Presidency of the Council of Ministers (PCM), the Ministry of the Environment (MINAM), the Ministry of Agriculture (MINAGRI), the Ministry of Justice (MINJUS), the Ministry of Culture (MINCUL), the Ministry of Health (MINSA), the Ministry of Women and vulnerable populations (MIMP) and the Ministry of Labor and Employment Promotion (MTPE).

Table 2. Transversal regulations applied to Aquaculture Activities

Entity	Norm
PCM	National Biological Diversity Strategy. Supreme Decree No. 102-2001-PCM
MINAM	Law No. 28611, General Environmental Law
	Law No. 28245, Law of the National Environmental Management System
	National Environmental Policy, approved by Supreme Decree No. 012-2009-MINAM
	Law No. 27446, Law of the National Environmental Impact Assessment System and its Regulations approved by Supreme Decree No. 019-2009-MINAM
	Law No. 26839. Conservation and sustainable use of Biological Diversity
	D.S. N°003-2011-MINAM modification of article 116 of the Regulation of the Law of Protected Natural Areas
MINAGRI	Law No. 29338, Water Resources Law and its Regulations approved by Supreme Decree No. 001-2010-AG and the Single Ordered Text of Law No. 27444
MINJUS	General Administrative Procedure Law, approved by Supreme Decree No. 004-2019-JUS
MINCUL	Law 28736 - Law for the protection of indigenous or native peoples in isolation and in a situation of initial contact
	D.S. No. 003-2014-MC. Regulation of Archaeological Interventions
MINSA	Law No. 1062, Food Safety Law and its Regulations approved by D.S. No. 034-2008-AG
MIMP	National Gender Equality Policy. D.S. 008-2019-MIMP
MTPE	D.S. No. 008-2005-TR. National Plan for the Prevention and Eradication of Child Labor
MTPE	Law No. 29783 Occupational Health and Safety Law and its regulations approved by Supreme Decree No. 005-2012-TR

2.3. Environmental and social policies of the Adaptation Fund

The list of environmental and social principles is presented below, detailing those that have been activated for the project.

Principle 1. Compliance with the law: The project must comply with the corresponding local, regional, national and international regulatory framework. Point 2.1 details the applicable regulations for aquaculture of the AREL and AMYPE categories that will be the beneficiaries of the program.

Principle 2. Access and equity: The project does not foresee a negative impact on this principle, since from its design and formulation it provides fair and equitable access to its benefits. In addition, their activities do not impede access to basic health services, drinking water and sanitation, energy, education, housing, safe and decent working conditions, and land rights.

Principle 3. Marginalized or vulnerable groups: The project identified vulnerable groups according to (i) poverty level; (ii) sensitivity level according to the IPCC; (iii) harvest level; (iv) ecological sensitivity, according to IMARPE criteria, and (v) socioeconomic adaptive capacity. The purpose is to avoid any disproportionate adverse impact on marginalized and vulnerable groups that include children, women and girls, the elderly, and indigenous peoples, among others.

The project will contribute to improving the quality of life of the population and it is expected to generate positive impacts on vulnerable and traditionally marginalized groups in the aquaculture production sector, such as women producers.

Principle 4. Human rights: Peru is a signatory of the nine human rights treaties that make up the universal system for the protection and promotion of human rights and is part of the regional system on

the matter. So, although specific safeguards are not activated for this principle, the Project from its design and formulation is framed within the unrestricted respect for human rights. The implementation of the activities foreseen in the Project will contribute to the protection of human rights.

Principle 5. Gender equality and women's empowerment: The project has been designed so that both women and men have equal opportunities to participate, receive comparable social and economic benefits, and do not suffer disproportionate adverse effects during the development process. In addition, it considers and promotes within its three components, the participation of women in aquaculture, incorporating a gender approach in the various technical and regulatory instruments and technologies for adaptation to climate change that will be developed.

Principle 6. Fundamental labor rights: The project will comply with the fundamental labor standards indicated by the International Labor Organization (ILO), of which Peru has been a member since 1919. In addition, it considers from its design and within its three components, the establishment of good safety and health practices at work, with the design of a specific manual aimed at facilitating the application and compliance with existing regulations on the matter.

Principle 7. Indigenous peoples: No indigenous peoples have been identified in the project intervention territories, nor have beneficiaries belonging to indigenous peoples, so no additional evaluation is required. The activities carried out within the framework of the design and formulation of the project have been carried out with respect for the multicultural, ethnic and linguistic diversity that characterizes the country.

Principle 8. Involuntary resettlement: The project has been designed and will be implemented without requiring any resettlement and/or displacement of people or communities to other areas or territories.

Principle 9. Protection of natural habitats: The Adaptation Fund does not support projects that imply the unjustified conversion or degradation of critical natural habitats, including those that are: i) legally protected; ii) officially proposed for protection; iii) recognized by authorized sources for their high conservation value, including as critical habitat, or iv) recognized as protected by local traditional or indigenous communities.

For this project, Lake Titicaca was identified as a RAMSAR site (recognized as a wetland of international importance, where a little more than 14 thousand hectares of aquatic surface of Lake Titicaca are enabled and destined for the development of aquaculture. The culture of trout in floating cage systems is intensive and is carried out in certain areas authorized by the government. The beneficiaries that are in this area have authorization of rights granted by DIREPRO - Puno to carry out this activity in a sustainable manner In addition, within Lake Titicaca is the Titicaca National Reserve, however, there is no aquaculture activity in this area.

The beneficiaries of Junín and Huánuco are not located near Protected Natural Areas (ANP).

Principle 10. Conservation of biological diversity: The project is designed and implemented avoiding any significant or unjustified reduction or loss of biological diversity or the introduction of known invasive species. Peru signed and ratified the Convention on Biological Diversity, and the sector has standards and manuals for the sustainable management of aquaculture in the country. The project foresees a specific plan to facilitate the application and compliance with the applicable regulations.

The rainbow trout is a species introduced in Peru and today it is considered naturalized in the country, establishing autonomous populations in habitats where they were previously exotic. It is a prioritized species for biosecurity and its introduction into natural environments requires control measures, thus minimizing any possible impact on native biodiversity.

Principle 11. Climate change: The project has focused on reducing the vulnerability of the population to the effects of climate change, and will not significantly or unjustifiably increase greenhouse gas emissions or other drivers of climate change. Its implementation constitutes, in itself, an adaptation measure for the aquaculture sector.

Principle 12. Pollution prevention and resource efficiency: The project is designed and will be

implemented in such a way that it complies with applicable international standards to maximize energy efficiency and minimize the use of resources, the production of waste and the emission of pollutants. .

Possible risks have been considered and are expected to be mitigated through the implementation of good practices and guidelines for the prevention and minimization of environmental impacts and efficient use of resources.

Principle 13. Public health: The project must avoid potentially significant negative impacts on public health. In this sense, it provides for the participation of the National Fisheries Health Agency (SANIPES, for its Spanish acronym), which is the competent authority to carry out disease surveillance and control activities of hydrobiological resources, from aquaculture or the natural environment (wild), to ensure their health condition.

Principle 14. Physical and cultural heritage: No physical and cultural heritage has been identified in the territories of intervention of this Project. However, it must be taken into account that the alteration, damage or removal of any physical cultural resources, cultural sites and sites with unique natural values recognized as such at the community, national or international level must be avoided; in addition to not permanently interfering with the access and current use of said physical and cultural resources.

Principle 15. Land and soil conservation: The project promotes soil conservation and avoids the degradation or conversion of productive lands that provide valuable ecosystem services. The project establishes guidelines for the prevention and minimization of possible environmental impacts through the Soil Conservation Plan.

3. Main risks and environmental and social impacts of the Project

The table below shows the main environmental and social aspects identified for the project, as well as their possible impacts, risks and control measures.

Table 3. Environmental and social aspects, possible risks and impacts identified

ACTIVITY	ENVIRONMENTAL AND SOCIAL ASPECTS	POTENTIAL IMPACTS / IDENTIFIED RISKS	GENERAL CONTROL MEASURES FOR IDENTIFIED IMPACTS / RISKS Junín/Huánuco – Pond systems	GENERAL CONTROL MEASURES FOR IDENTIFIED IMPACTS / RISKS Puno – Floating cages systems
GROWING AND PROCESSING	Feed or organic waste in ponds or cages	-Eutrophication of water and low light -Disturbances in the surrounding area -Water with excess nutrients and organic matter -Fish mortality -Residues from the harvest process: eviscerated, sanguazas	- Good feeding practices: adequate amount of supply, dosage, feeding tables - Installation of pools in suitable areas that do not alter the surrounding area in the event of possible flooding -Periodic cleaning of pools: excess flora (algae), cleaning of water inlet and outlet filters (algae, plants, mud, etc.) -Adequate disposal of residues from the harvest: transfer to disposal of residues, generation of by-products: compost, silage, others. - Daily extraction of mortality and adequate final disposal.	- Installation of floating cages in areas deeper than 20 meters -Periodic rotation of cages within the concession granted in order to mitigate excess nutrients. - Good feeding practices: adequate amount of supply, dosage, feeding tables - Adequate disposal of residues from the harvest: transfer to disposal of residues, generation of by-products: compost, silage, others. - Daily extraction of mortality and adequate final disposal.

ACTIVITY	ENVIRONMENTAL AND SOCIAL ASPECTS	POTENTIAL IMPACTS / IDENTIFIED RISKS	GENERAL CONTROL MEASURES FOR IDENTIFIED IMPACTS / RISKS Junín/Huánuco – Pond systems	GENERAL CONTROL MEASURES FOR IDENTIFIED IMPACTS / RISKS Puno – Floating cages systems
	Effluents	- Contamination of water and soil - Alteration in flora and fauna/exhaustion of natural resources - Damage to the surrounding natural habitat	-Good practices for the use of chemical products: used in disease control. -Installation of filters and/or sedimentation pool.	-Good practices for the use of chemical products: used in disease control. - Location of cages away from the shores of the lake and reeds, thus mitigating the negative impact of natural breeding areas for other species: native lake fish and birds.
	Emissions	- Atmospheric and noise pollution - Damage to human health - Alteration in flora and fauna/exhaustion of natural resources	-Avoid burning waste: empty food bags, cardboard, nets, disused material, others. - Control of fuel use in operation of production equipment: vehicles, sorters, pumps, others bombs, others - Noise control resulting from the use of equipment in production: sorters, harvesters or others	-Avoid burning waste: empty food bags, cardboard, nets, disused material, others - Control of the use of fuels in the operation of production equipment: vehicles, boat engines, pressure mesh cleaners, selectors, pumps, others - Noise control resulting from the use of equipment in production: sorters, harvesters or others
	Chemical products (veterinarians, disinfectants, etc.)	-Contamination of water/soil with chemical products -Alteration in flora and fauna/exhaustion of natural resources -Alterations in areas adjacent to the activities	-Use of products authorized by SANIPES or DIGESA -Application of Good Sanitary Practices: use of chemical products for cleaning, disease control, others - Adequate final disposal of cleaning, disinfection and disease control waste and residues	--Use of products authorized by SANIPES or DIGESA -Application of Good Sanitary Practices: use of chemical products for cleaning, disease control, others - Adequate final disposal of cleaning, disinfection and disease control waste and residues
	Non-hazardous waste (organic and inorganic waste, household waste, disused gear, etc.)	landscape alteration Bad smells Damage to human health Others	-Adequate segregation of waste in the production center. -Recycling and use of RRSS. -Odor control: timely disposal of organic waste in order to avoid bad odors.	-Adequate segregation of waste in the production center. -Recycling and use of RRSS. -Odor control: timely disposal of organic waste in order to avoid bad odors.
	Hazardous waste (lubricants, oils and greases, batteries, etc.)	Water and soil contamination Alteration of the flora and fauna of the area Damage to human health Others:	-Signaling. -Use of hermetic deposits for hazardous waste. -Timely disposal of hazardous waste used in the activity: batteries, batteries, oils.	-Signaling. -Use of hermetic deposits for hazardous waste. -Timely disposal of hazardous waste used in the activity: batteries, batteries, oils.
	Fossil fuels (oil, gas and/or derivatives)	Gradual depletion of resources Alteration in the natural environment Air/water pollution Others:	-Change of energy source to clean energy (wind, and biocombustible and solar)	-Change of energy source (solar, wind, biofuels, etc.) -Have an anti-spill kit

ACTIVITY	ENVIRONMENTAL AND SOCIAL ASPECTS	POTENTIAL IMPACTS / IDENTIFIED RISKS	GENERAL CONTROL MEASURES FOR IDENTIFIED IMPACTS / RISKS Junín/Huánuco – Pond systems	GENERAL CONTROL MEASURES FOR IDENTIFIED IMPACTS / RISKS Puno – Floating cages systems
	Noise generation	Damage to human health Changes in fauna and their behavior Damage to the surrounding natural habitat Others:	- Minimize as much as possible the generation of noise and vibrations of the equipment, controlling the motors and the state of the mufflers -Periodic maintenance of equipment	- Minimize as much as possible the generation of noise and vibrations of the equipment, controlling the motors and the state of the mufflers -Periodic maintenance of equipment
	Escape of cultivated specimens	-Introduction of species in natural environments. -Competition with native species for food and places to live. -Introduction of diseases. -Others:	-Good fish handling practices in controlled rearing systems, by trained personnel to prevent escapes. -Leakage control systems in the production center.	-Good fish handling practices in controlled rearing systems, by trained personnel to prevent escapes. -Leakage control systems in the production center.
	Activity in natural environments	Threats to biodiversity Alteration of the natural environment RRNN depletion Others:	-Perform permitted activities in natural environments. -Request corresponding special permits if necessary.	- Carry out activities allowed in natural environments. -Request corresponding special permits if necessary.
CAPACITY BUILDING	Access to information (Objectives, possible effects, progress) of the local communities that may be affected.	Lack of access to information that could lead to misunderstandings by local communities Others:	- Have a space that allows constant communication with local communities that may be affected. - Include the participation agreement as in the meeting minutes. -Permanent coordination with the leaders in the impact zones.	- Have a space that allows constant communication with local communities that may be affected - Include the participation agreement as in the meeting minutes. -Permanent coordination with the leaders in the impact zones
	Understanding of the contents of the training or technical assistance.	That the information provided is not being understood by the direct beneficiaries. Others:	-Maintain a constant evaluation of the comprehension of the topics and activities before moving on to the following topics. - Apply friendly and adaptable learning methodologies for the target audience.	- Maintain a constant evaluation of the comprehension of the topics and activities before moving on to the following topics. - Apply friendly and adaptable learning methodologies for the target audience.
	Participation of beneficiaries	Low participation of direct beneficiaries Others:	-Adapt the times and spaces of the activities to ensure the participation of the beneficiaries. -Carry out the dissemination through the means used by the beneficiaries.	-Adapt the times and spaces of the activities to ensure the participation of the beneficiaries. -Carry out the dissemination through the means used by the beneficiaries.

This document, in addition to showing the main environmental and social aspects, as well as the impacts and risks associated with trout farming and processing and capacity building, will serve as a tool for monitoring activities, proposing applicable control measures, always seeking eliminate the impact or risk that could be generated.

4. Social and environmental benefits

4.1. Environmental benefits

The Project will benefit the families and communities most vulnerable to climate change events by ensuring sustainable management. These benefits will be of an environmental, social, economic, and gender nature.

The Project will allow the most vulnerable aquaculture farmers in the AMYPE and AREL categories sustainable management of aquaculture hydrobiological resources through good health, safety, and environmental practices and guides and campaigns for the consumption of seasonal hydrobiological resources. Especially the AREL category of low-income farmers will considerably improve their environmental practices. In addition, the Project will enhance the quality of water and the conservation of the aquaculture ecosystem through technologies for managing, treating, and discharging effluent, sludge, and undigested food generated in aquaculture operations.

The principles of the circular economy will also be applied: eliminate waste, circularize materials and products for as long as possible, and regenerate nature. The Project takes this approach in all three components. As part of Component 1, environmental management is articulated in the entities and the strengthening of the capacities of actors in environmental innovation issues. In Component 2, in improving technologies and practices such as biofloc or RAS systems. And in Component 3, increasing circular business models for trout processing and marketing, developing new products, and reaching new markets.

4.2. Social benefits

The Project will strengthen the aquaculture community's food security and livelihoods by improving this sector's adaptive capacity and resilience to extreme events intensified by climate change. The families will have trout, traditionally a nutritious food in the family diet, favoring children's nutrition.

Aquaculture farmers will strengthen their technological capacities through training and training activities in good health, safety, and environmental practices and in terms of adaptive capacity to climate change. In addition, the Project will strengthen the sector's governance with protocols, guidelines, and plans for aquaculture resilience to climate change.

The Project promotes organizational strengthening and business skills development in fish farmers and all people linked to the trout value chain, including tourism and hotel sector actors. The beneficiaries will have access to new technologies, technology transfer processes, commercial capacities, and market access improvement.

Gender Approach

The Project contributes to improving the quality and detail of information on the participation of women in aquaculture, incorporating the gender approach in the various technical, regulatory, and technological instruments for adaptation to climate change that will develop. A Gender Action Plan has been prepared containing specific measures to ensure gender equality and the empowerment of women aquaculture farmers.

The selection criteria of the beneficiaries prioritize women producers and farms where the active participation of women is verified, contemplating an intersectional approach. Likewise, the involvement of women in aquaculture organizations and the assemblies and workshops held within the framework of the Project will be encouraged.

The Project provides training on equality, sensitivity, and gender perspective, including gender diversity and issues that affect the LGBTIQ+ community, seeking to encourage the incorporation of women and diversity in activities throughout the entire value chain of aquaculture. This will contribute to strengthening women's self-esteem and capacities and to the inclusion of gender-sex diversities, which are invisible in the intervention regions.

4.3. Economic benefits

The Project will improve aquaculture productivity and the use of hydrobiological resources, resulting in economic benefits such as the reduction of losses due to the impacts of climate change, the increase in the confidence of the financial sector in investing in the aquaculture sector, and the decrease of costs of the production. These benefits translate into a strengthening of the sector's competitiveness.

With the reduced costs and the added value that the Project will provide, the sector becomes attractive for more people to get involved. In addition, fishery certifications integrate economic benefits that allow the inclusion of environmental costs, promoting the diversification of the aquaculture sector. Implementing the Project will limit the financial losses in production, infrastructure, means of subsistence, provision of services, ecosystems, and environmental resources of the aquaculture sector derived from extreme weather events associated with climate change.

5. Socio-environmental management

5.1. Guidelines for the Environmental and Social Management plan

The Environmental and Social Management Plan (ESMP) ensures that the Principles (safeguards) required by the Adaptation Fund are properly adhered to, and also that they comprehensively cover all aspects of project implementations and appropriately complement each other, so that the health, safety, rights of individuals are protected and their environmental conditions are maintained or improved, biological diversity is preserved and sustainable economic development is promoted.

Accordingly, ESMP provides Project beneficiaries with mandatory compliance guidelines that are easy and correct to apply for the preparation, execution, and monitoring of their activities to:

- Identify the environmental and social impacts an activity has been causing or could cause.
- Propose and establish the mitigation, control, remediation, or environmental rehabilitation measures that must be implemented so that the operation has the optimal parameters established and compliance with current environmental regulations is ensured.
- Design and implement the ESMP considering the planning, operation, and closure stages, considering the specific plans proposed to ensure environmental, social, and gender safeguards.

5.2. Methodology

Identifying and evaluating the environmental, social, and gender impact is crucial for decision-making and developing the Project's activities correctly. This allows the proposal and implementation of corrective and mitigation measures, ensuring compliance with current regulations.

To identify and evaluate the impact of Project activities, it is necessary:

- Know the characteristics of the execution zone and the area of influence of the activity.
- Identify the impacts caused directly and may or may not be controlled by the same activity.
- Identify the activities that cause positive and negative impacts of the activity on natural ecosystems.
- Determine the direct and indirect impacts of the activity, its magnitude, and importance which allow the beneficiary to identify critical aspects that must be considered when planning and executing their productive activities.
- Determine appropriate prevention and mitigation measures for adverse impacts and measures that maximize positive effects.
- Based on the prevention measures, the mechanisms are defined to monitor the impacts caused by the productive system's activities and evaluate the behavior, efficiency, and effectiveness of

the designed prevention, mitigation, correction, or compensation measures.

Considering that the activities will, directly and indirectly, affect the existing ecosystems, it is vital to consider the safeguards and their specific plans to ensure compliance.

5.3. Monitoring and compliance with the Adaptation Fund's safeguards

Table 4. Monitoring and compliance with the Adaptation Fund's safeguards

Environmental and social principles	Control measures to avoid negative impacts	ESMP indicator	Compliance date/milestone
Principle 1: Compliance with legislation	Selection criteria proposed for the beneficiaries of the AREL and AMYPE categories.	Beneficiaries selected	Before the start of activities
	The AREL beneficiaries will fill out an Environmental Technical Sheet (already developed, annexed to proposal) to ensure the environmental management measures regarding the impacts that could be generated.	Environmental Technical Sheet (FTA, for its Spanish acronym)	Before the start of activities
	AMYPE beneficiaries must have a DIA, which will be updated as per Project requirement.	Environmental Impact Statement updated. (DIA, for its Spanish acronym)	Before the start of activities
	The Manual of Good Aquaculture Practices will be implemented, which includes the Hygiene and Biosafety section (already developed, annexed to proposal)	Good practices manual implemented	Before the start of activities
Principle 2: Access and equity.	Selection criteria proposed for the beneficiaries of the AREL and AMYPE categories.	Beneficiaries selected	Before the start of activities
Principle 3: Marginalized and vulnerable groups	Selection criteria proposed for the beneficiaries of the AREL and AMYPE categories.	Beneficiaries selected	Before the start of activities
Principle 4: Human rights	No negative impact on Human Rights.	NA	NA
Principle 5: Gender equality and women's empowerment	Evaluation and Gender Action Plan (annexed)	Gender Action Plan	Proposal
Principle 6: Fundamental labour rights	Occupational Health and Safety Plan, in order to safeguard workers by preventing accidents and avoiding the transmission of diseases (annexed).	Occupational Health and Safety Plan (PSST, for its Spanish acronym)	Before the start of activities
Principio 7: Indigenous people	No indigenous peoples have been identified in the territories of the beneficiaries, neither beneficiary identified as indigenous peoples.	NA	NA
Principio 8: Involuntary resettlement	No activities requiring resettlement have been proposed.	NA	NA
Principle 9: Protection of natural habitats	Once the beneficiaries are selected, it is assessed that they are outside any ANP or its buffer zones (zoning of activities in ANP). In case they are inside, the Project must be aligned to the ANP Master Plan.	Zonification	Before the start of activities
	Ensure that the RAMSAR site is compatible with aquaculture, through guidelines for biodiversity conservation.	BDMP	Proposal

Environmental and social principles	Control measures to avoid negative impacts	ESMP indicator	Compliance date/milestone
	Biological Diversity Management Plan -PDGB (annexed)	BDMP	Proposal
Principle 10: Biodiversity conservation	The Exploration Service for the distribution of naturalized trout in prioritized areas of the Junín and Huánuco regions is taken into account within the framework of Law 29811 – The Moratorium Law (2015).	BDMP	Proposal
	Proper management of trout is ensured to prevent the escape of individuals from earthen ponds or cages into the natural environment (included in the BDMP annexed)	BDMP	Proposal
Principio 11: Climate change	The project has focused on reducing the vulnerability of the population to the effects of climate change and will not significantly or unjustifiably increase greenhouse gas emissions or other drivers of climate change.	Project proposal	Proposal
Principle 12: Pollution prevention and resource efficiency	The project will emphasize the reasonable reduction in the use of resources, for which the development of a baseline and formats to be used by the beneficiaries are proposed.	GRE	Proposal
	Guidelines for resource efficiency (annexed)	GRE	Proposal
	Solid waste minimization and management plan (annexed)	Solid waste minimization and management plan (PMMRS, for its Spanish acronym)	Before the start of activities
Principle 13: Public health	Only chemicals authorized by SANIPES will be used as sanitary products or DIGESA for cleaning products, following health authority recommendations.	MBPA	Before the start of activities
	Hygiene and biosecurity measures as indicated in the manual of good practices under the health and biosecurity options will be used	MBPA	Before the start of activities
Principio 14: Patrimonio físico y cultural	No physical and cultural heritage has been identified in the territories of the beneficiaries.	NA	NA
Principle 15: Land and soil conservation	The project will ensure the conservation and preservation of soils and land, through the preparation of a baseline and guidelines that ensure their sustainable use.	Soil conservation plan (PCS, for its Spanish acronym)	Before the start of activities
	Soil conservation plan (PCS) (annexed)	Soil conservation plan (PCS, for its Spanish acronym)	Before the start of activities

Planning stage

This is the Project design and activity planning stage, where it must consider how the impacts and risks that may exist in the operation stage will be identified to have the necessary control and mitigation measures.

In addition, at this stage, the following specific plans must be developed:

- Evaluation and Gender Plan
- Biological Biodiversity Management Plan
- Guidelines for resource efficiency
- Plan for Citizen Participation and Relations with the community

Operation stage

This is the start-up stage of the Project where all the activities to be implemented must be considered and ensure that the necessary information is available for their optimal development. In this stage, the beneficiaries of the AREL and AMYPE categories will be identified according to the established selection criteria.

In the case of the beneficiaries of the AREL category, they will complete an Environmental Technical Sheet according to the characteristics of their farming activities. The beneficiaries of the AMYPE category must update their Environmental Impact Statement.

In addition, the following specific plans must be developed:

- Manual of Good Aquaculture Practices
- Workplace Health and Security plan
- Solid waste minimization and management plan
- Soil conservation plan

At this stage, the monitoring and evaluation of activities should also be considered to ensure the continuous improvement of the Project using the follow-up formats.

Closing stage

In the closing stage of the Project, it must be ensured that all the activities were developed in compliance with the control measures and specific plans of the ESMP.

The closure of the Project does not indicate the end of activities, thanks to the improvements implemented in the five-year duration of the Project; beneficiaries may choose to continue them.

5.4. Beneficiaries selection criteria

Multiple dimensions are considered for determining eligibility, including geographical areas of intervention, formal operational category (AREL: Limited Resources Aquaculture producers or AMYPE: Micro and Small Business Aquaculture producers), socioeconomic condition and gender[128].

Intervention areas: Geographical areas at risk, highly vulnerable to the effects of climate change, were selected as the project's intervention areas.

Socioeconomic condition: AREL and AMYPE producers have marked economic, social, and technological differences between them; therefore, the project established a differentiated selection criteria:

5.4.1. Selection criteria for AREL beneficiaries

According to socioeconomic condition:

- *Formal AREL*: The producer has an authoritative resolution provided by the DIREPRO to develop aquaculture activity (concession or authorization). The source of information corresponds to the DIREPRO and the National Aquaculture Roster (CAN, for its Spanish acronym).
- *Natural Person*: The authoritative resolution was granted to a natural person. The source of information corresponds to the DIREPRO and the National Aquaculture Roster (CAN, for its Spanish acronym).
- *Active operation*: Producers who are formal and currently operating. The source of information

[128] Cases may differ since there is a broad range of production levels (+3.5 to 150 tons). An AMYPE that produces 10 tons may only rely on family for the farm work. There are cases in which the aquaculture operation produces a larger quantity, and there may be one or two paid external workers in addition to the family. Finally, there are cases in which all workers are external workers. In all cases, field verification will be essential to determine if these external workers are formally and legally paid (they have a contract, issue receipts, etc.).

corresponds to the DIREPRO and field verification.

- *Family labor*: the aquaculture operation does not have external workers except family members. The information comes from the DIREPRO and field information.
- *-Aquaculture operation led by a woman, with the aquaculture right (concession or authorization) granted to her name (owner)*: Women-owned aquaculture operations will have a preference of the first order. The source of information corresponds to DIREPRO's administrative records and the National Aquaculture Roster - (CAN, for its Spanish acronym).
- *Aquaculture producer registered in SISFOH's General Register of Households as Poor or Extreme Poor*: Second degree preference. Means of verification: SISFOH's database through person's ID number.
- *Aquaculture operation led by a man, with the aquaculture right (concession or authorization) granted to his name (ownership):* Third-degree preference for operations where the women have active responsibility in aquaculture activities such as management, planting, production, harvesting, feeding or commercialization. The information comes from the DIREPRO and field information.

<u>According to access to development services:</u>

- Having been a user of aquaculture extension services provided by PRODUCE, GORE, FONDEPES, PNIPA or CITE (means of verification: administrative registries) and that these practices are being applied (means of verification: corroboration and field information).
- Not having current credits granted by FONDEPES (means of verification: administrative records).
- Not having received other types of subsidies for productive or innovation activities (means of verification: administrative records).

5.4.2. Selection criteria for AMYPE beneficiaries

<u>According to socioeconomic condition</u>:

- Formal AMYPE: The producer has an authoritative resolution provided by the DIREPRO to develop aquaculture activity (concession or authorization). The source of information corresponds to the DIREPRO and the National Aquaculture Roster (CAN, for its Spanish acronym).
- Formal AMYPE producer who has a farm sanitary license granted by the National Fisheries Health Agency (SANIPES) or has started the procedure to obtain it. Means of verification: producer's license or initial document.
- *Natural Person with Business or Legal Person*: With an active RUC at SUNAT.
- *Active operation*: Producers who are formal and currently operating. The source of information corresponds to the DIREPRO and field verification.
- *Aquaculture operation led by a woman, with the aquaculture right (concession or authorization) granted to her name (owner) or, in the case of Legal Entities, female legal representation:* Women-owned enterprises will have preference of the first order. The source of information corresponds to the National Aquaculture Roster – CAN and the administrative records of the DIREPRO or SUNAT.
- *Aquaculture operation led by a man, with the aquaculture right (concession or authorization) granted to his name (ownership) or male legal representation:* Second-degree preference for operations where the women have active responsibility in aquaculture activities such as management, planting, production, harvesting, feeding or commercialization. The information comes from the DIREPRO and field information.

- *Paid labor*: the aquaculture operation has paid external workers, with or without family work[129]. The source of information corresponds to the DIREPRO and field verification.
- *Not having a firm sanction imposed by the regional authorities in the environmental or productive fields*: The source of information corresponds to the DIREPRO.

According to access to development services:

- Having been a user of aquaculture extension services provided by PRODUCE, GORE, FONDEPES, PNIPA or CITE (means of verification: administrative records), and that these practices are being applied (means of verification: corroboration and field information).
- Not having current credits granted by FONDEPES (means of verification: administrative records).
- Not having received other types of subsidies for productive or innovation activities (means of verification: administrative records).

5.4.3. Selection Process

The methodology proposed for the selection of beneficiaries for each of the intervention areas is as follows:

- A Matrix is prepared with the determined selection criteria, one for AREL producers and another for AMYPE producers, which will indicate whether it meets each selection criteria and in what order.
- Based on updated information from the National Aquaculture Roster (CAN, for its acronym in Spanish), the universe of aquaculture producers to whom the Matrix will be applied is established.
- The technical personnel contracted by the project for each area will be responsible for applying the Matrix, considering the various public databases listed above.
- Likewise, some criteria will require that the information be taken and verified in the field, for which the project's technical staff will collect the corresponding information, considering pertinent evidence to verify whether the criteria are met.
- The project's technical staff, as a result of the application of the Matrix, will have a list of preselected producers for each of the intervention areas.
- Subsequently, the project's technical staff will organize a meeting in each zone of intervention - a single assembly with the groups of producers or associations of the intervention zones with valid aquaculture rights according to the CAN- to present and support the lists of preselected producers. Affirmative convening actions are required to ensure that 40% of attendees are women (see measure #1 PAG).
- After a presentation and discussion, the attendees will approve the list of preselected aquaculture producers by a simple majority. An act will be signed in conformity. The producers will go from being shortlisted to being selected.
- Records and meeting minutes will remain in the custody of the coordination of the project.

5.4.4. Databases

- SISFOH: https://operaciones.sisfoh.gob.pe:450/cse/
- Catastro Acuícola Nacional (CAN)/National Aquaculture Roster:

http://catastroacuicola.produce.gob.pe/web/

- SUNAT: https://e-consultaruc.sunat.gob.pe/cl-ti-itmrconsruc/FrameCriterioBusquedaWeb.jsp
- SANIPES: http://app02.sanipes.gob.pe:8089/Publico/Consulta_protocolos_concesion

5.4.5. Forms

MATRIX OF COMPLIANCE WITH THE SELECTION CRITERIA OF AQUACULTURE PRODUCERS OF THE AREL PRODUCTION CATEGORY

1. Location

Department	
Province	
District	
Zone	

2. Producer's information

Aquaculture right #	
Type of right	Authorization ( ) Concession ( )
Right holder's name	
DNI #	

3. Selection criteria

Criteria	Meets criteria: YES	Meets criteria: NO
According to socioeconomic condition and gender		
Formal AREL: The producer has an authoritative resolution provided by the DIREPRO to develop aquaculture activity (concession or authorization). The source of information corresponds to the DIREPRO and the National Aquaculture Roster (CAN, for its Spanish acronym).		
Natural Person: The authoritative resolution was granted to a natural person. The source of information corresponds to the DIREPRO and the National Aquaculture Roster (CAN, for its Spanish acronym).		
Active operation: Producers who are formal and currently operating. The source of information corresponds to the DIREPRO and field verification.		
Family labor: the aquaculture operation does not have external workers except family members. The information comes from the DIREPRO and field information.		
Aquaculture operation led by a woman, with the aquaculture right (concession or authorization) granted to her name (owner): Women-owned aquaculture operations will have a preference of the first order. The source of information corresponds to DIREPRO's administrative records and the National Aquaculture Roster - (CAN, for its Spanish acronym).		

Criteria	Meets criteria: YES	Meets criteria: NO
Aquaculture producer registered in SISFOH's General Register of Households as Poor or Extreme Poor: Second degree preference. Means of verification: SISFOH's database through person's ID number.		
Aquaculture operation led by a man, with the aquaculture right (concession or authorization) granted to his name (ownership): Third-degree preference for operations where the women have active responsibility in aquaculture activities such as management, planting, production, harvesting, feeding or commercialization. The information comes from the DIREPRO and field information.		
According to access to development services		
Having been a user of aquaculture extension services provided by PRODUCE, GORE, FONDEPES, PNIPA or CITE (means of verification: administrative records), and that these practices are being applied (means of verification: corroboration and field information).		
Not having current credits granted by FONDEPES (means of verification: administrative records).		
Not having received other types of subsidies for productive or innovation activities (means of verification: administrative records).		

MATRIX OF COMPLIANCE WITH THE SELECTION CRITERIA OF AQUACULTURE PRODUCERS OF THE AMYPE PRODUCTION CATEGORY

1. Location

Department	
Province	
District	
Zone	

2. Producer's information

Aquaculture right #	
Type of right	Authorization ( ) Concession ( )
Right holder's name	
DNI # (natural person with business)	
RUC # (legal person)	

3. Selection criteria

Criteria	Meets criteria: YES	Meets criteria: NO
According to socioeconomic condition and gender		
Formal AMYPE: The producer has an authoritative resolution provided by the DIREPRO to develop aquaculture activity (concession or authorization). The source of information corresponds to the DIREPRO and the National Aquaculture Roster (CAN, for its Spanish acronym).		
Formal AMYPE producer who has a farm sanitary license granted by the National Fisheries Health Agency (SANIPES) or has started the procedure to obtain it. Means of verification: producer's license or initial document.		
Natural Person with Business or Legal Person: With an active RUC at SUNAT.		
Active operation: Producers who are formal and currently operating. The source of information corresponds to the DIREPRO and field verification.		
Aquaculture operation led by a woman, with the aquaculture right (concession or authorization) granted to her name (owner) or, in the case of Legal Entities, female legal representation: Women-owned enterprises will have preference of the first order. The source of information corresponds to the National Aquaculture Roster – CAN and the administrative records of the DIREPRO or SUNAT.		
Aquaculture operation led by a man, with the aquaculture right (concession or authorization) granted to his name (ownership) or male legal representation: Second-degree preference for operations where the women have active responsibility in aquaculture activities such as management, planting, production, harvesting, feeding or commercialization. The information comes from the DIREPRO and field information.		
Paid labor: the aquaculture operation has paid external workers, with or without family work[130]. The source of information corresponds to the DIREPRO and field verification.		
Not having a firm sanction imposed by the regional authorities in the environmental or productive fields: The source of information corresponds to the DIREPRO.		
According to access to development services		
Having been a user of aquaculture extension services provided by PRODUCE, GORE, FONDEPES, PNIPA or CITE (means of verification: administrative records), and that these practices are being applied (means of verification: corroboration and field information).		
Not having current credits granted by FONDEPES (means of verification: administrative records).		
Not having received other types of subsidies for productive or innovation activities (means of verification: administrative records).		

6. Guidelines for citizen participation, relationship with the community, and grievance redress mechanism

The participation of citizens is a right guaranteed to all persons interested in knowing and influencing the planning and progress of projects producing effects on the environment. These guidelines follow the Supreme Decree No. 017-2022-PRODUCE[1], which approves the Regulations for Citizen Participation in the environmental management of the Fishing and Aquaculture subsectors, as well as Supreme Decree No. 002-2009-MINAM[2] approving the Regulations on Transparency, Access to Public Environmental Information and Citizen Participation and Consultation in Environmental Matters, and Supreme Decree No. 019-2009-MINAM[3] approving the Regulations of the Law No. 27446, Law of the National System of Environmental Impact Assessment.

These guidelines aim to ensure the project **"**Implementing Protection Technologies to Foster the Resilience of Aquaculture in the Regions of Huanuco, Junin, and Puno to Strengthen Food Security in the Context of Extreme Events Associated with Climate Change":

(i) Develops tools to inform, dialogue and collect the opinions and contributions of the population and the different interest groups, regarding the three project components' activities, beneficiaries' selection, and project results; and

(ii) Effectively communicates social, economic, environmental and cultural impacts that the project could generate, and their control measures. (iii) Includes a transparent, efficient and user-friendly grievance redress mechanism.

6.1. Citizen Participation Plan (CPP)

The CPP is a management instrument that will be used to assess and improve the activities of a project by ensuring that the knowledge and experience of the local population and different local economic and social stakeholders, are incorporated during all the stages of its design, approval and development. Accordingly, The CPP for this project:

- Specifically defines and covers the project's geographical area of direct and indirect influence.
- Determines the scope of actions which must be covered by citizen consultation or participation processes.
- Identifies Interest Groups.
- Transparently and clearly defines the purpose, strategy and goal of the consultation or citizen participation.
- Identifies mechanisms which to enhance the likelihood that intercultural and gender equality is considered and sought in all project activities
- Identifies various citizen participation vehicles which can be used at the different project's stages to maximize participation.
- Establishes a firm schedule for citizen participation activities.
- Ensures the appointment of the team to conduct the participation process.
- Identifies the logistics for compliance.
- Establishes a process to record contributions and the results obtained through the citizen participation process.

6.1.1. CPP mechanisms suggested for the project

The CPP envisages a number of instruments which can be used to maximize citizen feedback and direct participation in both the oversight and the implementation of project activities. Specifically:

Informational Material:

The project will develop informational material to ensure that information regarding the project's activities, eligibility criteria for potential beneficiaries and results of the technology allocation process are transparently and systematically available. This informational material will be available both in written and electronic form, ensuring that it can also be accessed through mobile telephones.

Participatory workshop

Participatory workshops promote participation and encourage dialogue among the participants through direct contact. It quickly allows us to know the participants' concerns and queries. Although workshops require a basic infrastructure, their organization, and replicability is easy. The project, as such includes a number of opportunities to convene concerned stakeholders to carry out participatory workshops, especially at key moments of implementation – among them : project launch, mid-term review, and project closure. Additional, ad-hoc opportunities will also be identified to promote associativity and to maintain citizen participation and ownership of the project and its activities.

Radio broadcasts/ Community Radio

Radio allows a large audience to be reached quickly, and a sequence of messages can be broadcast to deliver different information, producing effective communication. Community Radio is an important tool for citizen participation, in the areas of interest to the project, and for this reason, it is envisaged that the project will ensure that the activities of the project are fairly depicted through this media. Accordingly, the project will make ESS available to partake in community radio debates when required. It will additionally prepare press releases. The releases will be delivered in Spanish, athough other languages widely spoken in the regions[131]. The DIREPROs already use radio consistently to inform and disseminate news, with good results.

Suggestions mailbox

DIREPRO as the Technical Implementing Agency, will proactively encourage citizen feedback regarding the implementation of project activities. To this end, it will install visible and easily accessible mailboxes on its premises of the DIREPROs in Huánuco, Junín, and Puno, where citizens can write and drop their observations or suggestions regarding the project's activities in forms that include the provision of contact information optional to the citizen.

The project will also establish a vocal mailbox, in which stakeholders, using their mobile phones will be able to provide feedback, which will then be made part of the record.

Online Presence:

Consistently with requirements of the adaptation fund, PRODUCE as the Technical Implementing Agency will create an internet page for the project which can be accessed through its site. Moreover, the project will create a Facebook page and will ensure that the project is present in platforms popular with stakeholders, to ensure that two way participation is guaranteed. These pages should be regularly

[131] The issue of indigenous languages was assessed during the validation process, and it was determined that in the regions of interest, beneficiaries were comfortable interacting in Spanish. Nonetheless, to facilitate interventions in Community Radio, the CPP envisages providing information in native languages if determined to be in the best interests of the project.

updated, and feedback received through them should be recorded, and comments responded to in a timely fashion.

6.1.2. Criteria to delimit the area of influence for citizen participation

- Geographical areas of the project's main components, such as beneficiaries' farming operations and processing plants, and locations directly or indirectly impacted by its activities, especially considering the potential effects on water resources.
- Existing accesses: populations and natural environments that are directly affected by the work to be carried out in the project, which may impact land communication routes.

6.1.3. Identification of interest groups

It refers to social actors such as groups, communities, organizations, or institutions with links or relationships with the project's development and those with information, resources, experience, and a degree of influence. National and regional related agencies. Also, local communities in the areas of intervention -Ambo, Huánuco; Ingenio, Junín; and Juli and Pomata in Puno- including local government representatives and grassroots organizations.

6.1.4. CPP monitoring and evaluation

The CPP will be continuously monitored and evaluated against the following criteria:

Project's key actors and stakeholders' participation:

- Did a wide variety of representatives of critical actors participate?
- Were the resources for citizen participation activities available on time to ensure broad participation?
- Did all participants have the same opportunities to access information related to the project?
- Were the objectives set for each participatory mechanism met?

Interactive process:

- Did the tools allow participants to receive information about the project and contribute to it?
- Did the tools give participants enough time to understand the project?
- Did the shared information allow attendees' effective participation?

Efficient schedule:

- Was citizen participation scheduled in advance, and did it occur on the scheduled dates?
- Was there sufficient time to discuss all proposed issues and submission of responses to those issues?

Decision-making:

- Were the participatory tools useful to the participants to communicate their expectations?

Credibility:

- Were the concerns raised timely and relevant?
- Were the correct tools used to resolve potential conflicts?
- Are there evidence and records of how the issues were addressed?

6.2. Relationship with the community

Good communication and fluid dialog help develop a harmonious coexistence in the places where farming operations are located and where the project's activities will be carried out.

An effective strategy takes into account that:

- All aquaculture activities will be planned and developed using adequate measures to protect natural, social, and cultural resources such as water, soil, air, flora and fauna, communities, and archaeological values. Waste management will be of constant attention to prevent contamination derived from improper handling.
- The use of bodies of water for the installation of cages must be informed to the surrounding communities, and if necessary, due to aspects of ancestral traditions, it should be communicated to communal assemblies according to their procedures. Representatives of the farming operations should strive to maintain good communication with local communities, raising awareness of the problems that may occur with all the entities that participate in trout aquaculture production.
- There must be a detailed map of all the communities within the project's intervention zone in the Huánuco, Junín, and Puno regions to communicate and disseminate news about the project.
- If the farming operations or processing plants are located on traditional transit routes to nearby towns, they must have what is necessary to enable access and transit.
- No work or activity will be carried out without a prior assessment of the associated risks that may impact local communities and without adequate precautions for handling them.
- All project personnel must be always respectful, especially in the work and activities they carry out outside the farm or processing plants, so as not to disturb the peace of neighboring families.
- Beneficiaries' traditional and empirical will be valued in project activities.

6.3. Grievance redress mechanism

The project establishes a Complaints and Grievances Mechanism (CGM), to ensure that the project's beneficiaries and all citizens impacted by the intervention have access to adequate and timely attention to their claims and grievances. Besides providing sufficient and timely attention to situations affecting stakeholders within the project's scope, the CGM seeks to generate trust and contribute to the continuous improvement of the project and its components.

The CGM mechanism addresses the management of complaints and concerns during project implementation. This mechanism does not replace due legal process in all applicable cases. It is intended to handle complaints, claims, and grievances in such a way that they are resolved promptly, preventing conflict escalation. The principles that must be followed during the grievance resolution process include impartiality, respect for human rights, compliance with national regulations, equality, inclusivity, accessibility, confidentiality, responsiveness, effectiveness, transparency, honesty, mutual respect, and continuous improvement.

An ad-hoc Complaint Handling Committee (CHC) has given the mandate to independently review claims that cannot or should not be resolved at another level. The CHC will be composed by:

- the Project General Coordinator (PGC),
- the Project Environmental and Social Specialist (PESS), and
- a rotating member of the Project Steering Committee.

Concerns received through any channels should be addressed at the appropriate level closest to the implementation of the project and to the person who raised the matter, orally or in writing. Consequently, the CGM provides several uptake locations in the three regions (Junin, Huanuco, and

Puno), as well as nationally, through multiple means (physical letter, email, phone calls, complaint boxes, and SMS texts) including orally to the region's Project Technical Supervisor (PTS) who, in the case, will register the complaint in writing.

Each region's Project Technical Supervisor (PTS) will be responsible for gathering, sorting, registering and processing the claims, as well as activating the Complaint Handling Committee (CHC). The CHC will define a course of action which may require further investigation and dialogue with the complainant until a satisfactory solution is found. If the proposed solution requires monitoring and follow-up, the Projects ESS will be in charge of the task and a plan will be developed accordingly. The CHC will issue a final written decision which will be notified to the complainant in writing.

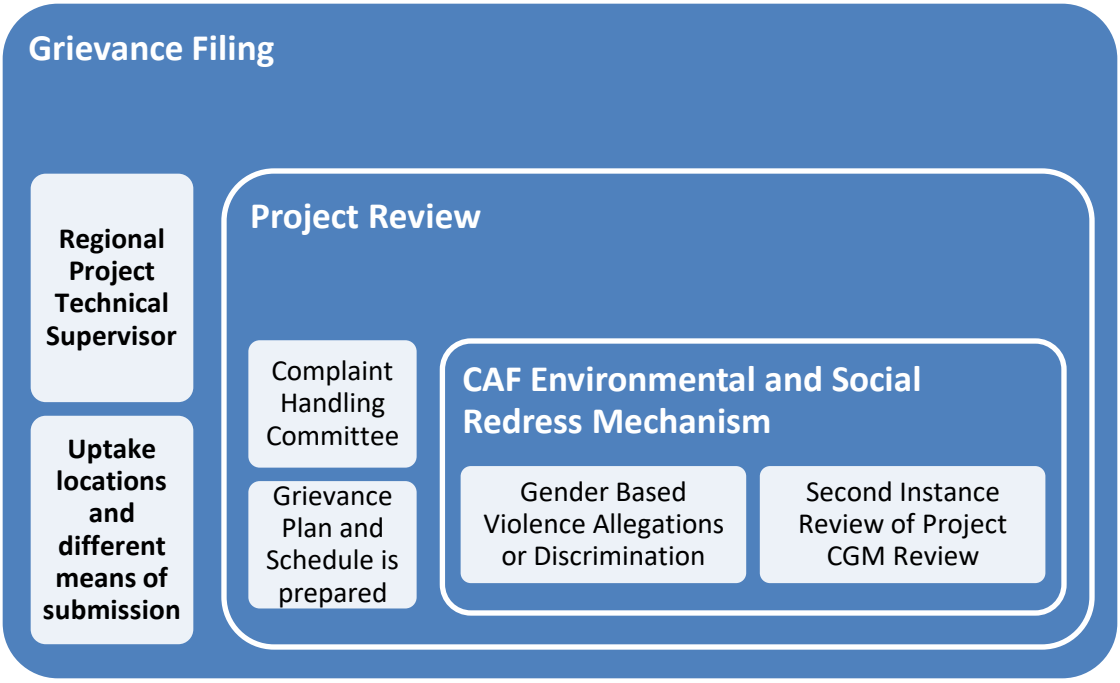
The Complaints and Grievances Mechanism will respect confidentiality and any existing indigenous or traditional dispute resolution mechanisms and will not interfere with an indigenous community's organizing system, should the case arise. Contact information and information about how to file a complaint will be disclosed at all meetings, workshops, and other project events. All material to be distributed will include information about the contacts and the complaint process.

Each regional PTS will be responsible for documenting and reporting any complaints received in his/her region and how they were addressed.

In the event that an environmental and/or social grievances could not be resolved to the complainant's satisfaction through consultation and action at the project management level—and at any time when the complaints are related to Gender-Based Violence (GBV) or any discrimination—CAF's Environmental and Social Grievance Redress Mechanism (CAF's ESGRM) is readily available; a complaint may be filed with the CAF's ESGRM following the established guidelines.

Phases of the Complaints and Grievances Mechanism

The Redress mechanism conceived specifically for the proposed project is organized around different phases, consistently with good international practices. Its objective is to ensure that citizens receive prompt a prompt, thorough fair hearing of their complaints and grievances in a timely manner and includes an opportunity to appeal decisions, if the complainant choses to do so. Figure 1 below provides describes the process.



Phase 1. Receipt of a Complaint or Grievance

The objective of this phase is to provide the aggrieved person an easily accessible way to file its complaint and to ensure that this complaint is properly documented and recorded. Table 1 below identifies the different steps in this process.

During any moment of the project implementation.	**Step 1. Reception of Complaint or Grievance** Individuals or a group who may file a Complaint or Grievance should consider: The Complaint or Grievance may relate to any stage of the project implementation. The complaint or grievance may be received by email, physical letter delivered to the PTS or PGC's office or project boxes, or presented orally to the PTS. Confidentiality will be respected but the complaint cannot be anonymous.
Within 10 working days after receiving the complaint or claim (maximum of 20 working days in justified special cases)	**Step 2. Registration and Acknowledgement of the Complaint or Claim** - The PTS acknowledges receipt of the Complaint or Grievance to the complainants, and verifies the complainants' information and request. - The PTS registers the complaint on the project CGM record system. - The PTS may defer the complaint or grievance until sufficient information and documentation is filed. - The PTS ensures confidentiality of complainants' identities upon request. - The PTS activates the Complaint Handling Committee.

Phase 2. Conflict Resolution

The resolution of the grievance must be prompt and thorough. The table below describes the process and its expected outcomes.

Table 7: Phase 2 of the Redress Mechanism - Conflict Resolution

Within 20 working days after receiving the complaint or claim (maximum of 30 working days in justified special cases)	**Step 1. Determine eligibility** - The PTS submits the information to the Complaints Handling Committee. - Complaint Handling Committee reviews and decides how to proceed. - Complaint Handling Committee refers the complaint to the appropriate CAF departments or area offices, if the nature of the complaint or grievance matches the scope limitations.
Within 5 working days after CHC decides course of action	**Step 2. Whistleblower Update** - The PTS informs the complainants about the process.
The time required depends on the specific conditions, context, nature and complexity of the problems.	**Step 3. Conflict Resolution** - The PTS coordinates with complainants their participation in problem-solving activities through consultative dialogue, information exchange, a mediation mechanism or other problem-solving methods, as decided by the CHC. - If a satisfactory solution is found and an agreement is reached the Complaints Handling Committee will issue a Problem Resolution Report and approve the Follow-up and Monitoring Plan submitted by the PESS. - The PTS will notify the solution to the complainants in written. - If no agreement is reached, the problem resolution process ends.
The time required depends on the specific conditions of the Plan and the Project.	**Step 4. Implementation and Monitoring.** - The Implementation Plan is executed by the project implementers, while the PESS follows the Monitoring Plan and its reporting schedule.
Within 10 working days after completion of the Implementation Plan (maximum of 20 working days in justified special cases)	**Step 5. End of the problem-solving process.** - When the Implementation Plan and Monitoring Plan have been completed, the PTS completes a Final Closure Report. - The Complaint Handling Committee approves the Final Closure Report. - The PTS sends the Final Closure Report to the complainants.

Consistently with the transparency requirements, PRODUCE will publish results of the grievance mechanism in the project's internet page, which will have a sub-page specifically to document the complaints and grivances received and the actions that were adopted to address it.

CAF's Environmental and Social Grievance Redress Mechanism

The CAF website describes in detail the steps and process to file a complaint related to possible adverse environmental and social impacts on people, communities, or the environment caused during the implementation of programs, projects, or activities (Operations) financed by the CAF. This applies to all projects where CAF acts as Implementing Agency and thus applies to this project.

Standing

a) **The following persons or entities may file a complaint:** Any group of two or more people who believe that they have been affected or may be affected by any adverse environmental and social impacts allegedly caused, or likely to be caused, to them or the environment by the project.
b) A duly authorized representative of a group.
c) A person who is not part of the affected group and who is not locally based may act as a representative of the group only if that person provides evidence that there is no adequate or appropriate capacity within the local community to file a complaint. If appropriate, the person should be fluent in the native language of the group members and be able to communicate effectively with the affected group.
d) Any person claiming GBV or discrimination.

Requirements for submitting a complaint:

Prior to submitting a complaint to the CAF - ESGRM, the complainant must present evidence of having gone before the specific Complaints and Grievances Mechanism (CGM) of the project and not having found a satisfactory response or having exhausted the possibilities of dialogue and extrajudicial channels with those responsible for the project.

Complaints related to allegations of Gender-Based Violence (GBV), or any type of discrimination do not need to be preceded by any filing with the project's Complaints and Grievances Mechanism (CGM) beforehand, they can be submitted directly to ESGRM.

Procedure for submitting a complaint:

Send an email to the following address MRAS@caf.com.
Complete the ESGRM Form available online.
Download the Form available online, fill it out and send it by mail or submit your complaint in person at the CAF's country office, located at:
Av. Enrique Canaval y Moreyra No. 380,
Edificio Torre Siglo XXI, Piso 13,
San Isidro, Lima.

The complaint must specify:

- The identity of the complainants, their physical addresses, e-mail addresses, and other contact information.
- If an organization or individual submits a complaint on behalf of those allegedly affected, the representative should clearly indicate the identity and contact details of those on whose behalf the complaint is made and provide explicit evidence of their authority to do so, as well as the bylaws of their organization, if applicable. ESGRM may verify that the affected parties have granted such authority. It is the responsibility of ESGRM to verify the validity of the delegation or representation.
- The name and precise location of the Operation to which the complaint refers.
- Evidence of the efforts made by the complainant to resolve the problem, including the details of the approach and the results obtained before the Complaints and Grievances Mechanism (CGM) of the project, and the details of the unresolved aspects of the problem.
- Any relevant aspect or fact that the complainant considers relevant and for which it can present documentary evidence.

- Excepted from the above requirements are complaints related to Gender-Based Violence (GBV) or any type of discrimination, for which the identification and contact details of the complainant will suffice, information that will be treated from the moment of receipt in accordance with the confidentiality criteria governing ESGRM; the name and precise location of the Operation to which the complaint refers and any other fact or information that the complainant considers relevant to the analysis process.

The registered complaints are subject to a detailed eligibility analysis, according to the criteria defined in the ESGRM. Exclusions are listed in this link.

In accordance with the provisions of the Access to Information and Institutional Transparency Policy (PAITI), CAF publishes an Annual Report on ESGRM's activities and results.

7. Environmental, social and gender monitoring and evaluation

The Project's Administrative Implementation Entity will procure a specialist to monitor safeguards contained in the project's environmental, social, and gender management plan, ensuring the successful implementation of the project's environmental and social management plans, as well as the gender action plan by monitoring the project's activities. In this capacity, the specialist will be responsible for analyzing and evaluating the possible environmental impacts and risks in the activities of the three components of the project, ensuring their sustainability and recommending, if necessary, mitigation measures or alternatives that increase the environmental benefits and social, documenting and compiling information to demonstrate compliance with the Principles of the Adaptation Fund and national and regional regulations.

The Project's Administrative Implementation Entity will hire a specialist to oversee safeguards detailed in the project's environmental, social, and gender management plans. In this capacity, she/he will monitor the effective execution of the environmental, social, and gender action plans. The specialist will assess potential environmental impacts and risks across the project's three components, ensuring sustainability. If required, she/he will propose mitigation measures or alternative strategies to enhance environmental and social benefits. Furthermore, the specialist will document and compile data to ensure alignment with the Adaptation Fund's principles and relevant national and regional regulations.

Additionally, the specialist will monitor the project beneficiaries, assessing the sociocultural impacts of the activities. She/he will advise on potential corrective measures or suggest alternatives when necessary. The specialist will also oversee the Gender Action Plan (GAP), analyzing the gender-related impacts of the activities and proposing adjustments or alternative actions as needed [132].

In the execution of his duties, the ESS will be assisted by CAF's Gender and Inclusion Department who will also be directly involved in assisting in monitoring the execution of the project's different social and environmental plans.

7.1. Template of the Environmental Data Sheet to be completed by beneficiaries in the AREL category

For beneficiaries under the AREL category, the specialist will aid, if requested, in completing the Environmental Data Sheet as mandated by the Project. We present in this section the Environmental Data Sheet Template to be completed by a potential beneficiary in the AREL category.

1. GENERAL DATA
Name of applicant: .....
DNI/ CE/ TAX NUMBER: ..... Telephone:.....

[132] This Environmental Data Sheet, which must be completed by all beneficiaries of the AREL category, is an adaptation of the Environmental Data Sheet prepared by the General Directorate of Fisheries and Aquaculture Environmental Affairs of the Ministry of Production that was published as draft Ministerial Resolution No. 007-2022-PRODUCE in January 2022. It can be reviewed in https://www.gob.pe/institucion/produce/normas-legales/2670203-007-2022-produce.

Domicile:.....
..
Reference No. for notification .....
Community:..... Hamlet:.....
District:..... Province:.....
Department:.....

2. TYPE OF RIGHT AND LOCATION OF THE AQUACULTURE PRODUCTION CENTRE
Concession (.....)
Authorization (.....)
2.1. Political location of the Aquaculture Production Centre (CPA):
Sector/Locality/Community/Village/ District/ Province/ Department (indicate a reference).
.....
.....
District/Province/Department (provide reference): .....
2.2. Description of the environment of the aquaculture facility
.....
.....

3. DESCRIPTION OF THE AQUACULTURE PROJECT
3.1. Species
Trout (*Oncorhynchus mykiss*) (...)
I cultivate more than one species (...) Mention which.....
3.2. Total project area (In hectares or square meters):
.....
.....
3.3. Productive area of water mirror used for production (hectares, square meters):
.....
3.4. Projected production capacity: ..... MT/year (Up to 3.5 gross tons per year).

4. DESCRIPTION OF THE AQUACULTURE INFRASTRUCTURE (Aquaculture Production Centre - CPA)2
4.1. Type of infrastructure:
Earthen ponds (....)
Cement ponds (....)
Cages (....)
Others (....) Specify.....
Number of ponds/cages and dimensions of each: .....
4.2. Treatment of ponds:
Sun drying (....)
Fertilization: Organic (...) Inorganic (....)
Quantity / Class: .....
4.3. Description of the area or place of storage of the feedingstuff:
.....
4.4. Detail other types of infrastructure, if any (dining room, storage of inputs or fertilizers, etc.).
.....
.....
.....

5. DESCRIPTION OF THE SPECIES TO BE CULTIVATED:
5.1. Supply of seeds / fingerlings:
Natural Environment (...)
Laboratory (...)

Import (...)
5.2. Company Name, Resolution No. and location of the Seed Production Center(s) that will supply seeds/fry:
.....
.....
Quantity to be acquired: .....

6. DESCRIPTION OF THE CROP:
6.1. Stocking density (Number of specimens / m2 or m3): .....
6.2. % Estimated mortality during the marketing year: .....%
6.3. Time of campaign (in which it reaches the harvest size: ..... months
Average harvest weight ..... Gr. Average harvest size: ..... cm
6.4. Feeding: Balanced (...)
Guy:.....
Total food consumed per campaign. ..... TM
6.5. Indicate the treatment and disposition of mortality: .....
.....
6.6. Specify the type of solid waste generated by the activity:
Viscera (...)
Fouling (...)
Other (please specify) .....
Quantity:..... TM / campaign
6.7. Specify the disposition (place), containers or temporary storage and approximate time of permanence of the following items generated by the activity (describe):

Solid Waste:
- Organic (viscera, fouling, others): .....
- Metabolic and excreta, sludge, sediments: .....
- Inorganic (plastics, packaging, other): .....
- Inputs (nets, buoys, ropes and others): .....

Effluents:
- sanitary (SSHH): .....
.....
- of ponds: .....
.
.....
7. DESCRIPTION OF THE WATER RESOURCE.
7.1. Specify name, origin of the water resource and basin or micro hydrographic basin to which it belongs and physicochemical, biological and microbiological characteristics of the water resource:
.....
.....
.....
7.2. Describe the hydraulic infrastructure implemented for the capture and/or derivation of water resources
.....
.....
7.3. Indicate the inflow rate of water (estanqueria): ..... l/s
7.4. Specify the type or systems of water treatment:
- Tributary (before the entrance of the aquaculture center) .....
- Effluent (at the exit of the aquaculture centre) .....
7.5. Indicate whether aquaculture culture generates effluents: YES (...) NOT (...)
7.6. If it generates effluent, specify the place of discharge and the use to be put to it: .....

Indicate the output flow ..... l/w

8. DESCRIPTION OF THE PROJECT ENVIRONMENT

ENVIRONMENTAL FACTORS		DESCRIPTION
PHYSICISTS	WATER	
	SOIL	
	AIR	
BIOLOGICAL	FLORA	
	FAUNA	
SOCIOECONOMIC	SOCIAL	
	ECONOMIC	

8.1. Describe what other economic activities exist in the environment, specifying the location:
.....
.....
.....
8.2. Establish whether other economic activities impact on the aquaculture project: .....
8.3. Existence of sources of pollution: .....

9. ENVIRONMENTAL IMPACTS
9.1. Determine potential environmental impacts: .....
.....
9.2 Actions to mitigate environmental impact: .....

10. ENVIRONMENTAL MANAGEMENT MEASURES RELATED TO THE ENVIRONMENTAL IMPACTS THAT MAY BE GENERATED:
- Detail environmental management measures, including prevention, control, solid waste and effluent management, contingency and closure measures. Include a timeline and budget for the implementation of these measures.

Number	Environmental impact	Environmental management measures

- Specify how the implementation of the aforementioned environmental management measures will be implemented and monitored.

.....
.....
.....

UNDER OATH, I DECLARE THAT, ON THE BASIS OF THE BACKGROUND PRESENTED, I
I AGREE TO COMPLY WITH WHAT IS REGISTERED IN THIS FORM AND THE CURRENT ENVIRONMENTAL AND SECTORAL REGULATIONS APPLICABLE TO THE EXECUTION OF THE PROJECT OR ACTIVITY.
Signature:.....
D.N.I./ C.E. N°: ..... of..... of 20 .....

ANNEXES:
1. Sketch of the location of the breeding and / or cultivation area in relation to its environment.
2. Sketch of the distribution of aquaculture infrastructure and sanitary facilities.
3. Affidavit or other document proving the right of ownership or possession of the property.

INSTRUCTIONS:
The boxes must be filled or marked with a cross or record a numerical data as the case may be.
Attach all the information requested in the Annex.
Attach photographs of the location of solid waste disposal.

8. Budget for ESMF implementation

The total ESMF budget is USD$ 875,525 for the four years of project implementation. The Budget for ESMF implementation is embedded in Project activities as well as estimated as a portion of Project staff that will be involved in carrying out the oversight and assist in the execution of the activities consistently with the principles of the Adaptation Fund and the different plans that have or will be prepared to this effect in the early stages of Project execution.

The Table belows details:

- The resources required to implement the identified environmental and social risk mitigation measures.
- The annual investment required to implement the Gender Action Plan.
- The cost of the Project's Grievance Redress Mechanism.

Table 8: Cost of ESMP execution over the life of the project

Item	Estimated Budget (USD)
I. Executiuon ESMP Framework	
Component 1	108,333
Component 2	366,698
Component 3	104,510
Subtotal Execution	$579,541
II. Monitoring and Evaluation	
A. ESS	$134,400[133]
B. Other human resources and management costs[134]	29,748
Subtotal	$182,398

[133] Corresponds to the gross salary of ESS including social benefits and labor insurance for the 48 months of the implementation period.
[134] CAF support to project implementation, which is directly financed from the implementation fee, and prorated to take into account support to ESMP at approximately 30%) – includes enhancing citizen participation supporting the GAP implementation

III. Other ESMP related Strategies, Plans and Mechanisms	
A. Implementation of Gender Action Plan	$95,000
B. Redress[135]	$91,000
Subtotal ESMF Strategies	$186,000
TOTAL ESMP	$875,525

9. Annexes

1: Biodiversity Management Plan (Spanish)
2: Guidelines for Resource Efficiency & Solid Waste Minimization and Management Plan (Spanish)
3: Manual of Good Aquaculture Practices (Spanish)
4: Occupational Health and Safety Plan (Spanish)

Annex 2: Gender Analysis of Peru's Aquaculture Sector: A Focus on Junin,

[135] Redress procedures rely mainly upon the action of the Project Executive Agency Grievance Review Committee composed by the General Coordinatore, the ESS and one of the PTC, depending on the region. Accordingly budget of grievance mechanism, as well as CAF as the second instance adjudicator. Accordingly cost of grievance were calculated as a portion of staff compensation for AEA team and CAF (from IE).

Huanuco, and Puno Regions

Abstract:
This gender analysis examines the aquaculture sector in Peru, with a specific focus on three regions: Junin, Huanuco, and Puno. The study explores the key gender gaps that exist within the sector, identifies the underlying factors contributing to these disparities, and provides recommendations to promote gender equality and women's empowerment. The analysis draws upon existing literature, reports, and interviews with key stakeholders to shed light on the gender dynamics in Peru's aquaculture sector. The findings highlight the need for targeted interventions to address gender inequalities and ensure inclusive and sustainable development in the industry.

1. Introduction

1.1 Background

The Government of Peru, with the support of CAF - Development Bank of Latin America, conceptualized a project to strengthen the resilience of aquaculture activity in the face of climate change, focusing on three Peruvian regions. The project, titled *"Implementation of protection technologies for the resilience of aquaculture activity in the regions of Huanuco, Junin, and Puno, for food security in the face of extreme events associated to climate change" (from now, the Project),* is to be submitted to the Adaptation Fund. This Gender Evaluation constitutes a vital input to the Project, representing the basis for its Gender Action Plan (GAP). The GAP's purpose is to guarantee that, both in the Project's design and execution, the potential risks for women concerning existing gender inequalities are addressed and mitigated and, to the extent possible, the planned activities tend to repair these inequalities and reduce gender gaps.

Gender equality and women's empowerment are critical aspects of sustainable development. Understanding women's roles, experiences, and challenges in the aquaculture sector is crucial for designing a targeted intervention that promotes inclusivity, addresses gender disparities, and harnesses the sector's full potential. By understanding women's challenges in the aquaculture of Junin, Huanuco and Puno, the Project can implement targeted actions and measures that promote gender equality, empowerment, and inclusive growth resilient to climate change.

1.2 Research Objectives

The primary objective of this gender analysis is to investigate the gender dynamics and inequalities prevalent in Peru's aquaculture sector, focusing on the Project's regions of intervention: Junin, Huanuco, and Puno.

The analysis aims to:

(i) Identify and examine the critical gender gaps and disparities within the aquaculture sector, including participation, access to resources, decision-making power, income disparities, and socio-cultural factors.

(ii) Understand the factors contributing to these gender gaps, including societal norms, cultural practices, institutional barriers, and economic constraints.

(iii) Provide recommendations to promote gender equality, empower women, and foster inclusive and sustainable development in the aquaculture sector within the framework of the Project.

1.3 Methodology

The gender analysis adopts a mixed-methods approach. Existing literature, reports, and studies on gender and aquaculture in Peru were reviewed extensively. Primary data was collected through semi-structured interviews and focus groups with key stakeholders, including women working in the sector, industry professionals, and government officials.

The data collected was analyzed using gender-sensitive frameworks and indicators to uncover the gender disparities and challenges women face in the aquaculture sector. The report presents findings through a comprehensive narrative that integrates the evidence to provide a nuanced understanding of the gender dynamics in the three regions.

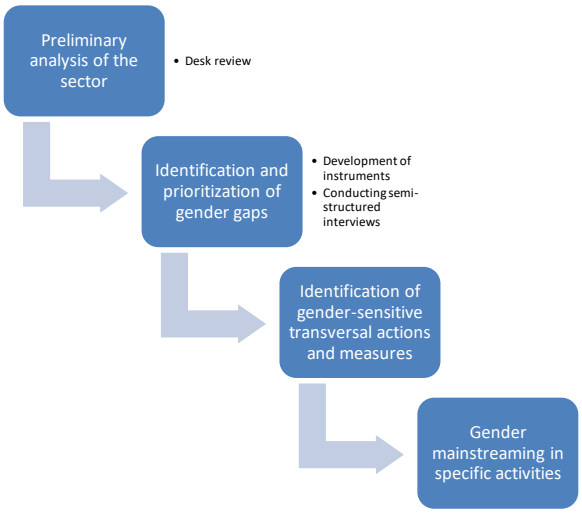


Fig. 1 Methodology

1.4 Scope and Organization of the Report

The report is structured as follows: Section 2 provides an overview of the aquaculture sector in Peru, highlights gender dimensions within the industry and introduces the national and international norms that constitute the country's legal framework on gender equality. Sections 3, 4, and 5 conduct a detailed gender analysis of the Junin, Huanuco, and Puno regions. Section 6 presents a comparative analysis of the three regions and describes critical gender gaps and disparities. Section 7 offers recommendations to promote gender equality and women's empowerment in the projected intervention, summarizing the essential findings and emphasizing the importance of integrating gender perspectives into the Project to promote gender equality, foster inclusive growth, and enhance the aquaculture industry's sustainability and resilience to climate change.

2. Gender Analysis of Peru's Aquaculture Sector

Overview of the Aquaculture Sector in Peru

Peru's aquaculture sector plays a vital role in the country's economy, contributing to food security and employment generation (FAO, 2022). The country's diverse geography and favorable environmental conditions fostered aquaculture practices, including the farming of rainbow trout (Oncorhynchus mykiss). Although aquaculture involves the cultivation of fish, shellfish, and aquatic plants, the Project's focuses on the cultivation of rainbow trout, which constitutes a prioritized species for biosecurity in Peru and provides opportunities for small-scale farmers and rural communities to engage in profitable economic activities (Palomino Ayquipa, 2021).

According to the Peruvian General Aquaculture Law136, there are three categories of aquaculture producers depending on level of production and requirements: Medium and large aquaculture company (AMYGE); Micro and medium-sized aquaculture company (AMYPE); and Limited resource aquaculture

[136] Legislative Decree No. 1195 - General Aquaculture Law. Available at https://www.ecolex.org/es/details/legislation/decreto-legislativo-no-1195-ley-general-de-acuicultura-lex-faoc152148/?q=categorias+productivas+AREL

(AREL). The Aquaculture National Roster137 reveals that most aquaculture rights are granted either to men or to business owned by men. Our fieldwork confirms that the sector is male dominated138. While the aquaculture industry has shown significant growth and potential in Peru (FAO, 2022), it is essential to examine its gender dimensions.

Mendoza (Mendoza Ramirez et al., 2016) reports the participation of women in production or cultivation in Peruvian aquaculture is meager (8%). Still, they constitute the majority in primary and secondary processing areas, three out of every ten workers in the marketing area, more than half in the primary processing stage, and about nine out of ten in the secondary processing stage.

Despite the high presence of female labor in Peruvian aquaculture, most of these jobs are temporary and seasonal, which generates economic insecurity and low levels of coverage for women in social protection systems (health insurance, unemployment, retirement) (Mendoza Ramirez et al., 2016).

Women are often underrepresented in decision-making processes related to aquaculture. Traditional gender roles and societal norms contribute to women's limited participation in governance structures, industry associations, and policy development forums. The lack of women's voices and perspectives in decision-making hampers the sector's ability to address gender-specific challenges and develop inclusive policies.

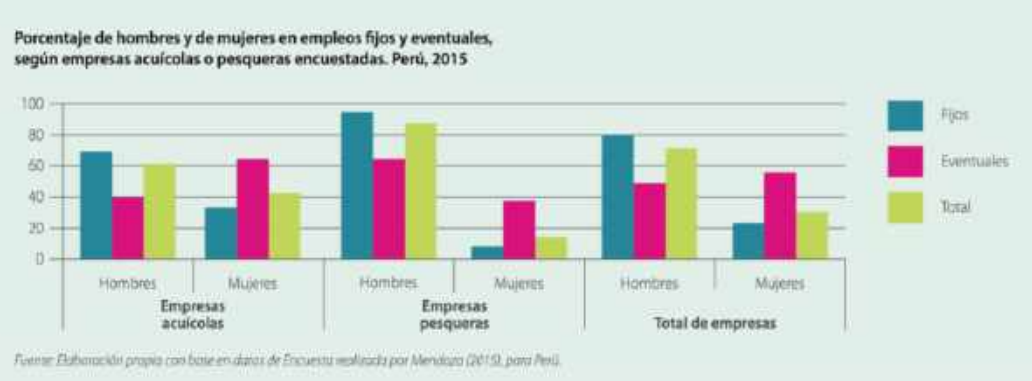


Figure 2: Percentage of men and women current employed in fixed and short term (Mendoza, Ramírez, et al

Information from the census of Peru at the continental level (CEMPAR, 2013) shows that 2% of women fishermen and 17% of aquaculturists have resorted to financing from external sources for the development of their productive activities. Regarding access to financing, in Peru there is a lack of financial products that suit the characteristics and conditions of women fishermen or aquaculture farmers (Mendoza Ramirez et al., 2016).

The existing limitations regarding the availability of more statistical information disaggregated by sex make it impossible to know the characteristics, situation, and particular conditions of women aquaculture farmers. This situation keeps women in the sector in a state of invisibility that affects the definition of public policies, as well as decision-making and actions for their economic and social empowerment.

Gender Dimensions in Aquaculture

Gender does not refer to masculine and feminine (which is sex or the biological characteristics that distinguish male/female/intersex) but to a social construction that is context and time specific. It refers to the social attributes and opportunities associated with being male and female. Thus, gender refers to the roles, behaviors, activities, and attributes that a particular society considers appropriate for men and women at a given moment. In addition, it refers to the relationship between men and women and

[137] Available at http://catastroacuicola.produce.gob.pe/web/

[138] A female fishing engineer with over twenty years of industry experience mentioned: “For a long time, I have been the only woman in pictures. And I still am, most of the time.” Interviewed by Zoom, 5/19/2023.

determines what is expected, allowed, and valued in a woman or a man in a given context.

These gendered expectations largely determine how women and men engage and how much they benefit from participating in the aquaculture value chain. The concept of intersectionality informs a critical nuance to this understanding of role and benefit. The intersections between different social dimensions (not only gender but also class, age, ethnicity, race, religion, and sexual orientation), which represent the identity's multiple components, can result in the aggravation of inequalities not only between women and men but also between women and between men.

Intersectionality should be included in the analysis, to inform the social location of individuals and their relative access to power or degree of oppression and vulnerabilities, which then help define the role they have in the fisheries and aquaculture sector. Failure to account for these intersections can lead to the unintended exclusion of the most vulnerable groups and risks entrenching and worsening inequities in fishing and aquaculture communities.

The subsequent sections of the report will provide a gender analysis of the Junin, Huanuco, and Puno regions, considering dimensions such us access to resources and opportunities, roles and division of labor, wage and employment inequality, participation in formal and informal spaces. and unpaid care workload and exploring region-specific factors that influence gender disparities in Peru's aquaculture sector.

3. Peru's gender equality legal framework

3.1. International instruments

The international corpus juris on respecting and protecting women's rights comprises a broad set of international treaties and instruments. At the universal level, Peru ratified the International Covenant on Civil and Political Rights (ICCPR), which establishes that States must respect and guarantee, through various legislative or other necessary measures, the rights recognized in the Covenant without any form of discrimination, as well as providing that men and women are treated equally in the enjoyment and exercise of their rights (articles 2 and 3). Peru also ratified the Convention on the Elimination of all Forms of Discrimination against Women (CEDAW), which provides that States must prohibit discrimination against women in all its forms (articles 1 and 2), as well as adopt the necessary measures to modify socio-cultural patterns of behavior of men and women, to achieve the elimination of prejudices and customary practices based on the idea of the inferiority or superiority of either of the sexes or on stereotyped roles of men and women (article 5).

At the regional level, Peru ratified the American Convention on Human Rights, which establishes the duty of States to respect and guarantee the full and free exercise of human rights without any form of discrimination (article 1.1) and the obligation to adopt provisions of internal law to make effective the rights and freedoms recognized therein (article 2). Likewise, it ratified the Inter-American Convention to Prevent, Punish and Eradicate Violence against Women (Belem Do Pará Convention), which defines violence against women as "any action or conduct, based on their gender, that causes death, harm or physical, sexual or psychological suffering to women, both in the public and private spheres" (article 1). These treaties complement and are interpreted in accordance with other international instruments such as the Program of Action of the World Conference on Human Rights (1993), the Program of Action of the Conference on Population and Development (1994), the Declaration and the Platform for Action of the Fourth World Conference on Women "Beijing" (1995), the Report of the Beijing +5 Conference (2000) and the Report of the Beijing +20 Conference (2015), which promote the respect and guarantee of the rights of women, as well as gender equality and women empowerment.

The country has aligned the 2030 UN Agenda for Sustainable Development, which includes a set of 17 SDGs to end poverty, fight against inequality and injustice, and addressing climate change as a reference point for the formulation of the country's public policy. Goal 5 aims to achieve gender equality and empower all women and girls.

The main international norms and instruments signed and ratified by the country are the following:

- Universal Declaration of Human Rights (1948).
- Convention No. 100 (1951) of the International Labor Organization (ILO), referring to equal remuneration between men and women for work of equal value.
- Convention on the Political Rights of Women (1952).
- ILO Convention No. 111 (1958), referring to equal opportunities and treatment in matters of employment and occupation.
- International Convention on the Elimination of all Forms of Racial Discrimination (1965).
- International Covenant on Civil and Political Rights (1966).
- International Covenant on Economic, Social and Cultural Rights (1966).
- Declaration on the Elimination of Discrimination against Women (1967).
- American Convention on Human Rights (ACHR) (1969)
- Convention on the Elimination of all Forms of Discrimination against Women (CEDAW) (1979).
- ILO Convention No. 156 (1981) on family responsibilities.
- ILO Convention No. 169 (1989) on indigenous and tribal peoples.
- Vienna Declaration and Program of Action (1993). - Inter-American Convention to Prevent, Punish and Eradicate Violence against Women (Belem do Pará Convention) (1994).
- Additional Protocol to the American Convention on Human Rights in the area of Economic, Social and Cultural Rights (1988)
- Program of Action of the Conference on Population and Development, Cairo (1994). - Beijing Declaration and Platform for Action. Fourth World Conference on Women (1995).
- ILO Convention No. 183 (2000) on maternity protection.
- Quito Consensus. Tenth Regional Conference on Women in Latin America and the Caribbean (2007).
- United Nations Declaration on the Rights of Indigenous Peoples (2007).
- Consensus of Brasilia. Eleventh Regional Conference on Women in Latin America and the Caribbean (2010).
- Montevideo Consensus on population and development (2013).
- Beijing +20 Conference Report (2015)
- 2030 Agenda for Sustainable Development (2015).
- Montevideo Strategy for the Implementation of the Regional Gender Agenda within the framework of Sustainable Development by 2030 (2016).

3.2. National legislation

Supreme Decree No. 008-2019-MIMP[139] states that the National Gender Equality Policy is based on the following national regulations:

a) Norms that recognize and develop the content of the right to equality and non-discrimination:

- Political Constitution of Peru (article 2, 2; article 26; article 191).
- Law No. 28983, Law on equal opportunities between women and men.

b) Norms that prohibit discrimination in various areas:

- Law No. 26772, provides that job offers and access to educational training means may not contain

[139] Available at https://www2.congreso.gob.pe/sicr/cendocbib/con5_uibd.nsf/AA7DBEFD6B737935052583D20057585C/$FILE/1757065-.pdf

requirements that constitute discrimination, annulment or alteration of equal opportunities or treatment. Regulation approved by Supreme Decree No. 002-98-TR.

- Law No. 30709, prohibits wage discrimination between men and women. Regulation
- approved by Supreme Decree No. 002-2018-TR.
- Legislative Decree No. 635, approves the Penal Code (article 323 – crime of discrimination), modified by Legislative Decree No. 1323.
- Supreme Decree No. 004-2009-TR specifies behaviors that are considered discriminatory acts against domestic workers.

c) Norms that prohibit violence against women:

- Law No. 27942, for the prevention and punishment of sexual harassment. Regulations approved by Supreme Decree No. 010-2003-MIMDES.
- Law No. 29944, on Teacher Reform, which regulates disciplinary administrative processes against educational personnel reported for sexual violence against students.
- Law No. 30314, to prevent and punish sexual harassment in public spaces.
- Law No. 30364, to prevent, punish and eradicate violence against women and members of the family group. Regulations approved by Supreme Decree No. 009-2016-MIMP.
- Law 30403 prohibits the use of physical and humiliating punishment against children and adolescents.
- Legislative Decree No. 1408, to strengthen families and prevent violence, amended by Legislative Decree No. 1443.
- Legislative Decree No. 1410, incorporates the crime of harassment, sexual harassment, sexual blackmail, and dissemination of images, audiovisual or audio materials with sexual content to the penal code, and modifies the procedure for sanctioning sexual harassment.
- Legislative Decree No. 635, approves the Criminal Code (articles 108-B – crime of femicide; 121-B, 122 and 122-B – crimes of injuries due to family violence; 151-A – crime of harassment; 153 and 153- A – crimes of trafficking in persons; 153-B – crime of sexual exploitation; 153-C; 154-B – crime of slavery and other forms of slavery; 168-B – crime of forced labor; 170 to 177 – crimes against sexual freedom; 183-A – crime of child pornography; 183-B – crime of sexual propositions to children and adolescents, and 442 – offense against the person: mistreatment).
- Vice-Ministerial Resolution No. 091-2015-MINEDU, regulates the disciplinary administrative process for teachers in the public sector.
- Supreme Decree No. 004-2018-MINEDU, Guidelines for the management of school coexistence, the prevention and care of violence against girls, boys, and adolescents.
- Ministerial Resolution No. 428-2018-MINEDU, approves the Technical Standard called "Provisions for the prevention, care and punishment of sexual harassment in technical-productive education centers and higher education institutes and schools".

d) Norms that establish measures that promote equality between women and men, including affirmative actions.

- Law No. 26859, Organic Law of Elections (article 116).
- Law No. 26864, Municipal Elections Law (article 10).
- Law No. 27683, Regional Elections Law (article 12).
- Law No. 28094, on Political Organizations (article 26)1.
- Law No. 29896, establishes the implementation of lactation facilities in public and private sector institutions promoting breastfeeding. Developed by Supreme Decree No. 001-2016-MIMP.
- Law No. 30367, protects the working mother against arbitrary dismissal and prolongs her rest period. Its regulatory standard is Supreme Decree No. 002-2016-TR.
- Law No. 30807, modifies Law No. 29409, which grants the right of paternity leave to workers in public and private activities.
- Supreme Decree No. 002-2007-MIMDES, provides for the implementation and operation of day care services through cradles or institutional wawa wasi in public administration entities.

e) Norms introducing gender considerations into state policies and interventions:

- Law No. 29083, Law that modifies article 47 of Law No. 28411, General Law of the National Budget System.
- Law No. 29700, includes unpaid work in national accounts. Regulation approved by Supreme Decree No. 056-2014-PCM.
- Law No. 29414, establishes the rights of users of the health service.
- Legislative Decree No. 1098, which approves the Law on Organization and Functions of the Ministry of Women and Vulnerable Populations (MIMP).
- Supreme Decree No. 003-2012-MIMP, approves regulations for the organization and functions of the Ministry for Women and Vulnerable Populations (MIMP).
- Supreme Decree No. 003-2015-MC, approving the National Policy for Mainstreaming
- of the Intercultural Approach.
- Supreme Decree No. 005-2017-MIMP, provides for the creation of a mechanism for Equality of Gender in the entities of the National Government and of the Regional Governments.
- Supreme Decree No. 068-2017-PCM, which provides for the "diagnosis of wage inequality in the State".
- Supreme Decree No. 056-2018-PCM, approving the General Government Policy (paragraph 4.6
- of article 4).
- Supreme Decree No. 027-2015-SA, Regulation of Law No. 29414, which establishes the rights of health services' users.

4. Gender Analysis of Junin Region

The Project's area of intervention in this region is the Chiapuquio micro-watershed, in the town of Ingenio, located in the Huancayo province; nearby trout farmers from the Rangra y Chía river may also participate.

The town of Ingenio owes its name to the "good genius" and inventiveness that characterized the inhabitants of this area of the Mantaro Valley since pre-Inca times, initially dedicated to mining. In the 20th century, with the introduction of rainbow trout farming in Peru, Ingenio became a national fish farming benchmark with the installation of the El Ingenio Aquaculture Center in 1943. The Center drove the region's aquaculture development, with the town's residents taking on trout farming and the establishment of numerous restaurants and country recreations offering typical dishes derived from trout (Gamion de la Cruz, 2009).

These activities strongly promoted tourism development in Ingenio, especially around patron saints and festive dates, as well as the promotion of other economic activities, such as the purchase of trout from small artisan producers and commerce in general (Chanca Rojas & Eulogio Espinoza, 2016).

Despite its traditional tourist activity, the Governance Agreement of the Junin Region 2023 - 2026[140] reports the region confronts many social, economic, environmental, and institutional problems. Some of the most critical issues affecting girls and women are restrictions to the social services to pregnant women and children younger than five years old; teen pregnancy increase; lack of vaccines against human papillomavirus for girls and adolescents; and high levels of violence against women and girls, among others.

Reports of trafficking in persons represent a serious concern[141].

The following organizations work on women's issues in the region: Central Regional de Organizaciones de Mujeres Rurales "Yachaq Mama"; Mesa de Diálogo de la Mujer de Huancayo; Mesa de Diálogo de la Mujer de Jauja; Mesa de Diálogo de la Mujer de Chupaca; Mesa de Diálogo de la Mujer de La Oroya; Mesa de Diálogo de la Mujer de Concepción; Mesa de Diálogo de la Mujer de Junin; Asociación de

[140] The Roundtable for the Fight Against Poverty, since 2002, throughout Peru, plays an active role in formulating and consolidating governance agreements in the context of national, regional, and municipal electoral processes. The agreements are linked to the Sustainable Development Goals for 2030. Available at https://www.mesadeconcertacion.org.pe/storage/documentos/2022-11-16/acuerdo-junin-2023-2026.pdf

[141] Available at https://www.state.gov/reports/2023-trafficking-in-persons-report/peru

Mujeres Productoras Warmi Tsinani de Satipo; Confederación Nacional de Mujeres Organizadas por la Vida y el Desarrollo Integral; Pastoral Social de Dignidad Humana (FOVIDA - Fomento de la Vida ONG, 2019).

4.1 Gender Roles and Division of Labor

In the Junin region of Peru, traditional gender roles and division of labor influence women's participation in the aquaculture sector. Women work primarily in gastronomic and tourist activities related to aquaculture as cooks, waitresses, and cleaning staff of restaurants and country recreation areas. Their participation tends to concentrate on lower-skilled tasks such as eviscerating and washing the trout; additionally, these types of jobs depend on consumers' demands and are temporary by nature and low-paid. Our field work identified few women established as trout producers in this area.

Historically, men have dominated fish farming and management activities, while women have been primarily involved in household-based tasks and supporting roles. These gender norms create barriers for women seeking to engage in more entrepreneurial and decision-making roles within the aquaculture sector.

4.2. Constraints and Challenges Faced by Women

Several constraints and challenges contribute to gender disparities in Junin's aquaculture sector. These include:

- Limited Access to Training: Women in Junin often face barriers in accessing training programs related to aquaculture. This lack of training opportunities limits their technical knowledge and skills, reducing their ability to engage in higher-value activities within the sector.

  Women interviewed reported lacking a clear and effective channel of communication with DIREPRO, directly impacting on access to training as they ignore when they happen.

  Public sector's officials consistently reported lack of training in gender issues, and some of them evidenced a gender-blind perspective. Women interviewed for the study agreed they would benefit from women empowerment and gender training.

- Unequal Access to Resources: Junin women need help accessing essential resources, including credit, land, and technology. Inadequate access to credit from private and public sources hampers their capacity to invest in productivity-enhancing inputs and equipment and restricts their ability to expand their trout farming enterprises.

  A women producer mentioned she had a mortgage over her family house to obtain a relatively small amount of money from a private bank to invest in her farming operation. All women producers reported having applied to the Peruvian financial help program when COVID-19, to no avail.

  Although the women interviewed manifested that, "unlike in the old days," there are no barriers for women to become fishing engineers or professionals within the aquaculture sector, they manifested that access to higher education is more difficult for women in this region, contingent upon social expectations regarding family duties, and having the economic resources to afford it.

- Lack of Supportive Infrastructure: Insufficient infrastructure, such as transportation networks, storage facilities, and post-processing plants, poses challenges for women in Junin's aquaculture sector. These limitations hinder their productivity, market access, and overall competitiveness.

  Women in the AREL and AMYPE productive categories reported needing more power to negotiate their product's market value and lose profit in front of more prominent producers able to sell for a lower price -including the governmental-owned plant in Ingenio.

  Women mentioned they lack the social opportunities provided for men to interact, such as sports playing, and therefore, are more isolated and have fewer chances of discussing common issues.

4.3. Empowering Women in Junin's Aquaculture Sector

To promote gender equality and women's empowerment in Junin's aquaculture sector, several strategies and interventions can be implemented:

Access to Training

Enhancing women's access to training programs related to aquaculture is crucial. This includes effective outreach, providing scholarships, vocational training, and capacity-building initiatives that address the specific needs and constraints that women face.

Access to Finance and Resources

Facilitating women's access to credit and productive resources is essential for their economic empowerment. This can be achieved through targeted financial inclusion programs, establishing women-friendly credit schemes, and promoting awareness among women in the sector.

Strengthening Women's Networks and Organizations

Supporting and strengthening women's networks, associations, and cooperatives can provide a platform for collective action, knowledge sharing, and advocacy. These networks can empower women by amplifying their voices, enhancing their bargaining power, and fostering peer-to-peer learning and mentorship.

Picture 1: Focus group with women aquaculture producers and workers. Concepcion, Junin, 6/12/23.

5. Gender Analysis of Huanuco Region

The Project's scope of intervention in Huanuco is the Huampo lagoon, in the town of Huampo, province of Ambo, including Maraypata. The places are rural villages located over two hours by car from the city of Ambo.

The Huanuco Regional Governance Agreement 2023 - 2026[142] reports the region confronts several social, economic, environmental, and institutional problems. Some of the most critical issues affecting girls and women are restrictions to the social services provided to pregnant women and children younger than five years old; maternal and infant mortality,

chronic malnutrition, anemia, high levels of sexual violence against children and violence against women, lack of mental health services, limited access to the Internet, among others.

5.1 Gender Roles and Division of Labor

The Huanuco areas selected for Project intervention are small rural settings characterized by highly conservative gender roles (Sara Goyeneche et al., 2016) and division of labor that exclude women from

[142] Available at https://www.mesadeconcertacion.org.pe/storage/documentos/2022-11-16/acuerdo-huanuco-2023-2026.pdf

managerial positions in trout farming and seclude them to their homes. These traditional gender norms limit women's access to entrepreneurial opportunities and decision-making power within the sector.

However, women in Huanuco region are extensively involved in all the activities of rainbow trout farming, from feeding the fish to cleaning the ponds and preparing the fish to sell. They perform the bulk of the trout production or cultivation activities, which are an extension of the household care duties.

Very limited access to resources, information, and training—as well as the fact that women usually do not leave the house/farms—prevents them from engaging in other activities such as commercialization or entrepreneurship. Cultural expectations and family responsibilities further constrain women's participation in the sector and limit their ability to fully benefit from aquaculture opportunities.

5.2. Constraints and Challenges Faced by Women

Several constraints and challenges contribute to gender disparities in Huanuco's aquaculture sector:

- Limited Access to Education and Training: Women in the areas of intervention face challenges in accessing education and training due to their remote location and high poverty levels. Cultural norms and language barriers also prevent them from taking advantage of educational and training opportunities. Farming operation safety and security, including protective gear, appeared to be an urgent necessity.
- Limited Access to Extension Services: Women in the areas of intervention face challenges in accessing extension services that provide technical support, knowledge, and information related to aquaculture. This lack of support hinders their ability to adopt best practices, improve productivity, and enhance the overall sustainability of their aquaculture enterprises.
- Gender-Inclusive Policies and Regulations: Inadequate gender-responsive policies and regulations can perpetuate gender inequalities within aquaculture. Huanuco's DIREPRO and other extension services should incorporate a gender perspective, ensuring women have equitable access to resources and training opportunities that are developed with an intercultural approach.
- Capacity Building and Skills Development: Women have few opportunities to strengthen their skills and knowledge and need targeted interventions to access to them.

5.2 Empowering Women in Huanuco's Aquaculture Sector

To promote gender equality and women's empowerment in Huanuco's aquaculture sector, the following strategies can be implemented:

Enhancing Women's Access to Extension Services

Improving the availability and accessibility of gender-responsive and intercultural extension services can provide women with technical support, training, and knowledge necessary to enhance their productivity, adopt sustainable practices, and improve their competitiveness.

Building Capacity and Skills

It is essential to recognize and address the unique challenges faced by women in the project's intervention locations, providing them with the necessary tools, resources, and opportunities to actively participate and benefit from the aquaculture industry. Bringing training closer to their farms seems crucial.

Developing Gender-Inclusive Protocols for the effective outreach of women

Implementing measures that consider women's safety, mobility, and ability to participate in training sessions fully will benefit the entire sector.

Picture 2: Women aquaculture producer shows us her farming operation during our field visit. Maraypata, Huanuco, 6/16/23.

6. Gender Analysis of Puno Region

The Project's area of intervention is Lake Titicaca, in the town of Pomata (Faro), Province of Chucuito.

The Regional governance agreement 2023 - 2026[143] reports the region confronts many social, economic, environmental, and institutional problems. Some of the most critical issues affecting girls and women are restrictions to the social services to pregnant women and children younger than five years old; poverty and extreme poverty; teen pregnancy increase; high levels of violence against women and girls, among others.

Reports of the increase of trafficking in persons in the region present a grave concern[144].

6.1. Gender Roles and Division of Labor

In Puno region, traditional gender roles and division of labor play a significant role in shaping women's participation in the aquaculture sector. Men have traditionally held primary roles in fish farming and management, while women have been engaged in household tasks and support roles. These gender norms limit women's access to decision-making positions and entrepreneurial opportunities within the sector.

Women in Puno region actively participate in various aspects of aquaculture, but their involvement is often concentrated in low-skilled activities. Limited access to resources, training, and information prevents women from engaging in higher-value activities such as fish farm management or entrepreneurship.

6.2. Constraints and Challenges Faced by Women

Several constraints and challenges contribute to gender disparities in Puno's aquaculture sector:

- Limited access to Productive Resources: Women in Puno face challenges in accessing productive resources such as land, credit, and technology. Limited land tenure rights and lack of access to credit hinder their ability to expand their aquaculture enterprises and invest in productivity-enhancing inputs.
- Limited access to training programs: Women manifested the need of training focused on technical skills, entrepreneurship, financial management, and marketing to empower them to participate in higher-value activities within the industry.
- Market Access and Value Chain Integration: Women often encounter barriers in accessing markets and integrating into value chains. Limited market information, transportation infrastructure, and market linkages prevent women from effectively marketing their aquaculture products and obtaining fair prices for their goods.

[143] Available at https://www.mesadeconcertacion.org.pe/storage/documentos/2022-09-29/acuerdo-de-gobernabilidad-puno-2023-2026-completo.pdf

[144] https://www.state.gov/reports/2023-trafficking-in-persons-report/peru

- Gender-Based Violence: Gender-based violence, both within and outside the aquaculture sector, poses a significant challenge for women in Puno. It not only affects their personal safety and well-being but also limits their mobility, decision-making power, and ability to engage in economic activities.

The AURORA National Program[145] registered 4.224 incidents of violence against women in Puno in 2022, a number significantly higher than the national average.

6.3. Empowering Women in Puno's Aquaculture Sector

To promote gender equality and women's empowerment in Puno's aquaculture sector, the following strategies can be implemented:

Enhancing Access to Productive Resources

Efforts should be made to improve women's access to land, credit, and technology. This can be achieved through targeted programs that provide support for land tenure rights, financial inclusion, and access to appropriate aquaculture technologies.

Strengthening Market Linkages and Value Chain Integration

Providing women with market information, improving transportation infrastructure, and fostering partnerships between women producers and market actors can enhance their market access and bargaining power. This can lead to improved income generation and economic empowerment.

Addressing Gender-Based Violence

Implementing initiatives that address and prevent gender-based violence is essential. This includes raising awareness, providing support services, and promoting a safe and inclusive working environment within the aquaculture sector.

Promoting Gender-Responsive Policies and Programs

Advocating for the integration of gender perspectives into aquaculture policies and programs is crucial. This includes ensuring equal representation and participation of women in decision-making processes, supporting women's networks and associations, and incorporating gender considerations in training and extension services.

Picture 3: Women aquaculture producer shows us her farming operation during our field visit. Puno, 6/19/23.

[145] The National Program for the Prevention and Eradication of Violence against Women and Members of the Family Group - AURORA belongs to the Ministry of Women and Vulnerable Populations (MIMP). Its objective is to implement and promote specialized services for preventing violence against women, members of the family group, and people affected by sexual violence, as well as victims' care and protection. It has a nationwide scope, prioritizing those areas with the highest rates of violence against women, members of the family group, and anyone affected by sexual violence. The program's services are interdisciplinary and offer assistance to anyone who voluntarily requests them for free. One of the main tools of the Aurora National Program is the CEM (*Centro Emergencia Mujer*), an assistance center that a survivor can resort to, where social, psychological, and legal help is provided. As emergency services, they should be available to any person without discrimination.

7. Comparative Analysis and Key Gender Gaps

When comparing the gender analysis of the aquaculture sectors in Junin, Huanuco, and Puno regions of Peru, several commonalities and variations emerge. These regions share similar gender disparities in terms of women's limited access to resources, lower participation in decision-making processes, and concentration in low-skilled activities within the aquaculture sector. However, specific regional factors contribute to unique gender gaps in each area.

In Junin, women's participation in higher-value activities and decision-making roles is constrained by limited access to training opportunities. Lack of access to credit, also hinders their economic empowerment. On the other hand, Huanuco faces challenges related to strict traditional gender roles, access to extension services and gender-responsive policies tending to their specific needs. Limited communication and capacity-building opportunities further restrict women's participation in higher-value activities in both regions. In Puno, the barriers to women's empowerment in aquaculture include limited access to productive resources, market integration, and the prevalence of gender-based violence.

The following critical gender gaps have been identified:

Limited Access to Resources

Across all three regions, women face challenges in accessing productive resources such as land, credit, and technology. Unequal distribution of resources limits women's ability to expand their enterprises, invest in productivity-enhancing inputs, and adopt sustainable practices.

Underrepresentation in Decision-Making

Women's participation in decision-making processes related to aquaculture is limited in all regions. The lack of women's voices and perspectives hampers the development of inclusive policies and inhibits the sector's ability to address gender-specific challenges effectively.

Concentration in Low-Skilled Activities

Women in all regions are predominantly engaged in low-skilled and seasonal activities. Limited opportunities for higher-value roles, like fish farming management and entrepreneurship, constrain women's economic empowerment and limit their ability to generate higher incomes.

Limited Access to Education and Training

Women's access to education and training programs specific to aquaculture is limited in all regions. This lack of technical knowledge and skills impedes their capacity to engage in higher-value activities, adopt sustainable practices, and enhance their competitiveness in the sector.

Gender-based violence

In the fisheries sector, structural inequalities and harmful social norms put women and girls in vulnerable situations where they could be affected and exposed to violence and abuse. Gender-based violence negatively affects survivors' health, well-being, and productive capacity, creating consequences that extend beyond the survivors to their families and communities (Siles, 2019).

In Peru, violence against women and girls, especially intrafamily violence against women in the private sphere, is a critical problem[146]. In 2020, 9 out of 100 women declared having been victims of physical and/or sexual violence by their current or last husband or partner in the last 12 months (INE, 2020). According to reports from Amnesty International, gender-based violence increased by 31% between 2019 and 2021[147].

Although, in general, it is considered that the Peruvian legislation for protection against gender violence is adequate and modern[148], its compliance is haphazard and insufficient, leaving a considerable gap in

[146] Ministry of Women and Vulnerable Populations of Peru, 2021.
[147] Amnesty International. Desprotegidas. 2022.
[148] The Peruvian national regulatory framework against gender violence is composed of Law No. 26260 on Protection against Family

the implementation of norms.

Social and Cultural Factors

Gender roles, norms, and cultural practices influence women's participation in aquaculture. Traditional divisions of labor often assign men to more prominent roles in fish farming and management, while women are predominantly engaged in household-based activities. Societal expectations and limited support for childcare and household responsibilities constrain women's full engagement in the sector.

Regarding gender-sex dissidence, silence is predominant in the three regions under analysis and there is low visibility of LGBTIQ people. People preferred not to talk about it, either positively or negatively. As a consequence, most of the LGBTIQ people live their gender identity and sexual orientation in a hidden way, maintaining secrecy about it to guarantee their survival (Machuca Rose et al., 2016).

Addressing these challenges requires targeted interventions that focus on market linkages and addressing gender-based violence to create a safe and inclusive environment for women in the sector.

8. Recommendations for the Project's Gender Action Plan

Based on the gender analysis of Peru's aquaculture sector in the Junin, Huanuco, and Puno regions, the following recommendations are proposed to address the identified gender gaps and promote gender equality and women's empowerment:

Strengthen Gender-Responsive Policies: Develop and implement gender-responsive policies and regulations that promote women's equal access to resources, markets, and decision-making processes within the aquaculture sector. These policies should address the specific challenges faced by women and ensure their inclusion and participation at all levels.

This evaluation recommends promoting women's active and effective participation in informative and deliberative community meetings and training through specific outreach measures. Where these networks exist, there should be coordination with local women's organizations to ensure that information regarding community meetings and workshops/training reaches women and that the most significant number of women are reached.

Meetings and training activities should consider women's work schedules and capacity to access location venues to ensure maximum participation. In this regard, we recommend the establishment of decentralized training delivery centers in locations where women can attend or take them.

Also, this evaluation recommends the constitution of implementing teams with gender parity to improve gender balance within the aquaculture sector.

Provide Education and Training Opportunities: Increase women's access to education and training programs that focus on aquaculture-related skills and knowledge. These programs should address the specific needs and constraints faced by women, enhance their technical competencies, and provide training on entrepreneurship, financial management, and marketing. Additionally, promote vocational training and scholarships to empower women in the sector.

This evaluation recommends that institutional strengthening programs include a training module on gender equality, sensitivity, and perspective, with an emphasis on gender-sex diversity and issues affecting the LGBTIQ+ community. All training modules, irrespective of their content, should be developed with a gender perspective.

Also, we recommend a Capacity Building Workshop targeting public servants in all regions on gender equality, sensitivity, and perspective, with an emphasis on gender-sex diversity and issues affecting the LGBTIQ+ community.

Violence, of 1997; Law No. 30364, of the year 2015, and its subsequent regulation, to prevent, eradicate and punish all forms of violence against women due to their status as such and against members of the family group, produced in the public or private sphere; and Legislative Decree No. 1,323 of 2017, which introduces reforms to the criminal law on gender violence.

In regard to the Project's direct beneficiaries, we recommend training in gender equality and women empowerment, including exercising labor rights and undertaking the formalization process of the aquaculture productive operation.

Enhance Access to Productive Resources: To facilitate women's access to productive resources such as land, credit, and technology, we recommend the development of a financial instrument that address female entrepreneurs' hardships and promoting initiatives that support women's ownership and control over productive assets.

This evaluation recommends the implementation of certifications with a gender focus for primary processing plants, and the development of business plans with a gender perspective, considering the gender impact of activities related to rainbow trout farming.

Strengthen Extension Services: Improve the availability and accessibility of gender-responsive extension services that provide technical support, knowledge, and information related to aquaculture. These services should be tailored to the specific needs of women, addressing their constraints, and enabling them to adopt best practices, improve productivity, and enhance the sustainability of their aquaculture enterprises.

Foster Women's Networks and Organizations: Support and strengthen women's networks, associations, and cooperatives within the aquaculture sector. These platforms can provide a space for knowledge sharing, peer-to-peer learning, mentorship, and collective action. Facilitate the formation of alliances and partnerships between women producers, market actors, and relevant stakeholders to enhance market access and improve bargaining power.

Address Gender-Based Violence: Implement initiatives that raise awareness about gender-based violence, both within and outside the aquaculture sector. Create safe and inclusive working environments that promote zero tolerance for harassment and violence, ensuring the safety and well-being of women in the sector.

Promote Gender-Responsive Research and Data Collection: Encourage research and data collection that incorporates a gender perspective in aquaculture-related studies. This includes conducting gender-disaggregated data collection, analysis, and monitoring to better understand the specific challenges and opportunities faced by women in the sector.

We recommend a gender-focused workshop targeted to the members of the Regional Observatories of Resilient Aquaculture (RORA) to: 1) Develop and establish institutional gender policies and protocols for the outreach of women producers and workers to promote and guarantee their access to programs and training; 2) Identify indicators of women's participation in aquaculture activities; 3) Encourage research on how to increase the role and added value of the participation of women in good practices of resilient aquaculture. 4) Include in their inter-institutional agreements the requirement to generate research about women in aquaculture and risks associated with climate change.

Engage Men and Communities: Involve men and communities in gender equality initiatives within the aquaculture sector. Promote gender-transformative approaches that challenge traditional gender norms and roles, fostering supportive environments where men become advocates for women's empowerment and equal participation.

Gender-based discrimination directly affects women and burdens the aquaculture sector through productivity losses, inefficiencies, and missed opportunities for innovation and women's entrepreneurship. By implementing these recommendations, the Project can contribute to reducing gender disparities, promoting women's empowerment, and fostering inclusive and sustainable development in Huanuco, Junin and Puno's aquaculture sector. These actions will not only benefit women but also contribute to the overall growth and success of the aquaculture sector.

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Annex 3: Good Practices Manual
Manual of Good Aquaculture Practices (GAP) for rainbow trout farming

GAP is a set of procedures to ensure the safety and quality of products from aquaculture activity, according to the regulations of the competent sectors.

This GAP Manual is based on the INACAL Technical Standard NTP 320.004-2014 Aquaculture: Good Aquaculture Production Practices in the production of rainbow trout and has been adapted to the AREL and AMYPE categories of the project to be developed in the Huanuco, Junin and Puno regions.

1. Objective

Establish guidelines for the sustainable production of rainbow trout (Oncorhynchus mykiss), with the purpose of ensuring a good quality, safe and healthy product, guaranteeing an activity that generates triple impact (environmental, social and economic).

2. Scope

All activities that comprise the production cycle for trout farming of the AREL and AMYPE categories, including animal welfare, environmental impact, quality and food safety, from the choice of the place of farming. Also including the management of eggs and fry, water quality, the productive cycle, feeding, feeding, sediment and effluent control, harvesting and transport in the regions of Huanuco, Junin and Puno.

3. Good aquaculture practices

As indicated by the technical standard cited above, for a sustainable development of trout farming that guarantees the safety of the products, the conservation of the environment, the efficient use of resources, including the workers of the farming center and the surrounding community, the following considerations must be taken into account:

Trout farming centres must comply with national, national and local regulations and have aquaculture law demonstrating that they have legal rights to land and water use, construction and operation.

AREL category crops must have the authorization for cultivation issued by the DIREPRO of their region, from the presentation of an affidavit with all the characteristics of the production cycle. For this project, AREL category producers must complete the Environmental Sheet that is attached as part of the requirements to be a beneficiary.

AMYPE cultivation centers must demonstrate compliance with current national regulations issued by the competent authorities and have:

- Environmental Impact Statement (EIS).
- Concession or authorization to develop aquaculture activities.
- Authorization for the execution of hydraulic infrastructure works, as appropriate.
- Operating licenses that are requested by other national, regional and local authorities, among others.

4. Location of facilities and infrastructure

Farming centres must be located close to an access road and must be aquaculture-capable, potentially suitable for trout culture, and always ensure a water supply. In addition, they must have a perimeter fence.

The infrastructure must facilitate the access of supplies, which must be taken into account from the design and construction to avoid contamination of products and the aquatic environment. In addition to facilitating cleaning and disinfection.

Mechanisms must be taken into account to prevent the escape of specimens from the crop and control

damage to local flora and fauna, for which there will be specific lanes for the conservation of biological diversity.

Pond culture

With regard to the area for the construction of ponds and complementary infrastructure:

- It must have the optimal conditions related to its topography, soil nature and have the appropriate extension that justifies the projected production volume.
- You must have a source of water of optimal quality and with the volume required to ensure production.
- The topography of the land must be taken into account for a correct distribution of ponds and other areas, seeking, as far as possible, that the distribution of water is by gravity.
- A sedimentator should be placed in the intake to help remove fine particles.
- An efficient drainage system should be used that allows the removal of suspended solids produced as crop waste (uneaten food, feces, etc.).
- Water should not be reused if there is no recirculation system or adequate water treatment. It is recommended to use parallel ponds.
- The circular ponds vary in size according to the stages of the trout and the characteristics of the terrain. For its construction, traditional materials such as concrete and corrugated sheets can be used up to reinforced fiberglass. It must have central evacuation and slope towards the center of the pond (slope of 5% to 10% is the most appropriate). The central drain should allow a self-cleaning effect and the distribution of oxygen throughout the volume of water.
- Complementary facilities such as sheds or cellars, floating or terrestrial structures and cultivation units must be safe in adverse weather conditions.
- A maintenance plan for aquaculture infrastructure must be in place for repair or renovation.
- The entry and exit of ponds or canals must be controlled to prevent the introduction of unwanted species.

In cages

The choice of location for the installation of floating cages shall take into account the following principles:

- Aquaculture fitness
- Easy access
- Sufficient size and volume so that the projected maximum production does not affect the water resource
- Topography and bathymetry suitable for the installation of cages and other infrastructure
- For the construction of the cages, materials must be used that comply with environmental requirements, and do not constitute potential sources of contamination.
- The design, size and number of the cages will be based on the projected production and carrying capacity of the aquatic environment where they are installed, in order to avoid pollution, eutrophication and break the ecological balance.
- Cloths or nets with different mesh openings will be used, depending on the stage of the trout that is sown in each cage.
- It is recommended to group the cages into modules or groups to facilitate their anchoring and handling operations.

- The cages should be located perpendicular to the direction of the dominant current within the body of water to favor the exchange of water within the cages.
- Areas of shallow depth or very close to shore lines should be avoided when cages are located because it could contaminate surrounding areas.
- The characteristics of the area must be evaluated to ensure a correct anchoring of the cages, selecting the most convenient material, as well as an adequate weight of the ballasts.
- Personnel transport vessels must be built with an easily disinfected material.

4.1 Water quality and management

Water quality is the most important thing in a trout farm. Hazards that may cause chemical and/or biological contamination should be identified, such as water from other farming centers, pesticides, industrial activity, wastewater or domestic use and water from pond soil.

Water quality must be maintained as it will reduce the risk of disease transmission, improve production and the quality of the final product.

The water supply source must be free of contaminants, be of high quality and meet the optimal physical and chemical parameters for trout, in addition to having enough water for the entire production cycle.

The main catchment must have a sedimentation and desander, to reduce the entry of sediments.

Water quality criteria and their indicators:

Parameter	Rank
Temperature (°C)	Reproduction and incubation 9 °C - 12 °C Fingerlings 10 °C – 12 °C Growth 10 °C - 17 °C
Dissolved oxygen (mg/L)	The whole process: Greater than 5.0 ppm Fingerling: Greater than 7.0 mg/L Growth: Greater than 5.5 mg/L
Ammonium (mg/L NH3)	Less than 0.02 mg/L
pH	6,5 - 9,0
Hardness (mg CaC03)	Greater than 200 mg/L
Carbon Dioxide	Less than 10 mg/L

Source: INACAL, 2014

Physicochemical parameters such as temperature, dissolved oxygen and pH must be monitored and analyzed daily to always ensure water quality.

The number and location of the sampling points, as well as the periodicity, will be established according to the risks of contamination in the water inlet, as well as the size of the facilities.

Records of water quality parameters, input and output, should be kept for pond culture and ensure that they are within accepted limits.

In cage culture, bottom sediment (under the cages) should be monitored to identify macrobenthos diversity, percentage of organic matter and oxide-reduction potential, prior to the installation of the cages. When these are already operating, the recommendations of the Regional Production Directorate (DIREPRO) of your region and the National Fisheries Health Agency (SANIPES) will also be followed.

4.2 Crop management

4.2.1 Reception and management of embryonated eggs

According to the Sanitary Protocol for the disinfection of eggs for fish No. 35-2020-SANIPES/PE, the procedure for the disinfection of eggs from salmonid fish must be as follows:

- Rinse the eggs with water free of organic matter for a period of 30 to 60 seconds, removing the remains of organic material.
- Prepare the disinfectant solution, using povidone-iodine or buffered iodine and water free of organic matter. This solution should be at a concentration of not less than 100 ppm of free iodine available throughout the disinfection stage. Control the pH of the iodized solution to be kept between 6 and 8.
- Immerse the eggs in the iodized solution for 10 minutes. The ratio of volume to be used of ova with respect to iodized solution should be a maximum of 1:4.
- Rinse the eggs again with plenty of water free of organic matter after disinfection for a period of 30 to 60 seconds.
- Keep eggs disinfected in water free of organic matter during incubation and/or reincubation.
- Inactivate residues of iodized solution used in egg disinfection.

For eggs of national origin, account shall be taken of the fact that:

- The production and transfer of eggs in national territory, as well as the breeding animals that originated them, must comply with the requirements established in national regulations regarding the health certificates required for importation, except for diseases or pathogens not present in the national territory, according to the requirements of the competent national authority.
- The national producing centres, for the sale of eggs, must demonstrate that the eggs were subjected to prophylactic treatment in iodized solution, at the indicated concentration and time; within 48 hours prior to transport to the buyer's hatchery, or as determined by the national competent authority.

In the buyer's production center (final destination), the eggs must undergo prophylactic treatment in iodized solution again, prior to sowing in the corresponding facilities for their development.

For imported eggs:

- The import of trout eggs requires the Import Certificate of species in their different biological stages for aquaculture purposes, granted by PRODUCE or DIREPRO, as well as the authorization and sanitary certification of SANIPES, as well as the disinfection certificate issued by the official authority of the country of origin.
- The breeders that gave rise to the eggs to be imported must comply with the same health requirements demanded by the Competent National Authority.
- At the hatchery of destination, the eggs must be subjected to prophylactic treatment, immersed in iodized solution, at the specified concentration and time.
- Packaging and materials used in importation must be disinfected or incinerated.
- The materials used in the unpacking of the eggs and those that have been in contact with them, during their conditioning, as well as the clothing of the people who carried out the activity, must be disinfected with iodized solution.

4.2.2 Origin of fry

The fingerlings that are acquired for the cultivation center must come from hatcheries or seed production centers that comply with the sanitary provisions of SANIPES and are authorized by DIREPRO. The fry will be received in the quarantine area of the cultivation center.

If the fingerlings are produced within the same cultivation center, it must also comply with the requirements of SANIPES and DIREPRO.

For the transfer of fry, a tank or fish transport containers, equipped with an air diffuser, should be used for oxygenation and maintain the uniform temperature if the place is distant.

It is recommended that the transport be in the morning hours to avoid the increase in water temperature and cause mortality by anoxia, by the sun's radiation.

An appropriate number of fingerlings must be kept in each transfer tank to ensure animal welfare and to avoid fish mortality.

Food should not be provided between 12 hours to 24 hours before transport.

The temperature of the culture water and the transport vessel must be balanced, without causing stress or damage to the fish, prior to stocking the fry.

4.2.3 Characteristics of breeding, hatchery, and fingerling facilities

The hatchery area should be isolated from other areas and facilities and from possible contamination that may affect the development of the fish.

The incubation room must be protected from the outside, with a previous environment, where a footbath is installed for the disinfection of shoes, a handbag or sink, a changing room for clothes and storage of utensils.

The facilities must have physical and sanitary barriers, the accesses must be very well identified; Restrict and control the unauthorized entry of people and vehicles outside the cultivation center, as well as predators that may cause stress or damage to the crop.

All culture infrastructure (hatcheries, tanks and ponds) must be drained, dried and disinfected after each production cycle.

Water intake and discharge lines, walls and floors should be disinfected, keeping a record of dates and doses used.

The staff in charge of hatcheries must not have direct relationship or contact with the other facilities; or comply with preventive disinfection measures when moving from one environment to another.

4.2.4 Management of incubation and early stages

To monitor the development of eggs, incubation records should be used, including the origin of the eggs, average diameter (mm), percentage of survival at each stage. Also include the temperature record from the embryonated ova to hatching and first feeding.

The physical and chemical factors of water quality should be monitored periodically, recording the ambient and water temperature three times a day to ensure the welfare of the fish. In addition to staying within optimal ranges.

4.2.5 Management of the fattening and commercial stages

Oxygen levels must be ensured according to the stocking densities of the fry and specimens in the fattening stage, both in cages and in ponds.

Significant accumulation of organic matter should be avoided by performing periodic bottom cleanings.

Mechanical damage to the skin and excessive handling or overloading of fish should be prevented with proper handling to ensure animal welfare. In addition to not stressing the fish with sudden movements, or loud noises, prolonged exposure out of the water, among others.

Biometrics (weight and height) will be performed to maintain adequate load densities with monthly growth monitoring.

The cultivation center must have the necessary equipment and materials for an adequate and sustainable management of the crop.

The personnel in charge of the use of equipment must be trained in the handling or operation. All equipment and materials must be washed after use and stored in areas or warehouses specially

designated for them.

4.2.6 Feed handling

The balanced feed in the case of intensive and semi-intensive culture of rainbow trout, must ensure the nutrition of the fish, preserve the balance of the environment and guarantee the safety of the species for the final consumer. Feed is the main input in the production of farmed trout.

The characteristics of the food must guarantee the best quality so that it ensures the expected production results, the welfare of the specimens is maintained during their growth, and optimal and safe products are obtained.

In addition, it should be taken into account:

- Reception and storage: the annual or campaign programming of the acquisition of the balanced feed should be considered, by type of feed, taking into account that it must always be available and ensuring that the storage time does not reach its expiration date.
- When receiving the product, it will be verified if the quantity and type of food correspond to what was requested and that all packaging is in good condition, each bag must be correctly labeled, rejecting those that do not meet these conditions.
- The food warehouse is one of the most important facilities of the cultivation center, its size will be according to the need for food, it will have ventilation and sunlight will be avoided.
- It will have the parihuelas (or bases) of wood or plastic, on which it will accommodate the food bags, stacking them correctly to prevent their deterioration. The location of the bags should facilitate the constant cleaning of the environment, the presence of insects or rodents should be avoided.
- The food warehouse will have a responsible person who will keep inventories and detailed records of the entries and exits of these products.

Power: Conversion factor measurement

The supply of food is one of the most important activities, the personnel in charge must have received special training so that they know the behavior of the specimens in culture and identify their appetite, satiety or anomalous attitude of these.

The recommendations of the table provided by feed manufacturers should be followed; However, with experience it will be possible to make the necessary adjustments considering the water quality parameters.

Power registers

All movements of the food and aspects related to this input will be recorded in appropriate formats and will serve for analysis and decision making.

5. Animal welfare and health

Animal welfare and animal health practices are necessary to ensure the expected production results in trout farming. Compliance with the physical, nutritional and environmental requirements of the species will result in lower mortality, better growth and better health status; Likewise, it will avoid the use of chemical and biological products that may represent risks to public health and threaten the environment.

The producer must review the historical record and the updated list of diseases that have been identified in the cultivation center, as well as the treatments used.

It is recommended to have a sanitary program where there is diagnosis and monitoring of diseases, prevention and control actions, verification of the procedures of fish farming operations and an orderly record of all the actions carried out, which must be aligned with what is indicated by SANIPES and requirements of the destination market.

The staff of the cultivation center must be trained on contingency procedures in case of emergencies that constitute a threat to the health and welfare of the animal, such as contamination of supply water, possibility of failures in the adequate supply of food, low oxygen, among others.

The veterinary medicinal product should only be used as a treatment, under the prescription of a veterinarian with technical competence, in accordance with the provisions of current regulations and the requirements of the target market.

Inform the competent authority about any disease of mandatory notification by the OIE (World Organization for Animal Health) of national importance.

Quarantine procedures must be maintained for the introduction of trout to a given production unit, in any of its biological stages.

Use eggs and fingerlings certified by the competent national authority.

The trout population should be monitored and supervised on a regular basis to determine its correct development for classification and feeding purposes.

Stocking densities appropriate to the species, the productive stage and the cultivation techniques must be maintained. It is necessary to consider the age and size of the fish, the production capacity of the culture center, the biomass and size expected at the time of harvest.

A food that covers the nutritional requirements according to the productive stages must be supplied, using quantities appropriate to the carrying capacity of the cultivation center, to maintain good water quality.

The feeding rate should be appropriate avoiding leaving excess residue in the water.

Staff should remain in a given farming area without moving to another during the day, or consider biosecurity standards for their movement (use of boots, clothing and utensils from each area) and good aquaculture practices.

There must be a protocol for the disposal of dead or sick fish which must be disposed of in a sanitary manner. They can be cremated in a place designated for this purpose or buried deep using quicklime, to prevent the spread of diseases. It is important that the cause of death be investigated by performing necropsies of sick animals at the culture centre and sending healthy and diseased live fish separately to an aquaculture health diagnostic laboratory.

Domestic animals should not be allowed to enter and remain on the premises of the culture centre, as they can be a source of infection when introduced into ponds or water supply channels or when leaving their faeces as a safety hazard.

Sampling is important in order to identify some of the most common nutritional problems or signs of infectious diseases that fish may present.

When the presence of a disease is discovered, analysis, diagnosis and medication should be requested from professionals specialized in the area to deal with the allowed medications and the appropriate dose.

Equipment and utensils that are in contact with fish should be kept separate, recommending one for each pond, and disinfected after each use.

Ponds should be cleaned and disinfected before stocking and after harvesting trout culture, always.

All the activities of the cultivation center and the results of the evolution of the stocks in cultivation, the quality of water, consumption of inputs, among others, must be registered in special formats for each item and subsequently analyzed by the person in charge of the cultivation center.

5.1 Diseases reported in trout.

Parasites

Parasites are organisms that live on or inside another living organism, from which it obtains part or all of its nutrients, in many cases, parasites damage or cause disease to the host organism.

The main parasite in rainbow trout farming is *Ichthyophthiriosis*, which is responsible for the disease called white spot in most freshwater fish species.

The contamination of trout by bacteria depends mainly on the environment where the farming area is located, and the quality of the water used. There are certain characteristics that influence the proliferation of bacteria, such as humidity, water temperature and salinity, feed quality, harvesting methods, as well as the proximity of the cultivation center to urban areas or human settlements.

Main diseases caused by bacteria.

Furunculosis: the bacterium that causes this disease is *Aeromonas salmonicida*. The incubation period is two to four days, but in chronic cases the period can be several weeks at low temperatures. It appears between the months of July and August.

Symptoms: Sick fish have blisters on their skin, isolation from the group, loss of appetite, inflation of the intestine and small hemorrhages in the liver.

Columnar disease: It is caused by the bacterium *Flexibacter columnaris*. The more virulent form attacks the gill tissue (gall rot) and the less virulent form usually causes skin infections.

Symptoms: the first sign is usually the appearance of gray plaques in the dorsal fin area. These lesions increase in size exposing muscle tissue and become noticeable in the mouth and head regions, turning yellow and taking on a crater shape.

Enteric red mouth disease (EBR): The causative agent of this disease is the bacterium *Yersinia ruckeri*, which is transmitted from one fish to another by contact and through water.

Symptoms: Affected fish have darkening of the skin, lethargy, and loss of appetite. During the acute phase of the disease there are small hemorrhages and inflammation in the mouth, which give the general appearance of red mouth. Small hemorrhages usually occur in the belly and at the base of the fins.

Fungal Disease

The most important are represented by the genera *Saprolegnias* and *Ichthyophonus*. These organisms are responsible for fungal diseases of the skin, gills, liver, heart and other organs that become infected through the bloodstream.

Fungi can cause death in large numbers of eggs, young, fry and adults by anoxia. An easy way to control saprolegnia is to immerse sick fish in saltwater solution (0.5%) three times a week.

Main viral diseases that attack trout

Infectious pancreatic necrosis (IPN): The incubation period of the virus depends on temperature, and varies from six days at 12.5°C to several weeks at 4°C. Fish that survive infection are carriers for the rest of their lives, releasing amounts of the virus for long periods through urine, feces, semen, and eggs, causing transmission of the virus to healthy organisms or offspring.

Symptoms: affected individuals have a slow movement, swim on their sides and frequently sink to the bottom of ponds. This is a terminal sign and death occurs within a couple of hours. Another characteristic symptom of the disease is the presence of clear or milky mucus in the stomach.

Infectious hematopoietic necrosis (IHN): This is caused by a rhabdovirus called infectious hematopoietic necrosis virus (IHNV). The NHI larvae constitute the most susceptible stage; In this

regard, it is important to note that fish are more resistant to infection with age. It is transmitted from trout to trout, from parents to offspring through seminal fluids or infected eggs.

Symptoms: Affected individuals present with distention of the abdomen, darkening of the body and anemia. The kidney, spleen, liver and viscera are observed necrotic.

Viral hemorrhagic septicemia (VHS): produces high mortality rates in juvenile trout. Transmission occurs by contact from one fish to another in the water. As the water temperature increases, the losses decrease. Young fish are the most susceptible to this disease.

Symptoms: infected trout have pale gills and bleeding; the pectoral fins redden from the base. As the disease progresses, the fish turns a black color and reaches a state of acute anemia.

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Symptoms: infected trout have pale gills and bleeding; pectoral fins redden at the base. As the disease progresses, the fish turns a black color and reaches a state of acute anemia.

Prevention and treatment: the introduction of wild fish should be avoided, and health certificates of the acquired fish should be requested since, unfortunately, there is no treatment for this disease.

5.2 Disease prevention

The stress of farmed fish is the triggering factor for the generation of infectious diseases, which is why unnecessary suffering of animals must be avoided. When fish in the culture center are exposed to ongoing stress, their feed intake and growth rates may decrease. Stressed fish are also less resistant to disease, and mortality generally increases.

In that sense, the operations of the cultivation center are designed and operated with animal welfare in mind to avoid stress.

Disease prevention measures to consider:

- Disinfection of eggs at the time of reincubation.
- Handling the feed, you must ensure adequate oxygen levels, you will not feed if you have levels below 6 mg / L.
- Monitoring of water quality and physicochemical parameters.
- Dead and diseased fish should be removed from cages or ponds daily to prevent spread of pathogens.
- Acclimatization and hydration to the temperature conditions of the production center in reincubation.
- Food used with the optimal size and nutritional properties for each stage of cultivation.
- Adequate culture densities must be maintained according to the characteristics of the cages or ponds.
- The transport of fish for stocking, must maintain and ensure the proper temperature throughout the transfer. In addition to acclimatizing the water prior to planting.

5.3 Harvesting and transport

During harvesting and transport, quality control should be maintained, minimizing physical damage and contamination of the aquatic and terrestrial environment. In addition, harvested specimens must be cooled immediately after leaving the water to quickly reduce and maintain a temperature below 4.4 °C (40 °F), thus ensuring a good quality product. The ice used must be based on drinking water, suitable for human consumption, and the containers used for transport must be disinfected and be for exclusive use so as not to represent a danger of contamination.

Mixtures of ice and fish or alternating layers of ice and fish are recommended in order to avoid variations

in temperatures, with respect to what is recommended.

5.4 Environmental Management

5.4.1 General

To ensure the sustainability of trout farming, it must generate triple impact:

- Economic, the activity must be profitable.
- Environmental, the activity must be environmentally friendly.
- Social, where there is inclusion and equity in the activity.

If these variables are not met, any project will not be sustainable. It is extremely important to comply with the necessary legal and administrative requirements, such as certifications, permits, plans, manuals, protocols, etc. to ensure sustainable and long-term production.

5.4.2 Identification of residues and contaminants

There must be a very well identified solid waste management in each of the cultivation centers as it will be crucial for the safe and healthy development of the crop. The provisions of the competent authority must be complied with.

It is important to take into account everything related to the management and preservation of the area adjacent to the project, including everything related to the management of waste generated during the installation and pre-operation stage of the project, in addition to that which will be carried out in trout culture.

5.4.3 Impact on the environment

All the negative impacts detailed in the environmental management instruments must be identified and considered, so that the responsible person considers in each of the phases of the production process the measures that must be implemented to timely minimize any negative impact on the environment of the cultivation center.

Aspects related to the external impacts to which aquaculture is subjected, in addition to those of the crop, such as the pollution generated by agricultural, energy, mining, tourism, population activities, among others, must be considered.

Special consideration will be given to everything related to the storage of fuel, fuel and lubricants.

5.4.4 Risk analysis

The monitoring that has to be developed in relation to the importation of eggs is basic, considering that sanitary control measures must be carried out so that not only disinfection work is carried out on the batches that are imported, but also the sanitary effectiveness of the products that are imported is ensured, where SANIPES must guarantee the sanitary certification of the same.

Once the risk areas have been identified, the elements or areas of greatest concern should be evaluated and prioritized, such as:

- Establish the impact of risk factors on the establishment.
- Identify diseases and pathogens at risk for the species found in the establishment.
- Declaration of diseases.
- Consider the possibility of introducing diseases.
- Evaluate potential outcomes or consequences (e.g. animal death, production losses, loss of business or trade).
- Determine preventive measures that can reduce the risk and its consequences.
- Evaluate the cost versus benefits of implementing prevention strategies.

- Ensure compliance with all standards.
- Establish the objectives of the operation in the short and long term.

To assess risk, it is important to consider the different routes of disease transmission and how diseases spread. Implementing preventive measures against a specific route of transmission can help control various pathogens.

5.4.5 Risk management and communication

Risk management involves selecting and implementing preventive measures to reduce the risk of disease entry and prevent spread at the farm and off-site once they are detected. While some pathogens cannot be completely eliminated, most can be reduced. While there are measures that are low-cost, there are others that require greater investment.

In the presence of any dangerous contamination in the fish of the farmhouse, without outbreaks of disease, SANIPES will be immediately informed in order to determine the origin of the contamination and establish and apply the appropriate precautionary measures. Also, in the presence of disease outbreaks involving the fish of the farming center, so that the necessary investigations are carried out to determine the origin of the contamination, establishing and coordinating the respective safety measures.

It is important that in each of the cultivation centers there are controls for the environmental management and management of the activity. Special consideration will be given to the fauna that may be close to the cultivation center, so the most appropriate mechanisms to avoid the presence of predators should be considered, but taking into account current legislation, especially with regard to the management of endangered species that are of importance to our biodiversity.

5.4.6 Waste of human origin

For the management of municipal solid waste, current national legislation regulating the subject will be complied with. It is extremely important the proper management of wastewater that deserves special treatment in order to avoid any type of cross-contamination that may impact production or that may generate pollution to the ecosystem in which the activity takes place.

5.4.7 Effluent management

It is the responsibility of the cultivation center to carry out an adequate management of its effluents that come both from the culture ponds in all their stages (troughs, fattening growth, harvest, breeding stock) and from the cleaning of ponds, hydraulic infrastructure (intake, desander, diversion channels, among others), and, when appropriate, the cleaning of the culture cages, to minimize the impacts that may occur. Treatment systems must be in place that, in the case of YMA, must be in accordance with the DIA.

The effluents of the aquaculture activity must be independent of the domestic effluents generated by the canteen, bathrooms or other related facilities. In addition to the management of effluents, they must be monitored according to the Environmental Quality Standards (ECA) and the Maximum Permissible Limits (LMP) of water and effluent quality in force.

6. Hygiene and biosecurity

6.1 General considerations

One of the main sources of contamination is that which comes from people, equipment, materials and vehicles entering the cultivation center. Policies for entering the premises of any person, equipment and material must be defined and mandatory.

There must be foot baths (for pedestrian crossings) and foot baths (for the passage of vehicles) at the entrances, as well as disinfectants for hand washing, which must be covered, in order to avoid

degradation by light or rain, and be periodically replaced.

All areas of the cultivation center must be properly located, marked and identified, have well-equipped bathrooms with sinks, showers and dressing rooms.

The cultivation center must have an adequate supply of water for sanitary and hygiene facilities, which shall be separated from the places of water supply for cultivation. There shall be separate drainage for effluent discharges from sanitary zones and these should not flow into the sedimentation pit or in conjunction with those of production systems.

Personnel should have personal protective equipment (PPE) and appropriate equipment according to the type of work they do.

There must be a washing and disinfection area for materials for crop management such as nets, cages, buckets, brushes, hoses, among others. They will be washed and disinfected periodically.

Persons suffering from an infectious and contagious disease that can be transmitted through food (typhoid, hepatitis, tuberculosis or others), should not work with the products and / or handle them until they have recovered; In the same way if they have infected wounds or skin infections.

6.2 Storage and disposal of inputs from cultivation centers

- Fuels, lubricants, and chemicals must be stored and disposed of safely and responsibly. Paper waste and plastic must be disposed of in a sanitary and responsible manner.
- Fuels, lubricants, and chemicals must be labeled and stored in a way that prevents fires, explosions, and spills. Used lubricants and unwanted or expired chemicals must be disposed of responsibly.
- "Flammable Material" and "No Smoking" signs should be installed at fuel storage sites.
- Oil leaks from vehicles, boats and other equipment must be prevented with good maintenance.
- Oil changes should prevent spills, and used oil should be sent to recycling centers.
- Expired chemicals and trash collected after chemical spills should be confined in waterproof plastic containers, labeled, and shipped to authorized hazardous waste disposal sites.
- Chemicals such as insecticides, herbicides, algaecides, and others should be stored in safe, well-ventilated, and waterproof buildings.
- Concrete warehouses should have the floor sloped to a central collector to contain spills, and hazard signs should be placed.
- Contingency measures must be in place for the management of spills of oil, fuel, chemicals, food, fertilizers and other products.
- The equipment and supplies necessary for the management and cleanup of these spills must be available and accessible.
- Workers must be trained in the proper use of equipment and the handling of stored waste.
- Garbage, waste and other waste from cultivation centers should not be discarded on free land. This type of garbage must be burned, decomposed or placed in authorized landfills.
- Decomposition should be carried out by a procedure that does not create an odor problem or attract wild animals or insects.
- Recycling of paper and plastic garbage should be promoted, where possible, as well as batteries used in lighting fixtures.
- There should be adequate containers for this waste and establish collection routines.

6.3 Handling of veterinary products

Records on veterinary products used in farming centres should include: pond identification, diagnosis of the disease, dose, start and end date of treatment, harvest date for treated ponds, withdrawal periods for placing them on the market. They must also comply with the requirements concerning the use of permitted products laid down by the competent national authority.

It should also be noted that:

- Veterinary products must be stored in specific, closed cabinets, avoiding contamination and verifying that the indications of the labeling and/or labeling are complied with.
- Remains of unused veterinary products and their packaging must be disposed of in accordance with the requirements of the competent national authority.
- Records containing information required by applicable national law shall be available.
- All veterinary products for use in trout farming must comply with current national legislation. A list of prohibited drugs is annexed to this manual.
- The monitoring and analysis protocols against the presence of residues of chemicals, pesticides, PCBs and heavy metals, established by SANIPES, must be complied with.

7. Traceability

7.1 Log Archiving Requirements

Traceability in the rainbow trout production process must include all stages of the production chain, in such a way that it allows the product and its process to be traced through it, from its origin to the immediate destination.

Those responsible for each of these stages must establish systems and procedures to fulfil this purpose, providing the information to the competent national authorities and/or interest groups, when they request it. The generic guidelines stipulated in the FAO Principle of Product Traceability (CAC/GL 60) should be followed.

Specifically, to establish the traceability of farmed trout, the following must be recorded for each pond/cage and for each production cycle:

a. Identification number of the pond and/or cage
b. Pond area
c. Sowing date
d. Quantity of fingerlings sown
e. Source of embryonated eggs or fingerlings
f. Lime, fertilizers, disinfectants and other products used in the maintenance of ponds
g. Antibiotic and drug use
h. Manufacturer and batch number of each food used
i. Harvest date
j. Quantity harvested
k. Process plant or buyer

Trout farming centers must keep written records of the required data in notebooks or files, which allow the product and its process to be traced through the entire production chain from its origin to the immediate destination, ensuring its traceability. It is recommended that the information produced can be transferred to a computerized archive, with the original files saved to allow verification of the electronic record.

The trout must be identified at the batch level, throughout the growth period, differentiating from the specimens or lots that have received some treatment for which there is or is not a suppression period.

General considerations for sustainable trout farming according to the GAP manual:

- The facilities of the production unit, primary processing or smaller vessels,
- Water and ice supply,
- Aquaculture food and health,
- Cleaning and disinfection procedures,
- The records at each stage,
- Waste disposal,
- The management of chemical substances,
- Pest control,
- Training and hygiene and health procedures of personnel,
- The handling of the harvested product and traceability.

Annex

Drugs and drug families that are not approved by the FDA and should not be used for food fish, unless there is a list or approval rating for them:

- Chloramphenicol
- Nitrofurans
- Fluoroquinolones and quinolones
- Malachite green
- Steroid hormones
- Clenbuterol
- Diethylstilbestrol (DES)
- Dimetridazole, lpronidazole and other Nitroimidazoles
- Furazolidone and nitrofurazone
- Fluoroquinolones
- Glycopeptides

Pharmacological substances banned by the European Union and maximum pesticide residue levels (MRLs) cannot be established:

- Aristolochia spp. and its formulations
- Chloramphenicol
- Chloroform
- Chlorpromazine
- Colchicine
- Dapsone
- Dimetridazole
- Metronidazole
- Nitrofurans (including furazole idona)
- Ronidazole

Antimicrobials designated as critically important for human medicine by the World Health Organization (WHO):

- Cephalosporins (third, fourth and fifth generation)
- Glycopeptides
- Macrolides and ketolides
- Polymyxins
- Quinolones
- Aminoglycosides, Ansamycins
- Carbapenems and other penemics.
- Glycylcyclines

- Lipopeptides, Monobactamics, Oxazolidinones
- Penicillins (aminopenicillins with B-lactamase inhibitors) derived from phosphoric acid
- Drugs to treat only tuberculosis/mycobacterial diseases
- Penicillins (antipseudomonals) and Penicillins (aminopenicillins)

Ficha Técnica Ambiental para beneficiarios de la categoría AREL[149]

1. DATOS GENERALES
Nombre del solicitante:
……..
N° DNI/ CE/ RUC: ..... Teléfono: …….....
Domicilio:
…..……...
N° de referencia para notificación
….....
Comunidad: ..... Caserío: .....
Distrito: ..... Provincia: ..... Departamento: .....

2. TIPO DE DERECHO Y LOCALIZACIÓN DEL CENTRO DE PRODUCCIÓN ACUÍCOLA
Concesión (.....)
Autorización (.....)
2.1. Ubicación política del Centro de Producción Acuícola (CPA):
Sector/Localidad/Comunidad/Caserío/ Distrito/ Provincia/ Departamento (indicar una referencia).
….....
.....
Distrito/Provincia/Departamento (indicar una referencia):
.....
.....
2.2. Descripción del entorno de la instalación acuícola
.....
.....….....

3. DESCRIPCIÓN DEL PROYECTO ACUÍCOLA
3.1. Especie
Trucha (*Oncorhynchus mykiss*) (...)
Cultivo más de una especie (...) Mencionar cual……
3.2. Área total del proyecto (En hectáreas o metros cuadrados):
.....
.....
3.3. Área productiva de espejo de agua utilizado para la producción (hectáreas, metros cuadrados):
.....
3.4. Capacidad de producción proyectada: …..... TM / año (Hasta 3.5 toneladas brutas por año).

4. DESCRIPCIÓN DE LA INFRAESTRUCTURA ACUÍCOLA (Centro de Producción Acuícola - CPA)2
4.1. Tipo de infraestructura:
Estanques de tierra (....)
Estanques de cemento (....)
Jaulas (....)
Otros (....) Especificar……..……..
N° de estanques/jaulas y dimensiones de c/u:
.....
.....
4.2. Tratamiento de los estanques:
Secado al sol (....)
Fertilización: Orgánica (...) Inorgánica (....)
Cantidad / clase:
.....

[149] Esta Ficha Técnica Ambiental, que deberá ser completada por todos los beneficiarios de la categoría AREL, es una adaptación de la Ficha Técnica Ambiental elaborada por la Dirección General de Asuntos Ambientales Pesqueros y Acuícolas del Ministerio de Producción que fue publicado como proyecto de Resolución Ministerial N°007-2022-PRODUCE en enero 2022. Puede ser revisada en https://www.gob.pe/institucion/produce/normas-legales/2670203-007-2022-produce.

4.3. Descripción del área o lugar de almacenamiento del alimento balanceado:
……
……
4.4. Detallar otro tipo de infraestructura, en caso exista (comedor, almacén de insumos o fertilizantes, etc.).
.....
.....

5. DESCRIPCIÓN DE LA ESPECIE A CULTIVAR:
5.1. Abastecimiento de semillas / alevinos:
Medio Natural (...)
Laboratorio (...)
Importación (...)
5.2. Razón Social, N° de Resolución y ubicación del Centro (s) de producción de semillas que abastecerá de semillas / alevinos:
…..
.....
Cantidad a adquirir: …….....

6. DESCRIPCIÓN DEL CULTIVO:
6.1. Densidad de siembra (N° de ejemplares / m2 o m3): …….....……
6.2. % Mortalidad estimada durante la campaña: ...…....%
6.3. Tiempo de campaña (en el que alcanza la talla de cosecha: .....meses
Peso promedio de cosecha ……gr. Talla promedio de cosecha: .....……cm
6.4. Alimentación: Balanceado (...)
Tipo: .....
Total alimento consumido por campaña . .....TM
6.5. Indicar el tratamiento y disposición de la mortalidad: ……...
……
6.6. Especificar el tipo de residuos sólidos que genera la actividad:
Vísceras (...)
Fouling (...)
Otros (especificar) …….
Cantidad: ..... TM / campaña
6.7. Especificar la disposición (lugar), recipientes u almacén temporal y tiempo aproximado de permanencia de los siguientes ítems generados por la actividad (describir):

Residuos Sólidos:
- Orgánicos (vísceras, fouling, otros): ……..…….....
- Metabólicos y excretas, lodos, sedimentos: ……..…….....
- Inorgánicos (plásticos, envases, otros): ……..…….....
- Insumos (redes, boyas, cabos y otros): ……..…….....

Efluentes:
- sanitarios (SSHH): ……..…….....
…….....
- de los estanques: ……..…….....
……
- del lavado de los sistemas de cultivo (jaulas): ……..…….....
…….....

7. DESCRIPCIÓN DEL RECURSO HÍDRICO.
7.1. Especificar nombre, origen del recurso hídrico y cuenca o micro cuenca hidrográfica a la que pertenece y características fisicoquímicas, biológicas y microbiológicas del recurso hídrico:
…….....
.....
.....
7.2. Describir la infraestructura hidráulica implementada para la captación y/o derivación del recurso hídrico
……
……

……
……
7.3. Indicar el caudal de ingreso del agua (estanqueria): …..... l / s
7.4. Especificar el tipo o sistemas de tratamiento del agua:
- Afluente (antes del ingreso del centro acuícola) …….....
- Efluente (a la salida del centro acuícola) …….....
7.5. Indicar si el cultivo acuícola genera efluentes: SI (...) NO (...)
7.6. Si genera efluente precisar el lugar de vertimiento y el uso que se dará al mismo: ……
……
.....
Indicar el caudal de salida ……..……l/s

8. DESCRIPCIÓN DEL ENTORNO DEL PROYECTO

FACTORES AMBIENTALES		DESCRIPCIÓN
FÍSICOS	AGUA	
	SUELO	
	AIRE	
BIOLÓGICO	FLORA	
	FAUNA	
SOCIOECONÓMICO	SOCIAL	
	ECONÓMICO	

8.1. Describir qué otras actividades económicas existen en el entorno, especificando la ubicación: .....
.....
.....
8.2. Establecer si la otras actividades económicas impactan sobre el proyecto acuícola: ……
……
……...
8.3. Existencia de fuentes de contaminación:
…….....
.....
.....

9. IMPACTOS AMBIENTALES
9.1. Determinar los posibles impactos ambientales:
……
……..……..
……..……
…..
9.2 Acciones para mitigar el impacto ambiental:
……
……..……
……...

10. MEDIDAS DE MANEJO AMBIENTAL RELACIONADAS A LOS IMPACTOS AMBIENTALES QUE PUDIERAN GENERARSE:

- Detallar las medidas de manejo ambiental, incluyendo las de prevención, control, manejo de los Residuos Sólidos y Efluentes, medidas de contingencias y de cierre. Incluir un cronograma y presupuesto para la implementación de estas medidas.

Nº	Impacto Ambiental	Medidas de manejo ambiental

- Especificar como se implementará y dará seguimiento a la implementación de las medidas de manejo ambiental mencionadas.

.....
.....
.....
.....
.....

BAJO JURAMENTO, DECLARO QUE, SOBRE LA BASE DE LOS ANTECEDENTES PRESENTADOS, ME COMPROMETO A CUMPLIR CON LO REGISTRADO EN ESTE FORMULARIO Y LA NORMATIVA AMBIENTAL Y SECTORIAL VIGENTE APLICABLE A LA EJECUCIÓN DEL PROYECTO O ACTIVIDAD.

Firma: .....

D.N.I./ C.E. N°: .... de …..... de 20 ……

ANEXOS:

1. Croquis de ubicación del área de crianza y/o cultivo en relación a su entorno.
2. Croquis de la distribución de la infraestructura acuícola e instalaciones sanitarias.
3. Declaración jurada u otro documento que acredite el derecho de propiedad o posesión del predio.

INSTRUCCIONES:

Los casilleros, deben llenarse o marcarse con un aspa o consignar un dato numérico según el caso.
Adjuntar toda la información solicitada en el anexo.
Adjuntar fotografías de la ubicación de disposición de los residuos sólidos.

Annex 4. Gender Action Plan

The Gender Action Plan (after this, GAP) operationalizes the gender analysis results and recommendations. It describes gender-specific elements that were incorporated in the project design and should be monitored during the execution of the project. The implementation of the GAP guarantees the effective integration of a gender perspective in the project, thus maximizing its climate and development benefits. GAP actions and activities promote gender-inclusion opportunities, identifies and incentivizes stakeholders to become drivers of change and promote positive gender dynamics to manage and mitigate possible adverse climate risks during the duration of the program.

The GAP complies with the Environmental and Social Policies of the Adaptation Fund and the CAF Strategy for Gender Equality 2022–2026. It is aligned with the logical framework and the outputs of each of the project components and complements its Environmental and Social Management Plan. In addition to the specific activities and measures provided for in the GAP, the project team will document how project activities' impact, either positively or negatively, gender relations. Furthermore, it establishes gender-specific results-based monitoring and proactively contributes to the collection of sex-disaggregated data. Project reports, training materials, publications, and products will use gender-sensitive language.

The GAP's implementation will be the responsibility of the project's Environmental and Social Specialist (after this, ESS). This individual will be required a gender certification to ensure that he/she is appropriately versed in gender-specific development and climate-resilient challenges. The ESS, who is part of the project team, will be based in Puno but will regularly travel to Lima, Huanuco and Junin. Reviewing or adapting the GAP during implementation may be necessary.

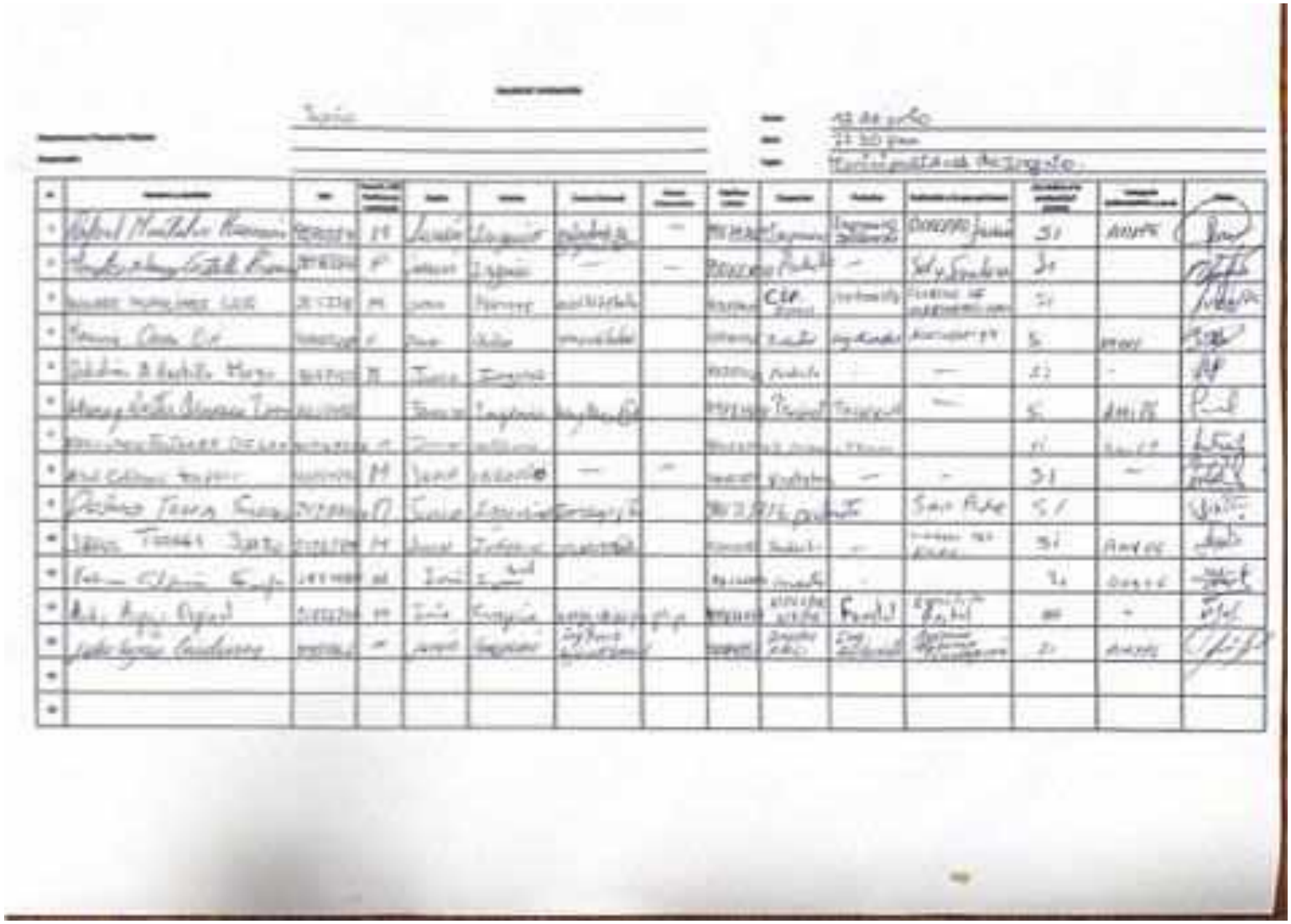
Table 1 below describes all gender-relevant actions which will have to be monitored during project implementation. It further identifies targets, timelines and identifies resources that have been allocated for this purpose.

No.	Actions and measures	GAP Indicator	Base line	Target	Timeline	Responsibility	Budget	Comments
Cross-cutting								
1	Promote the active and effective participation of women in informative and deliberative community meetings and in training, through specificoutreach measures	% participation of women in informativeand deliberative meetings and workshops/training	<10%	40%	Project implementation	ESS monitoring	Earmarked activities A5, A6, A10, A13,A15, A20, A33, A40, A43, A44, A48	Coordinate with local women's organizations to take advantage of existing networks to ensure that information regarding community meetings and workshops/training reaches women and the greatest number of women are reached. Schedule and locate meetings and training activities considering women's work schedules and women's capacity to access the locations of the meetings, to ensure maximum participation
2	Support the constitution of implementing teams with gender parity to improve gender balance within the aquaculture sector.	% women in implementation teams	0	2/3 of theimplementation teams Have gender parity	Project implementation	Project Steering Committee, personnel recruiters.	No specificbudget earmarked	
COMPONENT 1: Governance, knowledge management and access to finance for sustainable and climate change resilient aquaculture are strengthened. GAP Objective: Institutional strengthening programs, governance and financial instruments are developed with a gender perspective. The Regional Observatories of Resilient Aquaculture incorporate gender awareness and perspective into their design and operation.								
3	Gender perspective is applied in thestrengthening and developing of public policy instruments. Governance mechanisms include the participation of women	Policy documents	0	5 policy instruments	Project implementation	Professional services – Company Firm ESS monitoring	10% of the cost of activities A1, A2, A3	
4	Each institutional strengthening program includes a training moduleon gender equality, sensitivity, and perspective, with an emphasis on gender-sex diversity and issues affecting the LGBTIQ+ community. All training modules, irrespective oftheir content, are developed with a gender perspective	Training programs' materials and pedagogical tools	0	+80 publicsector operatorsfrom the project's Intervention regions receivetraining	Project implementation	Professional services – Company Firm ESS monitoring	33% of thebudgeted costs for activity A4 applies to the gender modele ($15.000)	Open to Regional Government, municipal officials, and public servants ingeneral.

No.	Actions and measures	GAP Indicator	Base line	Target	Timeline	Responsibility	Budget	Comments
5	Capacity Building Workshop on gender equality, sensitivity and perspective, with an emphasis ongender-sex diversity and issues affecting the LGBTIQ+ community.	# of trainings	0	+100 publicsector operators from the project's interventi on regions attend workshop	At the beginnin gof the impleme ntation and at mid-term	Professional services – Company Firm ESS monitoring	100% of the budgeted cost for A6 ($28000)	Targeted to RegionalGovernment, municipal officials, and public servants ingeneral. Participants: 6 trainings x 2 days x 30persons per training Trainers: 6 trainings days + 12 travel days + transport for 2 trainers (trainer fee, per diem, materials,transport)
6	Gender-focused workshop for theRORA to: 1. Develop and establish institutionalgender policies and protocols for the outreach of women producers and workers to promote and guarantee their access to programs and training; 2. Identify indicators of women's participation in aquaculture activities; 3. Encourage research on how to increase the role and added value ofthe participation of women in good practices of resilient aquaculture. 4. Include in their inter-institutional agreements the requirement to generate research about women in aquaculture and risks associated with climate change.	Institutional policy document ofeach Observator y. Outreach protocol forwomen aquacultur e producers and workers. 1 gender-specific peer-reviewed publication.	0	+40 professors, practitioners and other membersof academiaparticipating in the RORA	Project impleme ntation	Professional services – Company Firm ESS monitoring	100% of the budgetedcost for activity A13 ($15000)	Participants: 3 workshops x 1 day x20 persons per training. Trainers: 3 training days + 6 travel days + transport for 1 trainer(trainer fee, per diem,materials, transport)
7	Training in gender equality and women empowerment for the project's beneficiaries, including exercising labor rights and undertaking the formalization processof the aquaculture productive operation.	# of trainings	0	3 trainings	Project implement ation	Professional services - Company Firm ESS monitoring	100% of the budgeted cost for activity A10 ($16500)	- Open to informal producers in the aquaculture sector Participants: 3 trainings x 2 days x 30persons per training - Trainers: 6 trainings days + 12 travel days +transport for 2 trainers (trainer fee,per diem, materials, transport)
8	Development of decentralized trainingdelivery centers in locations where women can attend/take them.	# of training delivery centers	0	1 trainingdelivery center in Maraypat a, Huánuco. 1 trainingdelivery center in Puno 1 trainingdelivery center in Ingenio,	Project impleme ntation	ESS	100% of the budgetedcost for activity A9($15000)	

No.	Actions and measures	GAP Indicator	Base line	Target	Timeline	Responsibility	Budget	Comments
				Junin				
9	Financial instruments address femaleentrepreneurs' hardships.	# financial instrument swith gender perspectiv e	0	1 financialinstrumen t with gender perspective	Project impleme ntation	Professional services – Company Firm ESS monitoring	10% of thebudgeted costs for activity A15 ($7500)	
Component 2: Innovation and technology transfer mechanisms are improved and/or implemented to promote resilient aquaculture activity in Huanuco, Junin and Puno, Peru.								
GAP Objective: Access of women producers to infrastructure and technological innovation.								
10	Cross-cutting: Beneficiary selection criteria favors women producers in both categories (AREL and AMYPE).							
Component 3: Value and production chains of resilient aquaculture activities will help diversify aquaculture producers' livelihoods and improve their food security. GAP Objective: Women producers are more competitive and resilient to climate change.								
11	Implementation of certifications witha gender focus for primary processingplants.	# of certifications with a gender focus	0	3 certifications 6 businessplans withgender considerations and differentiated impact	Project impleme ntation	Professional services – Company Firm ESS monitoring	100% of the budgetedcost for activity A9($10200)	
12	Business plans are prepared with a gender perspective, considering the gender impact of activities related torainbow trout farming.	Business plan documents	0		Project impleme ntation	Professional services – Company Firm ESS monitoring	Earmarkedfor activities A42, A43, A44	

Annex 4. Minutes of Attendance at Consultative Workshops



FORMATO 01

Dirección General de Acuicultura

SERVICIO DE EXTENSIONISMO ACUÍCOLA 2023

ACCIÓN DE CAPACITACIÓN - ASISTENTES

Lugar (Prov./Distr./Centro Poblado, caserío u otros):..

Fecha:..............................

	Entidades participantes	Componente/tema tratado
1		
2		
3		
4		

N°	Apellidos y Nombres	DNI	Edad	Género		Pueblos originarios			Discapacidad		Firma
				M	F	Andino	Amazónico	Afroperuano	Sí	No	
1	Inocente Granizo Huaman	22660077	55	x		x				x	
2	Eduardo Nieves Alarcón	41695500	39	x		x				x	
3	NIEVES GRANIZO Estefani	72161866	23	x		X				x	
4	NIEVES ALARCON Miller	22666366	48	x		X				x	
5	Gonzalo Granizo Falcón	22649872	46	x		X				x	
6	Inocente Falcón Joel	48577743	28	x		X				x	
7	Placido Chamorro Villegas	80950051	48		F	X					
8	Emeterio Elías P.	22649833	54	x		X					
9	Victor Manuel León	80381441	45	x		X					
10	MARiluz Rodrig	22527648	45		X	X					
11	Dilmer Estanislao	46504363	52	x		X					
12	GUILLORA ESPINOZA T	22660028	55	x		X				x	
13	DINA LIBERATO Carmen	43109284	38		x	x				x	
14	Aldava Espinoza Yeny	47043960	32		X	X				x	
15	Liz Inocente Granizo	75972752	27		X	X				X	
16	Yessica Aguirre Arandа	72589615	22		X	X				X	
17	Richar Blanco Alvares	46846812	30	X		X				X	
18	Josefina Medrano Villanueva	42890716	37		X	X				X	

Extensionista Acuícola

Autoridad: GONZALO CARHUARICRA

DNI: 22674872

ALCALDE DE MARAYPATA

Ministerio de la Producción

Dirección General de Acuicultura

FORMATO 01

SERVICIO DE EXTENSIONISMO ACUÍCOLA 2023

ACCIÓN DE CAPACITACIÓN - ASISTENTES

Lugar (Prov./Distr./Centro Poblado, caserío u otros): ....

Fecha: ....

	Entidades participantes	Componente/tema tratado
1		
2		
3		
4		

N°	Apellidos y Nombres	DNI	Edad	Género		Pueblos originarios			Discapacidad		Firma
				M	F	Andino	Amazónico	Afroperuano	Sí	No	
1	Cesar Inocente Gonzalo	41823907	39	X	39	X				X	[illegible]
2	[illegible] Inocente Hector	71317739	27	X		X				X	[illegible]
3	Honorio Inocente Castañeda	46772004	30	X		X				X	[illegible]
4	Medrano Villanuevo Mario	41145643	40	X		X				X	[illegible]
5	Tomas Inocente Aldana	41615871	41	X		X				X	[illegible]
6	Gilder Granizo Sernda	41665165	45	X		X				X	[illegible]
7	Domingo Espinoza Segura	22665304	50	X		X				X	[illegible]
8	Carhuaricra Aldair Josias	40215082	44	X		X				X	[illegible]
9	Marcos Gonzales Eduardo	76208462	25	X		X				X	[illegible]
10	Carhuaricra Palacios Rosmel	71304787	22	X		X				X	[illegible]
11	Durand Inocente Anibal	76088410	26	X		X				X	[illegible]
12	DINA LIBERATO CARMIN	43109284	33		X	X				X	[illegible]
13	YENY Aldana Espinoza	47045460	32		X	X				X	[illegible]
14	GUILLERMO ESPINOZA I	22662012	55	X		X				X	[illegible]
15	Dilmer Glacio Lozano	76504525	52	X		X				X	[illegible]
16	MARILUZ Rodriguez	22627698	45		X	X				X	[illegible]
17	Ureta Manuel Lorenzo	9038414	45	X		X				X	[illegible]
18	Inocente Castañeda Robert	44037342	36	X		X				X	[illegible]

Extensionista Acuícola

Autoridad: GONZALO CARHUARICRA

DNI: 22674872

ALCALDE DE

PERÚ | Ministerio de la Producción

Dirección General de Acuicultura

FORMATO 01

SERVICIO DE EXTENSIONISMO ACUÍCOLA 2023

ACCIÓN DE CAPACITACIÓN - ASISTENTES

Lugar (Prov./Distr./Centro Poblado, caserío u otros): ______

Fecha: ______

	Entidades participantes	Componente/tema tratado
1		
2		
3		
4		

N°	Apellidos y Nombres	DNI	Edad	Género M	Género F	Pueblos originarios Andino	Pueblos originarios Amazónico	Pueblos originarios Afroperuano	Discapacidad Sí	Discapacidad No	Firma
1	Plocido chumu Huyhua	8035005	48		F					X	
2	Emeterio Elias R	22648833		X							
3	Eduardo Nieves Alarcón	41695501		X							
4	NIEVES GRANIZO Eulogio	72161866		X							
5	NIEVES ALARCÓN Miller	22560266		X							
6	Gonzalo Carhuaricra Eloín	22674872		X							
7	Humberto Inocente	22660078		X							
8	Nicanor Cantera	2260516		X							
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											

Extensionista Acuícola

Autoridad: GONZALO CARHUARICRA

DNI: 22674872

ALCALDE DE MARAMBATA

Puno | 20 de junio
11:30 a.m.

#	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	Ericka [illegible] Cruz	[illegible]	F	Puno	Chucuito	–	–	[illegible]	[illegible]	–	–	Sí		[illegible]
2	Silvia [illegible]	[illegible]	F	Puno	Pomata	–	–	[illegible]	[illegible]	–	–	Sí		[illegible]
3	[illegible] Quispe Torres	[illegible]	F	Puno	Pomata	–	–	[illegible]	[illegible]	–	–	Sí		[illegible]
4	Nicolasa [illegible]	[illegible]	F	Puno	Pomata	–	–	[illegible]	[illegible]	–	–	Sí		[illegible]
5	Sonia [illegible]	[illegible]	F	Puno	Juli	–	–	[illegible]	[illegible]	–	–	Sí		[illegible]
6	[illegible] Quispe [illegible]	[illegible]	F	Puno	Chucuito	–	–	[illegible]	[illegible]	[illegible]	–	Sí	Aimara	[illegible]
7	[illegible] Torres Cruz	[illegible]	F	Puno	Chucuito	[illegible]	–	[illegible]	[illegible]	–	–	Sí		[illegible]
8	[illegible] Chura Pando	[illegible]	F	Puno	Chucuito	[illegible]	–	[illegible]	[illegible]	[illegible]	–	Sí		[illegible]
9	[illegible] Condori	[illegible]	F	Puno	Juli	–	–	–	[illegible]	–	–	Sí		[illegible]
10	Margaret Condori Zapata	[illegible]	F	Puno	Pomata	–	–	[illegible]	[illegible]	–	–	Sí		[illegible]
11	[illegible]	[illegible]	F	Puno	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	Sí	[illegible]	[illegible]
12	Sonia Quispe [illegible]	[illegible]	F	Puno	Pomata	[illegible]	–	[illegible]	[illegible]	–	–	Sí		[illegible]
13	Angelica Condori Cruz	[illegible]	F	Puno	[illegible]	–	–	[illegible]	[illegible]	–	–	Sí		[illegible]
14	[illegible]	[illegible]	F	[illegible]	[illegible]	[illegible]	–	[illegible]	[illegible]	[illegible]	[illegible]	Sí	[illegible]	[illegible]
15	[illegible]	[illegible]	F	Puno	Pomata	–	–	[illegible]	–	–	–			[illegible]
16	[illegible]	[illegible]	F	Puno	Pomata	–	–	[illegible]	[illegible]	–	–	Sí		[illegible]
17	[illegible]	[illegible]	F	Puno	[illegible]	–	–	[illegible]	[illegible]	[illegible]	[illegible]	Sí		[illegible]
18	[illegible]	[illegible]	F	Puno	Puno	–	–	[illegible]	[illegible]	[illegible]	–	Sí		[illegible]
19	[illegible] Cruz [illegible]	[illegible]	M	Puno	[illegible]	–	–	[illegible]	[illegible]	–	–	Sí	Aimara	[illegible]
20	[illegible]	[illegible]	M	Puno	Molino	[illegible]	–	[illegible]	[illegible]	–	–	Sí	Aimara	[illegible]

TALLER DE VALIDACIÓN

Departamento / Provincia / Distrito: Puno.

Responsable:

Fecha: 20 de Junio.

Hora: 11:30 a.m.

Lugar:

N°	Nombres y Apellidos	DNI	Sexo (F / M)	Región	Distrito	Correo Personal	Correo Corporativo	Teléfono celular	Ocupación	Profesión	Institución a la que pertenece	¿Ha recibido …?	Categoría	Firma
1	Milton Cueva Castillo	44337850	M	Puno	Pomata	[illegible]	[illegible]	[illegible]	Acuicultor	Acuicultor		Si		[firma]
2	Yohanny Choque Quispe	80068309	M	Puno	Pomata	Yohannychoque@g.		[illegible]	Acuicultor	Técnico	Truchas	SI	Prod.	[firma]
3	Efrain Olivera Aguilar	[illegible]	M	Puno	Puno	efrainaguilar@hot.		[illegible]	Asesor	Ing. Pesquero	Nacional	NO	Prod.	[firma]
4	Dennis Lupaca Luque	[illegible]	M	Puno	Pomata	[illegible]		[illegible]	[illegible]	[illegible]		Si		[firma]
5	Héctor Ginorga Mamani	[illegible]	M	Puno	Juli	[illegible]		[illegible]	Acuicultor	[illegible]		Si		[firma]
6	René Churo Cruz	01322056	M	P	P	ychuro@…	—	[illegible]	Biólogo		IMARPE	NO	—	[firma]
7	Dante Luque Barreda	[illegible]	M	Puno	Juli	[illegible]	[illegible]	[illegible]	[illegible]	Biólogo	Acuicultores SAC	SI	Ampe	[firma]
8	[illegible] Condori Pilco	[illegible]	M	Puno	Puno	[illegible]	[illegible]	[illegible]	Ing. Pesq.	Ing. Pesq.	Sanipes	NO	—	[firma]
9	Humberto Pizarro Mamani	[illegible]	M	Puno	Puno	[illegible]	—	[illegible]	Ing. Pesquero	Ing. Pesquero	Sanipes	NO		[firma]
10	Bautista Cabana Catacata	[illegible]	M	Puno	Puno	[illegible]	—	[illegible]	Téc.	Téc. A.	Foncodes	SI	Ampe	[firma]
11	Mateo Jose Tirado Quilla	[illegible]	M	Puno	Puno	[illegible]	—	[illegible]	Biólogo	Biólogo	Foncodes	—	—	[firma]
12	[illegible] Quispe Vicente	[illegible]	M	Puno	Puno	[illegible]	[illegible]	[illegible]	Biólogo	Biólogo	Puno	NO	—	[firma]
13	Mario D. Medina Aguilar	[illegible]	M	Puno	Puno	[illegible]	—	[illegible]	Biólogo	Biólogo	Produce	NO	—	[firma]
14	Mamani Chalco José	[illegible]	M	Juli	Juli	[illegible]	-	[illegible]	[illegible]	-	Mypel	[illegible]	—	[firma]
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[illegible]

[illegible] Puno

[illegible]

[illegible] 20 de Junio

[illegible] 11:30 am

[illegible]

N°	[illegible]	DNI	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Firma
1	Leoncio Quispe S[illegible]	[illegible]	M	Puno	Pomata			[illegible]	Acuicultor	—	EN PO Qunta, Casa blanca		AMYPE	[firma]
2	Juan Carlos Ibañez Villegas	[illegible]	M	Puno	Pomata	[illegible]		[illegible]	[illegible]		Empresa [illegible] AQUA TROUT	PERÚ E.R.L	AMYPE	[firma]
3	guido Amaro [illegible]	[illegible]	M	puno	Juli	[illegible]		[illegible]	[illegible]		continental trout perú E.I.R.L.		AMYPE	[firma]
4	Henry Maquera M	46108374	M	Puno	Pomata	henrymaquera17@gmail.com		920179082		Acuicultor	Titikaka Trout Perú SCRL		AMYPE	[firma]
5	Lisbeth Ramos	7148826	F	Puno	Capachica			948233614		Acuicultor			AMPE	[firma]
6	Veronica Mamani Marquez	[illegible]	F	Puno	Capachica			946693569		Acuicultor			AMYPE	[firma]
7	Aydee Quispe Meneses	[illegible]	F	Puno	Capachica	[illegible]		976532614		Acuicultor			AMPE	[firma]
8	Raul Chambi Paredes	[illegible]	M	Puno	Pomata	[illegible]		935030389		Acuicultor			AMYPE	[firma]
9	Ignacio Quispe [illegible]	[illegible]	[illegible]	puno	pomata			925431702		Acuicultor			AmyPE	[firma]
10	Humberto Arana Roza	[illegible]		PUNO	Pomata			921713177		Acuicultor	EP. ARANA		AM.PE	[firma]
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TALLER DE VALIDACIÓN

Departamento / Provincia / Distrito: Puno

Responsable:

Fecha: 20 de junio

Hora: 11:30 am

Lugar:

N°	Nombres y Apellidos	DNI	Sexo (F / M / Prefiero no contestar)	Región	Distrito	Correo Personal	Correo Corporativo	Teléfono Celular	Ocupación	Profesión	Institución a la que pertenece	¿Se dedica a la producción? (SI/NO)	Categoría (AREL/AMYPE u otro)	Firma
1	Oscar Cutipa Huanca	42797408	M	puno	Juli	oscarcutipahuanca@yahoo.com		930331930	Acuicultor		Feprontidro	si	AMYPE	
2	Daniel David Nina Ichuta	01843557	M	puno	Juli	pescadería el gemaslach	—	930344807	"		"	"	"	
3	Edwin Montero Choque	01339159	M	puno	yunguyo	edwin montero	—	916857524	"	—	—	"	AREL	
4	JORGE MONTERO CHOQUE	44960997	M	PUNO	YUNGUYO			922513609	"				AREL	
5	Gladys Mamani Maquera	40525507	F	PUNO	Molino	—	—	95140635 80	"		Productor	Si	AMIPE	
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TALLER DE VALIDACIÓN

Departamento / Provincia / Distrito: Puno

Responsable:

Fecha: 20 de junio

Hora: 11:30 am.

Lugar:

N°	Nombres y Apellidos	DNI	Sexo (F / M / Prefiero no contestar)	Región	Distrito	Correo Personal	Correo Corporativo	Telefono Celular	Ocupacion	Profesion	Institución a la que pertenece	¿Se dedica a la producción? (SI/NO)	Categoría (AREL/AMYPE u otro)	Firma
1	Hipolito Malcondo H.	[illegible]	M	Puno	Puno	[illegible]		95170 5224	Biologo	Direct Acuicultor	DIREPRO	NO		[signature]
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TALLER DE VALIDACIÓN

Departamento / Provincia / Distrito: Puno - Juli.

Responsable:

Fecha: 20 de junio.

Hora: 9:30 am.

Lugar:

N°	Nombres y Apellidos	DNI	Sexo (F / M / Prefiero no contestar)	Región	Distrito	Correo Personal	Correo Corporativo	Teléfono Celular	Ocupación	Profesión	Institución a la que pertenece	¿Se dedica a la producción? (SI/NO)	Categoría (ARCL/AMYPE u otro)	Firma
1	Raúl Rojas Vargas	01322150	M	Puno	Puno	raulrojas19@gmail.com		951538040	Sub gerente gestión amb.	Ing. Minero.	GORE PUNO.	NO	—	
2	Edwin Orna Rivas	29410762	M	Puno	Puno	eornar@gmail.com		951638692	docente	Ing. Pesquero Docente	UNA PUNO.	SÍ	Investigador	
3	Juan Alfredo Loza Calizaya	01223288	M	Puno	puno.	pomaloza@hotmail.		951634822	Sub gerente recursos nat.	veterinario	GORE PUNO.	NO	—	
4	Fernando Zúñiga Yaquetto	29481451	M	Puno	Puno	fzuniga@itp.org.pe		951670678	Ingeniero Pesquero	Ingeniero	CITE acuícola	—	—	
5	Cenaida Ramos Poma	42271242	F	Puno	Puno	cenaida@gmail.		988872925	Esp. en Calidad de [illegible]	Ing. Químico	AAA Titicaca / ALA Ilave	No	—	
6	Hipolito Mollocondo H.	01221602	M.	Puno	Puno	acuicultura puno@yahoo.es		951705624	acuicultura	biólogo	DIREPRO	No	-	
7	Ricardo Mamani Portillo	01264214	M	Puno	Puno	[illegible] @gmail.com		950014243	Docente	Biólogo	IESTP JULI	NO	—	
8	Hugo Quiño Olaguivam	01208134	M	Puno	Juli	hugo[illegible]@gmail.com	-	963964545	Docente	Biólogo	IESTP Juli	N.	-	
9	Militon Huarcsi Arizola	01232546	M	Puno	Juli	[illegible]		953771737	Docente	contador	IESTP Juli	NO	-	
10	Gladys M. Ramos Ordóñez	02382187		Puno	Juli	[illegible]		951503201		Docente	IESTP Juli	NO	-	
11	Hugo Mayta Perez.	01341101	M -	Puno	Juli.	humaype@gmail		998775500	I.U.A.	Ing. U.A.	IESTP - Juli	NO	—	
12	Veronica Musa	22595301	F	Argentina	Salta	veronica@cga-consultora.com		+54 413 8567	Docente Abogada	Abogada	CGA	NO	-	
13	Felix David Cáceres Rodriguez	29700170	M	Puno	Juli	fedacaro@gmail.com		951924629	Docente Ing. Pesq.	Ing. Pesq.	IESTP - Juli	No	—	
14	Milton Noé Tirona Quispe	41168052	M	Puno	Puno	[illegible]@hotm.		990543343	Biólogo FONDEPES	Biólogo	FONDEPES	NO	-	
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ACTA DE PARTICIPACIÓN

TALLER DE VALIDACIÓN

Siendo las 2:30pm horas, del día 13 de junio de 2023 en la localidad Ingenio en la región Junín, se ha realizado el Taller de validación del Proyecto *Implementación de tecnologías de protección para la resiliencia de la actividad acuícola en las regiones de Huánuco, Junín y Puno, para la seguridad alimentaria ante eventos extremos asociados al cambio climático* que se prepara para su presentación al Fondo de Adaptación.

A partir de la presentación de la propuesta del Proyecto, sus componentes y actividades, discusión grupal y plenaria, se tienen las siguientes conclusiones:

1. Propuestas de mejora para la implementación del Proyecto

Los Participantes están de acuerdo con las actividades propuestas por el proyecto.

Se recomienda implementar alertas climatológicas por el Estado.

Se recomienda mayor articulación comunicacional entre DIREPRO y acuicultores.

Se recomienda actualizar base de datos de los productores y productoras.

Se recomienda que la actualización de la DIA integre los desembalses del proyecto.

Se recomienda la implementación de un laboratorio de ictiosanidad y un laboratorio de aguas certificado por FNACAL, en Imperio o Huancayo.

2. Acuerdos y próximos pasos

Los participantes consideramos apropiada la propuesta de proyecto y validamos sus componentes

Siendo las .... horas se finaliza el Taller con la firma de todos los participantes en señal de conformidad acerca de los comentarios, propuestas de mejora y acuerdos y próximos pasos establecidos en la presente acta.

Se adjunta la lista de asistencia al Taller.

SERFOR - ATFFS Sierra Central Walter Ayuyo O.

DRAJ Concepción Ing. Julio Lujan C.

Municipalidad Distrital de Ingenio Huancayo - Junín Percy Huayta Oré ALCALDE

CIP - JUNIN - ZOOTECNIA Ing. Wilder Huaylinos Cosio

Paul Avila Mayor

Yanina Casas Oré Avícola CyM SAC

Jose Oré Villasante

GORE JUNIN
GERENCIA
ROSA ABAD SUAREZ

Oscar Salazar Loureano
72749724
Agricola Andina Peru SAC

Henry Vicente Alvarez Torres
Pis Valle Azul Integrados
10054567.

Director de produccion
Ronald Mariño Oregon
41149827

Feliciano Estarra Delao
Acuicola San Francisco de Asis EC SAC

Jesus Torres Suazo.
Corporacion turistico del centro Uruguay del Pican.

Pedro Torres Suazo
Acuicola San Pedro

Lizbeth Raymundo Mayta
Director tecnico
45343516

Fabian Calderon Gaspar
DNI 19947764

ACTA DE PARTICIPACIÓN

TALLER DE VALIDACIÓN

Siendo las 14 horas, del día 15 de junio de 2023 en la localidad Marcapata en la región Huánuco, se ha realizado el Taller de validación del Proyecto *Implementación de tecnologías de protección para la resiliencia de la actividad acuícola en las regiones de Huánuco, Junín y Puno, para la seguridad alimentaria ante eventos extremos asociados al cambio climático* que se prepara para su presentación al Fondo de Adaptación.

A partir de la presentación de la propuesta del Proyecto, sus componentes y actividades, discusión grupal y plenaria, se tienen las siguientes conclusiones:

1. Propuestas de mejora para la implementación del Proyecto

Los participantes están de acuerdo con las actividades propuestas por el proyecto.

Los participantes solicitan evaluar la instalación de un laboratorio de ictiopatologías.

Se recomienda que las capacitaciones se realicen en un lugar donde las mujeres puedan atenderlas.

Se sugiere que la asistencia técnica y el acompañamiento sean permanentes.

Se solicita evaluar la construcción de nuevos canales y muros de contención frente a las crecidas de los ríos.

2. Acuerdos y próximos pasos

Los participantes consideramos apropiada la propuesta de proyecto y validamos sus componentes.

Siendo las 17 horas se finaliza el Taller con la firma de todos los participantes en señal de conformidad acerca de los comentarios, propuestas de mejora y acuerdos y próximos pasos establecidos en la presente acta.

Se adjunta la lista de asistencia al Taller.

22648883
Emeterio Chas

44037342
Rober Inocente

22660078

22640516

80350051
Magdalena Placido Ch.

41695507

Wilder manuel
80386146

22621672

22666366

Marilu Rodriguez
22597648

Joel Inocente
48537743

72161366

ACTA DE PARTICIPACION
TALLER DE VALIDACION

Huánuco 15 de Junio, localidad: Maraypata.

22660028

46504325 40223082

22665304

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43535016

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ACTA DE PARTICIPACIÓN

TALLER DE VALIDACIÓN

Siendo las 14 horas, del día 15 de junio de 2023 en la localidad Mercy pata en la región Huánuco, se ha realizado el Taller de validación del Proyecto *Implementación de tecnologías de protección para la resiliencia de la actividad acuícola en las regiones de Huánuco, Junín y Puno, para la seguridad alimentaria ante eventos extremos asociados al cambio climático* que se prepara para su presentación al Fondo de Adaptación.

A partir de la presentación de la propuesta del Proyecto, sus componentes y actividades, discusión grupal y plenaria, se tienen las siguientes conclusiones:

1. Propuestas de mejora para la implementación del Proyecto

Los participantes están de acuerdo con las actividades propuestas por el proyecto.

Los participantes solicitan evaluar la instalación de un laboratorio de ictiopatologías.

Se recomienda que las capacitaciones se realicen en un lugar donde las mujeres puedan atenderlas.

Se espera que la asistencia técnica y el acompañamiento sean permanentes.

Se solicita evaluar la construcción de muros, canales y muros de contención frente a las crecidas de los ríos.

2. Acuerdos y próximos pasos

Los participantes consideramos apropiada la propuesta de proyecto y validamos sus componentes

Siendo las 17 horas se finaliza el Taller con la firma de todos los participantes en señal de conformidad acerca de los comentarios, propuestas de mejora y acuerdos y próximos pasos establecidos en la presente acta.

Se adjunta la lista de asistencia al Taller.

22660078

22648583
Emeterio Chaj

44037342
Rober Inocente

22640516

50350051
Magdalena Plácido Ch.

50386146

22666366

Mariluz Rodríguez

Joel Inocente
48573743

72161366

22597648

ACTA DE PARTICIPACIÓN

TALLER DE VALIDACIÓN

Siendo las 11 horas, del dia 20 de junio de 2023 en la localidad de Juli en la región de Puno, se ha realizado el Taller de validación del Proyecto *Implementación de tecnologías de protección para la resiliencia de la actividad acuícola en las regiones de Huánuco, Junín y Puno, para la seguridad alimentaria ante eventos extremos asociados al cambio climático* que se prepara para su presentación al Fondo de Adaptación.

A partir de la presentación de la propuesta del Proyecto, sus componentes y actividades, discusión grupal y plenaria, se tienen las siguientes conclusiones:

1. Propuestas de mejora para la implementación del Proyecto

Los participantes están de acuerdo con las actividades propuestas por el proyecto.

Las participantes mujeres recomiendan recibir capacitaciones en temas de administración y finanzas.

Los participantes recomiendan enfatizar la articulación inter-institucional para reducir la contaminación en el lago Titicaca.

Se recomienda que las jaulas resistentes a los cambios propuestas, tengan un diámetro de 20 mts.

Los participantes consideran importante que todos los productores cumplan con el tratamiento de los residuos sólidos.

Se recomienda la presencia de profesionales y técnicos mejor capacitados para brindar la asistencia.

técnica

2. Acuerdos y próximos pasos

Los participantes consideramos apropiada la propuesta de proyecto y validamos sus componentes

Siendo las 13:30 horas se finaliza el Taller con la firma de todos los participantes en señal de conformidad acerca de los comentarios, propuestas de mejora y acuerdos y próximos pasos establecidos en la presente acta.

Se adjunta la lista de asistencia al Taller.

01777251

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01322160

01223289

ACTA DE PARTICIPACION
TALLER DE VALIDACION

Huánuco 15 de Junio, localidad Maraypata

22660028 46504325 40223082 22665304

41615871 41145643 22665165 71312539

46773204 76008460 71104787 76088410

75374756 72587615 42879535

46335821 71305767 43535016

46846812 42789071 17043460

41104284 42830716

FEPROHIDRO PUNO PRESIDENTE

Oscar Cutipa Huanca
DNI: 42797408
PRESIDENTE

01864766

01845551

01334159

01221651

01286353

Annex 4: BENEFICIARIES SELECTION CRITERIA

1. Dimensions of eligibility criteria

Multiple dimensions are considered for determining eligibility, including geographical areas of intervention, formal operational category (AREL: Limited Resources Aquaculture producers or AMYPE: Micro and Small Business Aquaculture producers), socioeconomic condition and gender.

1.1. Intervention areas

Geographical areas at risk, highly vulnerable to the effects of climate change, were selected as the project's intervention areas.

1.2. Socioeconomic condition and gender

AREL and AMYPE producers have marked economic, social, and technological differences between them; therefore, the project established a differentiated selection criteria:

1.2.1. Selection criteria for AREL beneficiaries

According to socioeconomic condition and gender:

- *Formal AREL*: The producer has an authoritative resolution provided by the DIREPRO to develop aquaculture activity (concession or authorization). The source of information corresponds to the DIREPRO and the National Aquaculture Roster (CAN, for its Spanish acronym).

- *Natural Person*: The authoritative resolution was granted to a natural person. The source of information corresponds to the DIREPRO and the National Aquaculture Roster (CAN, for its Spanish acronym).

- *Active operation*: Producers who are formal and currently operating. The source of information corresponds to the DIREPRO and field verification.

- *Family labor*: the aquaculture operation does not have external workers except family members. The information comes from the DIREPRO and field information.

-*Aquaculture operation led by a woman, with the aquaculture right (concession or authorization) granted to her name (owner)*: Women-owned aquaculture operations will have a preference of the first order. The source of information corresponds to DIREPRO's administrative records and the National Aquaculture Roster - (CAN, for its Spanish acronym).

- *Aquaculture producer registered in SISFOH's General Register of Households as Poor or Extreme Poor*: Second degree preference. Means of verification: SISFOH's database through person's ID number.

- *Aquaculture operation led by a man, with the aquaculture right (concession or authorization) granted to his name (ownership):* Third-degree preference for operations where the women have active responsibility in aquaculture activities such as management, planting, production, harvesting, feeding or commercialization. The information comes from the DIREPRO and field information.

According to access to development services:

- Having been a user of aquaculture extension services provided by PRODUCE, GORE, FONDEPES, PNIPA or CITE (means of verification: administrative registries) and that these practices are being applied (means of verification: corroboration and field information).

- Not having current credits granted by FONDEPES (means of verification: administrative records).

- Not having received other types of subsidies for productive or innovation activities (means of verification: administrative records).

1.2.2. Selection criteria for AMYPE beneficiaries

According to socioeconomic condition and gender:

- Formal AMYPE: The producer has an authoritative resolution provided by the DIREPRO to develop aquaculture activity (concession or authorization). The source of information corresponds to the DIREPRO and the National Aquaculture Roster (CAN, for its Spanish acronym).

- Formal AMYPE producer who has a farm sanitary license granted by the National Fisheries Health Agency (SANIPES) or has started the procedure to obtain it. Means of verification: producer's license or initial document.

- *Natural Person with Business or Legal Person*: With an active RUC at SUNAT.

- *Active operation*: Producers who are formal and currently operating. The source of information corresponds to the DIREPRO and field verification.

- *Aquaculture operation led by a woman, with the aquaculture right (concession or authorization) granted to her name (owner) or, in the case of Legal Entities, female legal representation:* Women-owned enterprises will have preference of the first order. The source of information corresponds to the National Aquaculture Roster – CAN and the administrative records of the DIREPRO or SUNAT.

- *Aquaculture operation led by a man, with the aquaculture right (concession or authorization) granted to his name (ownership) or male legal representation:* Second-degree preference for operations where the women have active responsibility in aquaculture activities such as management, planting, production, harvesting, feeding or commercialization. The information comes from the DIREPRO and field information.

- *Paid labor*: the aquaculture operation has paid external workers, with or without family work[150]. The source of information corresponds to the DIREPRO and field verification.

- *Not having a firm sanction imposed by the regional authorities in the environmental or productive fields*: The source of information corresponds to the DIREPRO.

According to access to development services:

- Having been a user of aquaculture extension services provided by PRODUCE, GORE, FONDEPES, PNIPA or CITE (means of verification: administrative records), and that these practices are being applied (means of verification: corroboration and field information).

- Not having current credits granted by FONDEPES (means of verification: administrative records).

- Not having received other types of subsidies for productive or innovation activities (means of verification: administrative records).

2. Selection process

The methodology proposed for the selection of beneficiaries for each of the intervention areas is as follows:

- A Matrix is prepared with the determined selection criteria, one for AREL producers and another for AMYPE producers, which will indicate whether it meets each selection criteria and in what order.

- Based on updated information from the National Aquaculture Roster (CAN, for its acronym in Spanish), the universe of aquaculture producers to whom the Matrix will be applied is established.

- The technical personnel contracted by the project for each area will be responsible for applying the Matrix, considering the various public databases listed above.

- Likewise, some criteria will require that the information be taken and verified in the field, for which the

Cases may differ since there is a broad range of production levels (+3.5 to 150 tons). An AMYPE that produces 10 tons may only rely on family for the farm work. There are cases in which the aquaculture operation produces a larger quantity, and there may be one or two paid external workers in addition to the family. Finally, there are cases in which all workers are external workers. In all cases, field verification will be essential to determine if these external workers are formally and legally paid (they have a contract, issue receipts,

project's technical staff will collect the corresponding information, considering pertinent evidence to verify whether the criteria are met.

- The project's technical staff, as a result of the application of the Matrix, will have a list of preselected producers for each of the intervention areas.

- Subsequently, the project's technical staff will organize a meeting in each zone of intervention -a single assembly with the groups of producers or associations of the intervention zones with valid aquaculture rights according to the CAN- to present and support the lists of preselected producers. Affirmative convening actions are required to ensure that 40% of attendees are women (see measure #1 PAG).

- After a presentation and discussion, the attendees will approve the list of preselected aquaculture producers by a simple majority. An act will be signed in conformity. The producers will go from being shortlisted to being selected.

Records and meeting minutes will remain in the custody of the coordination of the project.

2.1. Databases

- **SISFOH**: https://operaciones.sisfoh.gob.pe:450/cse/
- **Catastro Acuícola Nacional (CAN)/National Aquaculture Roster:**
  http://catastroacuicola.produce.gob.pe/web/
- **SUNAT**: https://e-consultaruc.sunat.gob.pe/cl-ti-itmrconsruc/FrameCriterioBusquedaWeb.jsp
- **SANIPES**: http://app02.sanipes.gob.pe:8089/Publico/Consulta_protocolos_concesion

MATRIX OF COMPLIANCE WITH THE SELECTION CRITERIA OF AQUACULTURE PRODUCERS OF THE AREL PRODUCTION CATEGORY

4. Location

Department	
Province	
District	
Zone	

5. Producer's information

Aquaculture right #	
Type of right	Authorization ( ) Concession ( )
Right holder's name	
DNI #	

6. Selection criteria

Criteria	Meets criteria: YES	Meets criteria: NO
According to socioeconomic condition and gender		
Formal AREL: The producer has an authoritative resolution provided by the DIREPRO to develop aquaculture activity (concession or authorization). The source of information corresponds to the DIREPRO and the National Aquaculture Roster (CAN, for its Spanish acronym).		
Natural Person: The authoritative resolution was granted to a natural person. The source of information corresponds to the DIREPRO and the National Aquaculture Roster (CAN, for its Spanish acronym).		
Active operation: Producers who are formal and currently operating. The source of information corresponds to the DIREPRO and field verification.		
Family labor: the aquaculture operation does not have external workers except family members. The information comes from the DIREPRO and field information.		
Aquaculture operation led by a woman, with the aquaculture right (concession or authorization) granted to her name (owner): Women-owned aquaculture operations will have a preference of the first order. The source of information corresponds to DIREPRO's administrative records and the National Aquaculture Roster - (CAN, for its Spanish acronym).		
Aquaculture producer registered in SISFOH's General Register of Households as Poor or Extreme Poor: Second degree preference. Means of verification: SISFOH's database through person's ID number.		
Aquaculture operation led by a man, with the aquaculture right (concession or authorization) granted to his name (ownership): Third-degree preference for operations where the women have active responsibility in aquaculture activities such as management, planting, production, harvesting, feeding or commercialization. The information comes from the DIREPRO and field information.		
According to access to development services		
Having been a user of aquaculture extension services provided by PRODUCE, GORE, FONDEPES, PNIPA or CITE (means of verification: administrative records), and that these practices are being applied (means of verification: corroboration and field information).		
Not having current credits granted by FONDEPES (means of verification: administrative records).		
Not having received other types of subsidies for productive or innovation activities (means of verification: administrative records).		

MATRIX OF COMPLIANCE WITH THE SELECTION CRITERIA OF AQUACULTURE PRODUCERS OF THE AMYPE PRODUCTION CATEGORY

1. Location

Department	
Province	
District	
Zone	

2. Producer's information

Aquaculture right #	
Type of right	Authorization ( ) Concession ( )
Right holder's name	
DNI # (natural person with business)	
RUC # (legal person)	

3. Selection criteria

Criteria	Meets criteria: YES	Meets criteria: NO
According to socioeconomic condition and gender		
Formal AMYPE: The producer has an authoritative resolution provided by the DIREPRO to develop aquaculture activity (concession or authorization). The source of information corresponds to the DIREPRO and the National Aquaculture Roster (CAN, for its Spanish acronym).		
Formal AMYPE producer who has a farm sanitary license granted by the National Fisheries Health Agency (SANIPES) or has started the procedure to obtain it. Means of verification: producer's license or initial document.		
Natural Person with Business or Legal Person: With an active RUC at SUNAT.		
Active operation: Producers who are formal and currently operating. The source of information corresponds to the DIREPRO and field verification.		
Aquaculture operation led by a woman, with the aquaculture right (concession or authorization) granted to her name (owner) or, in the case of Legal Entities, female legal representation: Women-owned enterprises will have preference of the first order. The source of information corresponds to the National Aquaculture Roster – CAN and the administrative records of the DIREPRO or SUNAT.		
Aquaculture operation led by a man, with the aquaculture right (concession or authorization) granted to his name (ownership) or male legal representation: Second-degree preference for operations where the women have active responsibility in aquaculture activities such as management, planting, production, harvesting, feeding or commercialization. The information comes from the DIREPRO and field information.		
Paid labor: the aquaculture operation has paid external workers, with or without family work[151]. The source of information corresponds to the DIREPRO and field verification.		
Not having a firm sanction imposed by the regional authorities in the environmental or productive fields: The source of information corresponds to the DIREPRO.		
According to access to development services		
Having been a user of aquaculture extension services provided by PRODUCE, GORE, FONDEPES, PNIPA or CITE (means of verification: administrative records), and that these practices are being applied (means of verification: corroboration and field information).		
Not having current credits granted by FONDEPES (means of verification: administrative records).		
Not having received other types of subsidies for productive or innovation activities (means of verification: administrative records).		

[151][151] Cases may differ since there is a broad range of production levels (+3.5 to 150 tons). An AMYPE that produces 10 tons may only rely on family for the farm work. There are cases in which the aquaculture operation produces a larger quantity, and there may be one or two paid external workers in addition to the family. Finally, there are cases in which all workers are external workers. In all cases, field verification will be essential to determine if these external workers are formally and legally paid (they have a contract, issue receipts, etc.).