FAO/GLOBAL ENVIRONMENT FACILITY

PROJECT DOCUMENT

PROJECT TITLE: Sustainable management of agro-biodiversity and vulnerable ecosystems recuperation in Peruvian Andean regions through Globally Important Agricultural Heritage Systems (GIAHS) approach. **PROJECT CODE: GCP/PER/045/GFF**
COUNTRY: Peru
FINANCING PARTNER: GEF
FAO Project ID: 635627 **GEF/LDCF/SCCF Project ID: 9092**
EXECUTING PARTNERS: Ministry of Environment (MINAM) and Ministry of Agriculture and Irrigation (MINAGRI)
Expected EOD (Starting Date):
Expected NTE (End Date):
CONTRIBUTION TO FAO's STRATEGIC FRAMEWORK: **a. Strategic Objective/Organizational Result:** SO1: Contribute to the eradication of hunger and food insecurity SO2: Sustainably increase the provision of goods and services from agriculture, livestock, forestry and fishing **b. Regional Result/Priority Areas:** 2. Family farming and territorial development in rural zones **c. Country Programming Framework Outcome:** SO2: Making agriculture, forestry and fisheries more productive and sustainable
GEF/LDCF/SCCF Focal Area: Biodiversity, Land Degradation, Sustainable Forest Management
GEF/LDCF/SCCF Strategic objectives: BD-3 Programme 7, BD-4 Programme 9, LD-3 Programme 4, SFM-3 Programme 8
Environmental and social risk classification (insert √): Low risk √Moderate risk High risk

GEF allocation	**9,369,864**		
Co-financing	**Cash**	**In kind**	**Total**
MINAGRI	5,739,771	1,165,339	6,905,110
MINAM		6,723,680	6,723,680
GORE Huancavelica	9,154,633	114,840	9,269,473
GORE Apurímac	18,019,753		18,019,753
GORE Puno	20,636,554	600,714	21,237,267
GORE Cusco	11,508,266	4,029,972	15,538,239
GORE Arequipa		100,608	100,608
GOLO Atiquipa		23,335	23,335
ANPE	70,000	120,000	190,000
Consorcio Agro-ecológico Peruano	276,400	277,840	554,240

PROFO-NANPE		500,000	500,000
FAO	370,170		370,170
Sub-total cofinancing	65,775,548	13,656,327	79,431,874
Total project financing	**88,801,739**		

Executive Summary

The objective of the project is to conserve in-situ and to sustainably use globally-important agro-biodiversity (ABD) through the preservation of traditional agricultural systems, the integrated management of forests, water, and land resources, and the maintenance of ecosystem services. Currently, this ABD and the ecosystems on which it depends are threatened by a combination of factors including the introduction of intensified agriculture and new crop varieties, demographic change, environmental degradation, pests and diseases and climate change.

The project will work directly in five target localities in Peru, covering 13 districts, and will create conditions for the replication of results throughout the Peruvian Andes and beyond.

This project will promote a landscape approach to conservation, which will ensure that not only the ABD crops themselves but also the landscape-wide traditional systems in which they are dynamically managed by local people are maintained, and that threats operating at landscape scale are addressed. This is in accordance with the model of ABD zones provided for in Peruvian legislation, which corresponds in general to the principles of the GIAHS and NIAHS model.

The project will deliver benefits in an integrated manner in the biodiversity, land degradation and sustainable forest management focal areas, contributing to the conservation status of globally important ABD through its active management in sustainably managed production landscapes, as well as restoring the forests and other ecosystems that generate ecosystem services on which the ABD depends.

Component 1 focuses on strengthening farmers' capacities for managing and conserving ABD in response to evolving pressures, and on restoring the landscapes that provide ecosystems services on which the ABD management systems depend; Component 2 focuses on promoting the marketing of ABD crops and products in such a way as to increase the economic attractiveness of their maintenance by farmers; and Component 3 focuses on ensuring an enabling environment of interinstitutional coordination, institutional capacities and public awareness to support the proposed model of ABD conservation.

Acronyms and abbreviations

ABD	Agrobiodiversity
ANFFS	National Authority for Flora and Wildlife (*Autoridad Nacional de Flora y Fauna Silvestre)*
ANPE	Peruvian National Association of Ecologic Producers
ARFFS	Regional Authority for Flora and Wildlife (*Autoridad Regional de Flora y Fauna Silvestre)*
AWP/B	Annual Work Plan and Budget
BD	Biodiversity
BH	Budget Holder
CAP	Peruvian Agro-ecological Consortium
CBD	Convention on Biological Diversity
CCTA	CCTA – Science and Technology Andean Coordinator
CDP	Concerted Development Plan
CEO	Chief Executive Officer (GEF)
CESA	Centro de Servicios Agropecuarios
CMES	Compensation Mechanisms for Ecosystem Services
CO_{2eq}	Carbon dioxide equivalent
CONADIB	National Commission for Biological Diversity
CONCYTEC	National Council for Science, Technology and Innovation
COSUDE	Swiss Development Cooperation
CSA	Community-supported agriculture
CSO	Civil Society Organisation
CWR	Crop Wild Relatives
DGOTA	Generate Directorate of Environmental Territorial Land Use Planning (Dirección General de Ordenamiento Territorial Ambiental)
DIT	Integrated Territorial Diagnoses
DO	Denomination of Origin
EEZ	Ecological and Economic Zoning
FAO	Food and Agriculture Organization of the United Nations
FE	Final Evaluation
FFS	Farmer Field School
FLO	Funding Liaison Office
FPIC	Free and Prior Informed Consent
FPMIS	Field Project Management Information System
GEBs	Global Environmental Benefits
GEF	Global Environment Facility
GEFSEC	GEF Secretariat
GEFTF	GEF Trust Fund
GI	Geographic Indication
GIAHS	Globally Important Agricultural Heritage System
GORE	Regional Government (*Gobierno Regional*)
INDECOPI	National Institute for the Defence of Competition and Protection of Intellectual Property
INIA	National Institute for Agricultural Research

LAC	Latin America and the Caribbean
LD	Land Degradation
LoA	Letter of Agreement
LTO	Lead Technical Officer
LTU	Lead Technical Unit
M&E	Monitoring and Evaluation
MEF	Ministry of Economy and Finance
MINAM	Ministry of Environment
MINAGRI	Ministry of Agriculture and Irrigation
MINCETUR	Ministry of External Commerce and Tourism
MoA	Memorandum of Agreement
MTE	Mid Term Evaluation
MTR	Mid Term Review
NAP	National Adaptation Plan
NBSAP	National Biodiversity Strategy and Action Plan
NIAHS	Nationally Important Agricultural Heritage Site
NPD	National Project Director
NRM	Natural resource management
OED	FAO Office of Evaluation
OP	Operational Partner
PA	Protected area
PC	Project Coordinator
PES	Payment for Environmental Services
PGS	Participatory Guarantee System
PIF	Project Identification Form (GEF)
PIP	Public Investment Project
PIR	Project Implementation Review
PM	Project Management
PNIA	National Programme for Agrarian Innovation
PPG	Project Preparation Grant (GEF)
PPR	Project Progress Report
PRATEC	Andean Farmers Technology Project
PRODERN	Programme for Sustainable Economic Development and Strategic Management of Natural Resources in the regions of Ayacucho, Apurímac, Huancavelica, Junín and Pasco
PRODOC	Project Document
PRODUCE	Ministry of Production
PSC	Project Steering Committee
PT	Project Team
PTF	Project Task Force
PY	Project Year
R&D	Research and Development
RAP	Peruvian Environmental Network
RBM	Results-based management
RIMISP	Latin American Centre for Rural Development
ROAM	Restoration Opportunities Assessment Methodology

SC	Steering Committee
SENASA	National Service for Agrarian Health
SERFOR	National Forestry and Wildlife Service
SIAR	Regional Environmental Information Systems
SME	Small and Medium Sized Enterprise
STAP	Scientific and Technical Advisory Panel
TA	Technical assistance
TCC	Technical Consultative Committee
TCI	Investment Centre Division (FAO)
TCID	Technical Cooperation and Investment Division
TK	Traditional knowledge
TOR	Terms of Reference
TMU	Territorial Management Unit
USD	United States Dollar
WRI	World Resources Institute

SECTION 1 – PROJECT RATIONALE

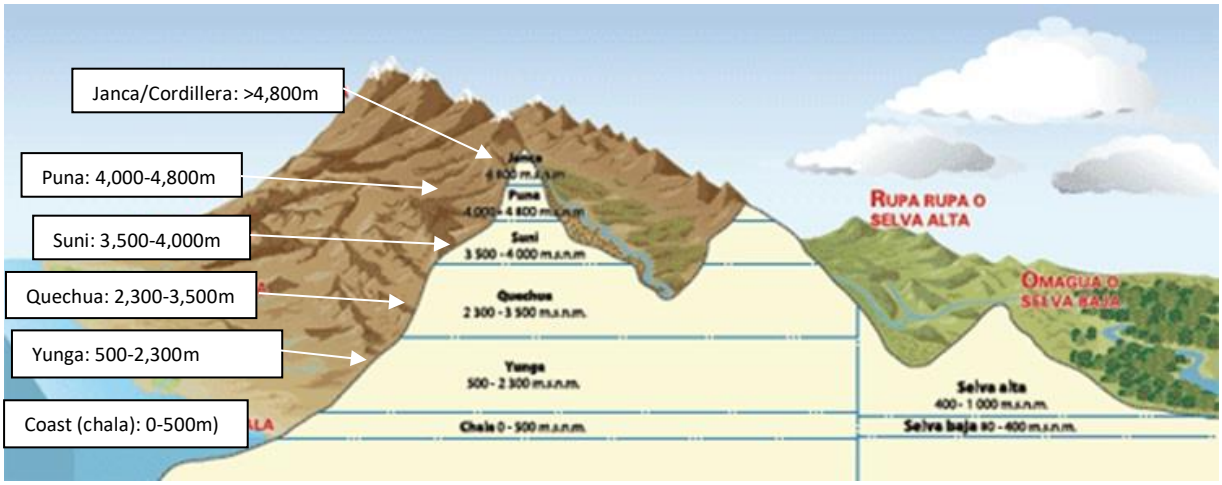
1.1 PROJECT CONTEXT

1.1. The national context

1. **Geography:** Peru covers 1,285,216km^2 of western South America. It borders Ecuador and Colombia to the north, Brazil to the east, Bolivia to the southeast, Chile to the south, and the Pacific Ocean to the west. The Andes mountains run parallel to the Pacific Ocean; they define the three regions traditionally used to describe the country geographically. The costa (coast), to the west, is a narrow plain, largely arid except for valleys created by seasonal rivers. The sierra (highlands) is the region of the Andes; it includes the Altiplano plateau as well as the highest peak of the country, the 6,768m Huascarán. The third region is the selva (jungle), a wide expanse of flat terrain covered by the Amazon rainforest that extends east.

2. Climate, vegetation and cropping systems vary widely across the different altitudinal zones in the country, which are shown in Figure 1 and described in Box 1.

Figure 1. Main altitudinal zones in Peru



Box 1. Altitude zones in Peru

- ***Janca* or *cordillera (>4,800m)***. The topography is very uneven. It comprises large areas with native pastures destined for the extensive raising of camelids (Vicuña, Alpaca, Llama) and sheep. There are also significant areas with little or no vegetation cover exposed to intense erosion processes due to the strong slopes of the soil and the intense rainfall. There is an accelerated process of deglaciation caused by climate change.
- ***Puna (4,000-4,800m)***. The topography of the terrain is uneven. Soils with vocation / aptitude for the breeding of local cattle, ovine, goat. Marginally suitable for agriculture due to climatic risks.
- ***Suni (3,500-4,000m)***. Rugged topography: some areas have micro climatic conditions favorable for agriculture and livestock. Agriculture is concentrated in slopes and small streams and is mainly rainfed (conditioned to the occurrence of rainfall). Livestock is complementary to agriculture, providing manure for the fertilization of soils and crops.
- ***Quechua (2,300-3,500m)***. Favourable microclimatic conditions for agriculture, with intensive and permanent cropping, as well as cattle ranching. Two very marked seasons: a 3 to 4-month rainy season and an 8 to 9-month dry season.

- ***Yunga (500-2,300m***): generally complex mountainous topography, with narrow deep valleys and steep Andean slopes. Consists of maritime yungas on the western slopes (500-2,300m), with high temperatures and low dry season precipitation, and fluvial yungas (1,500-2,300m) with rather lower temperatures but higher rainfall.
- ***Coast (0-500m):*** extends along the whole Pacific coast of the country, with generally flat or rolling topography, with some mountainous areas especially in the south. Contains pampas, dunes, and plateaux; Sandy desert intersected by seasonal rivers draining from the Andes range.

3. **Agro-biodiversity**: Peru is recognized among the five most mega diverse countries in the world, and the Peruvian Andean region encompasses 84 of the existing 103 life zones in the planet. The bio-physical conditions in the Andean mountain range, with altitudes up to 6990 masl, have created conditions for a wide climatic variability that has fostered different landscapes and ecosystems with high biodiversity and endemism. These unique landscapes constitute one of the most important reservoirs of genetic varieties and wild relatives: the country hosts about 184 native domesticated plant species with hundreds of cultivated varieties and species, including two of the most important food crops in the world, potatoes and maize. Likewise, Peru preserves wild relatives of globally relevant crops, including potato and barley: these crop wild relatives (CWR) are plants that are ancestors or close relatives to existing crops that have a direct socio-economical relevance for all humankind[1].

4. This natural diversity is a result of marked variations in elevation and micro-climates on one hand, and the dynamic efforts of farmers over thousands of years on the other, making the Peruvian Andean region one of the most important centres of plant domestication in the world[2]. Peruvian farmers have achieved, through thousands of years of experimentation and knowledge accumulation, the production and adaptation of agricultural species and varieties that constitute an invaluable genetic heritage for all humankind. Indeed, Peru is in the middle of the Vavilov South American Center of Origin for cultivate plants, including root tubers, grains and legumes, vegetable crops and fruits – one of eight Vavilov Centers worldwide.

5. Potato is the most important food security crop that originated here, with over 4,000 different known varieties (out of 5,000 worldwide), from nine different cultivated species and subspecies (*Solanum tuberosum, S. goniocalix, S. phureja, S. stenotomum, S. ajanhuiri, S. chaucha, S. juzepczukii, S. curtilobum* and *S. tuberosum ssp. andigenum*). Farms in a single community may have 50 morphotypes representing all four ploidy groups[3]. Potato is the fourth most important food crop in the world; in Peru, its centre of origin, it is the principal crop in terms of area planted; it is grown by around 600,000 small farmers and accounts for 25% of agricultural GDP.

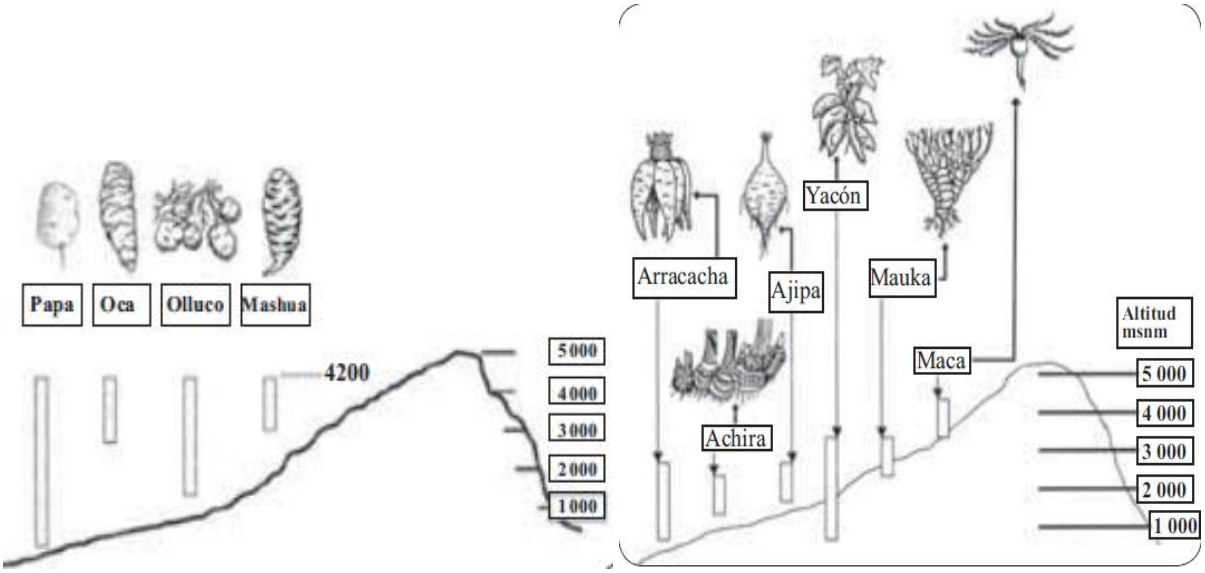
6. Other important rootcrops include olluco (*Ullucus tuberosus*), sweet potato (*Ipomea batatas*), oca (*Oxalis tuberosa*), mashua/añu/isaño (*Tropaeolum tuberosum)*, Cucurbitaceae such as caigua (*Cyclanthera pedata*), pumpkin and squash, fruit trees such as lucuma (*Pouteria lucuma*), grains such as quinoa (*Chenopodium quinoa*), qañiwa (*C. pallidicaule*) and kiwicha/achita/achis (*Amaranthus caudatus*), as well as livestock including llama (*Lama*

[1] The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture. FAO. Rome, 2010.
[2] http://www.mtnforum.org/sites/default/files/forum_topic/files/01_introduccion_-_agrobiodiversidad_en_los_andes_-_enfoques_de_investigacion.pdf
[3] Brush SB (1995): In Sity Conservation of Landraces in Centers of Crop Diversity. *Crop Science* Vol. 35 No. 2.

glama), alpaca (*Vicugna pacos*) and guinea pigs (*Cavia porcellus*) represent other important species, which have originated in this centre.

7. The predominant crops are stratified by altitude, as shown in the case of rootcrops in Figure 2.

Figure 2. Stratification of rootcrop ranges by altitude



8. The importance of crop diversity in allowing farmers to ensure food security in diverse altitudinal and climate conditions is shown in 8.

Table 1. Agronomic characteristics of different potato varieties in Peru

Scientific name	Common name	Altitude range	Agronomic characteristics
S. goniocalyx (diploide)	Papa amarilla (yellow potato)	2,500-3,800	Adapted to temperate climates
S. phureja (diploide)	Papa phureja	2,000-3,900	Withstands low temperatures and high humidity
S. stenotomum (diploide)	Pitiquiña (aymara) Chiquiliña (quechua)	3,600-3,800	Frost resistant
S. tuberosum (diploide)	Papa andina (Andean potato), Imillas	2,000-3,800	Adapts well to a range of climatic conditions
S. ajanhuiri (diploide)	Ajanhuiri	3,700-3,900	Frost resistant
S. chaucha (triploide)	Papa temprana (early potato)	3,500-3,800	Early, adapts well to valley conditions
S. juzepczukii (triploide)	Papa amarga (bitter potato), Rucki	3,800-4,200	Frost resistant
S. curtilobum (pentaploide)	Papa amarga (bitter potato) Occucuri	3,800-4,000	Frost resistant
S. tuberosum ssp. andigenum (tetraploide)	Papas nativas dulces (sweet native potato)	3,400-3,800	Adapts well to low temperaturas
S. hygrothermicum	Papa del trópico (tropical potato)		Withstands high temperatures

Source: P. Cosio and A. Canahua.

9. **Andean agricultural systems:** Andean agriculture is one of the best examples of how the traditional knowledge of farmers has allowed them to adapt to their environment, over a period of more than 5,000 years. These areas maintain most of the ancient traditional agricultural technologies, which have allowed local communities to satisfy their food needs in spite of strong influences of the western agriculture which is eroding many of their old traditions. The nutritional status of the population is very dependent on local food production, and all native crops and livestock are mostly used for self-consumption. Dehydrated potatoes, for example, can be conserved for several years, providing a vital food security resource in times of scarcity. A large number of medicinal plants are used in health care which underline the adaptation of the Indigenous communities in their area.

10. Some examples of the traditional indigenous technologies include:

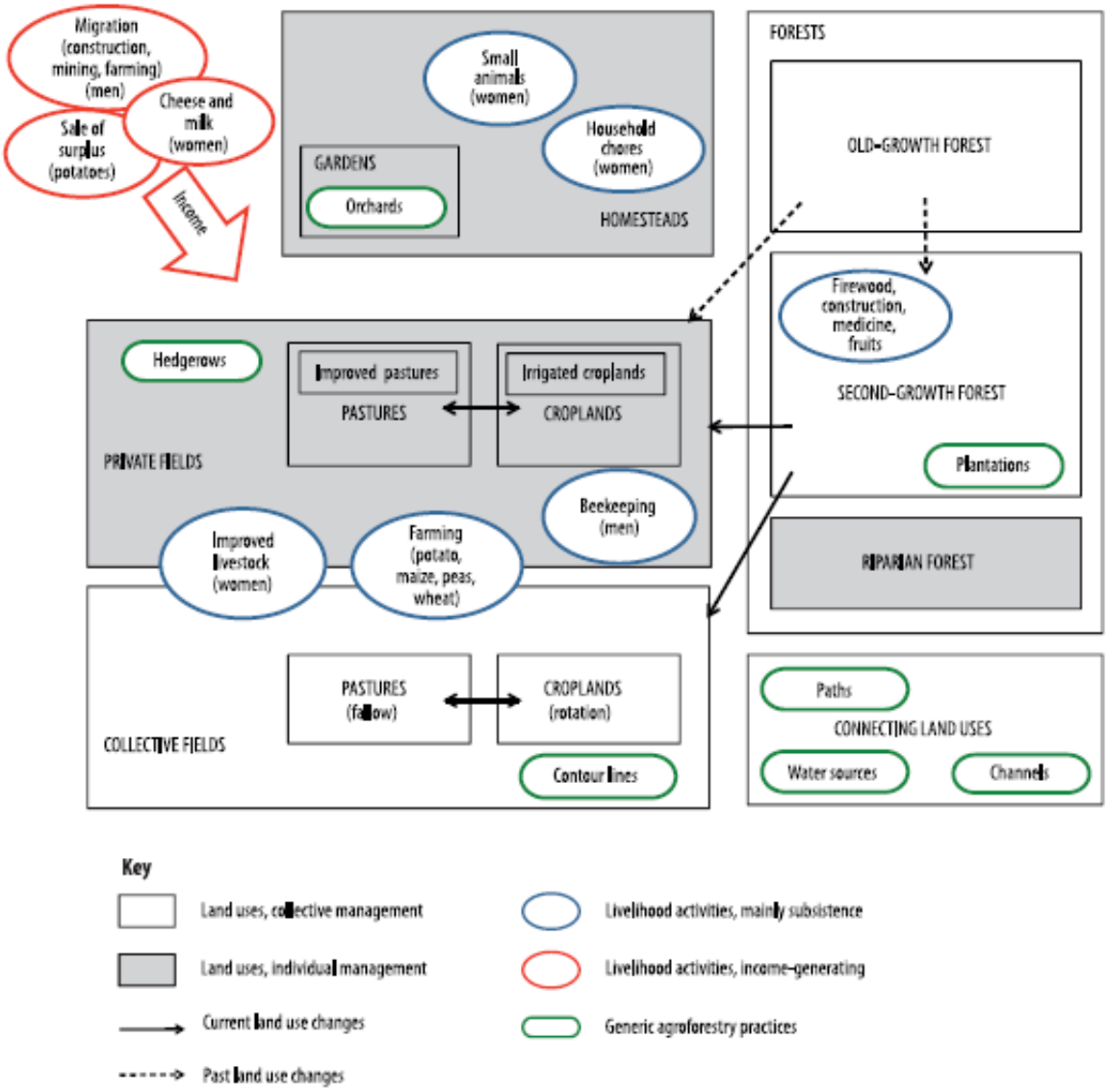
- Ancient terraces to convert steep slopes into crop productive zones
- Ridge fields or *camellones*: these are formed by building elevated strips of land of 3-10m in width, with channels around which could be filled with rainfall water or by the deviation of rivers, so the water is heated during the day and maintain stable temperatures at night, as well as acting as a water reserve during drought periods. This ancient technology locally called "waru waru" was abandoned due to regional climate changes, however there has been recent interest to recover this practice, and more than 1,000ha are now under production. One limitation to extend this type of soil-water management is the amount of work required (more than 500 working days/ha), also non-favourable market conditions for the surplus produced.
- Small lagoons or "*qochas*", which are natural depressions in the soil on flat areas, used as rainwater reserves in the high plateau: channels were built to distribute the moisture between several of them linked together, allowing the surrounding areas to be used as intensive agriculture fields, at altitudes of 3,900m[4].
- *Laymes or aynokas* which are the lands for a crop sectorial rotation system used by the traditional communities. Communal land is used annually for a defined crop rotation that takes from 5 to 20 years. Work is done communally but the benefits are individual. In addition, some plots are seeded to support those community families or persons such as widows, sick, orphans, which do not have resources. In this area each individual brings the seed, but manure and all the agronomic work is done by communal participatory work.
- *Canchones* (stone walled plots): especially in Puno, the tradition is to build a wall made of stones or adobes to protect the crops or mark individual property limits. In Puno the walls could be from 1.0 to 1.5 m. high and they are also used as protection against the invasion of foreign livestock. The main crops used in these "canchones" are potatoes and alfalfa.

11. **Farm and livelihood systems:** as in the example shown in Figure 3, agrobiodiversity management on farm interacts in a complex manner with other spatial elements of the farm unit (ranging from the homestead through individually-managed fields to collective fields, and

[4] http://www.fao.org/giahs/giahsaroundtheworld/designated-sites/latin-america-and-the-caribbean/andean-agriculture/en/

also with other components of farm families' livelihood systems, including off-farm income generation.

Figure 3. Livelihood activities, land use categories, and agroforestry practices in Ccerabamba (a study community in the Peruvian Andes)[5]



12. **Agriculture and ecosystem management in the coastal region:** although principally focused on the higher altitude strata (>2,300m), extended in one location to include middle altitude *yunga* (500-2,300m), the project will also include one locality in the coastal region (0-500m) of the south coast, which has a highly important and threatened landscape (see Section 1.1.2 for details of the target localities).

13. This part of the coastal region is classified climatically as "cold desert", with annual rainfall of around 150mm and so is largely unsuitable for rain fed cropping. The outstanding feature

[5] Identifying Gender-Sensitive Agroforestry Options: Methodological Considerations from the Field. Author(s): Sarah-Lan Mathez-Stiefel, Jorge Ayquipa-Valenzuela, Ruben Corrales-Quispe, Luzmila Rosales-Richard, and Merelyn Valdivia-Díaz. Source: Mountain Research and Development, 36(4):417-430. Published By: International Mountain Society. https://doi.org/10.1659/MRD-JOURNAL-D-16-00051.1,https://doi.org/10.1659/MRD-JOURNAL-D-16-00051.1. URL: http://www.bioone.org/doi/full/10.1659/MRD-JOURNAL-D-16-00051.1

of this area is the presence of winter-spring "fog oases", locally known as "*lomas*", where the hyperaridity of the coastal desert is punctuated by the interception of thick stratocumulus cloud banks on the sea-facing steep slopes of the coastal ranges. These *lomas* have many endemic taxa, often exceeding 40% of the local flora. Among the surviving *lomas*, only the target locality (Atiquipa, Arequipa province) supports a substantial stand of forest (1,260ha), which has long been recognized as the largest, most diverse and productive of all *loma* formations.

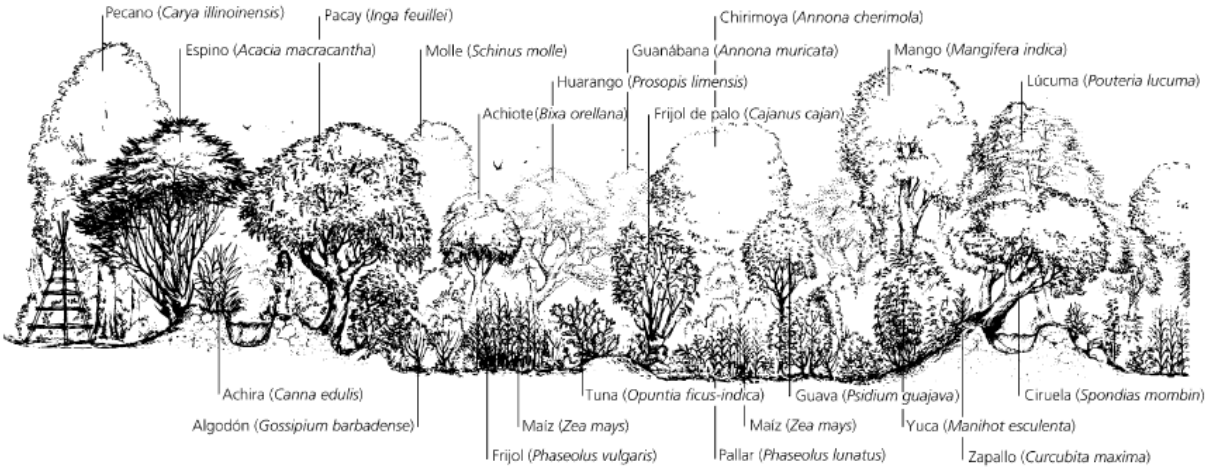
14. Today, only ca. 450 people live in the Atiquipa lomas, and by the end of the 20th century, this community experienced critical levels of poverty when severe deforestation resulted in water shortages that threatened subsistence agriculture. Research, however, suggests that this landscape has been highly influence by human management: extensive archaeological remains attest to a major Inca settlement, although remains of the earliest human activity in the territory date back to 12500 BP. Genetic analyses suggest that the presence and dominance of tara (*Caesalpinia spinosa*) in the Atiquipa fog oasis is attributable to past human activity. The Inca model of land management in this area, also known as "vertical archipelago", was based on ecological complementarity, that is, on the simultaneous control or manipulation of multiple ecological tiers along altitudinal gradients. In Atiquipa, this segregation in resource use was enabled by the outstanding Inca achievements in hydraulic engineering which diverted fog water collected by the loma forest to irrigate areas ("*andenerías*") at lower altitudes. Loma forest was considered a water source and storage area, and, thus, was mainly devoted to mixed forestry and camelid rearing, and only to a lesser extent to smallholding agriculture[6].

15. This hydrological role of *lomas* vegetation is of vital importance for production systems downstream. Soil fertility in the coastal region of this area and the neighbouring province of Ica is largely confined to vegetated valley bottoms and flood-plains, where annually replenished alluvial silts meld together with nitrogen-fixing trees and annual pioneering legumes to produce exceptionally productive soils and sediments[7]. Soil fertility has traditionally been managed here through systems of agroforestry in conjunction with small, so-called, 'kitchen garden' plots known locally as '*huertas*'. *Huertas* are watered using various techniques ranging from floodwater farming to canal irrigation. As seasonal water arrives it is diverted into canals, along small channels, into convoluted swales (or 'caracoles') and sunken fields. The silt deposited in this way dries out slowly, allowing a succession of crops to be cultivated and harvested upon them. Today, in addition to these smallholder *huertas* the lower altitude areas include areas of olive groves, which are also highly dependent on the *lomas* vegetation for water supply for irrigation.

[6] Balaguer L, Arroyo-García R, Jiménez P, Jiménez MD, Villegas L, Cordero I, et al. (2011) Forest Restoration in a Fog Oasis: Evidence Indicates Need for Cultural Awareness in Constructing the Reference. PLoS ONE 6(8): e23004. https://doi.org/10.1371/journal.pone.0023004

[7] An ecosystem approach to restoration and sustainable management of dry forest in southern Peru. Oliver Q. Whaley, David G. Beresford-Jones, William Milliken, Alfonso Orellana, Anna Smyk & Joaquín Leguía. KEW BULLETIN VOL. 65: 1 – 29 (2011)

Figure 4. Traditional *huerta* providing multiple ecosystem services[8]



16. **Determinants of *in situ* conservation and management of agrobiodiversity:** research in the Departments of Huánuco and Cajamarca, in conditions comparable with those found in the project's target areas, indicate that crop variety richness is directly correlated to the following factors[9]:

- Organization of cultivated area, with farmers using more cultivated land, and more plots in more altitudinal zones managing a greater richness of traditional varieties of tubers
- Indices of cultural identity (as defined by factors including use of the Quechua language, and the maintenance of cultural traditions associated to agricultural activities, such as mutual help and rituals)
- Degree of self-sufficiency of farmers' livelihoods
- Family size and availability of family labour.

17. Farm households in Andean villages practise a system of field rotation in which the entire inventory of potatoes for broad altitudinal zones is moved each year to a different field within the zone. A few morphotypes are selected, usually because of yield and commercial demand, but these are not assigned to specific fields of microenvironments. Most of the potato diversity is maintained in fields that are purposefully planted with mixed collections of local morphotypes. Diversity is an object of selection for cultural reasons, taste, gifts, and local identity, and for potential future markets[10].

18. **Crop wild relatives (CWR):** the Andean region is also a globally important source of wild relatives of native crops such as potato, oca, olluco, and mashua, which are of vital importance for the maintenance of agrobiodiversity in local farming systems, with which they interact dynamically, and which also have major option value as a gene resource for use in *ex situ* plant breeding and crop improvement programmes[11]. In addition to the nine cultivated species and

[8] An ecosystem approach to restoration and sustainable management of dry forest in southern Peru. Oliver Q. Whaley, David G. Beresford-Jones, William Milliken, Alfonso Orellana, Anna Smyk & Joaquín Leguía. KEW BULLETIN VOL. 65: 1 – 29 (2011)

[9] Ecological and sociocultural factors influencing in situ conservation of crop diversity by traditional Andean households in Peru. Dora Velásquez Milla, Alejandro Casas, Juan Torres Guevara, and Aldo Cruz Soriano J Ethnobiol Ethnomed. 2011; 7: 40. Published online 2011 Dec 6.

[10] Brush SB (1995): In Sity Conservation of Landraces in Centers of Crop Diversity. *Crop Science* Vol. 35 No. 2.

[11] Ecological and sociocultural factors influencing in situ conservation of crop diversity by traditional Andean households in Peru. Dora Velásquez Milla, Alejandro Casas, Juan Torres Guevara, and Aldo Cruz Soriano J Ethnobiol Ethnomed. 2011; 7: 40. Published online 2011 Dec 6.

subspecies of potato listed above, there are at least 199 wild potato species occur throughout the Americas, most of which are rare and narrowly endemic; the highest level of potato species richness found to date is in southern Peru (Cusco), with 22 species found in one kilometre grid square[12].

19. **Vegetation types:** the Peruvian Andes include 13 different categories of vegetation cover, including xeric interandean savannas, xeric interandean forests, mesoandean relic forest, mesoandean relic coniferous forest, western Andean montane forest, high Andean relic forest (*queñual*), high altitude moorlands (*jalcas, páramos, pajonales*), scrub, and high altitude wetlands (*bofedales*), which together cover an area of 29,815,882ha[13]; between 1 and 10% of these formations is covered by protected areas, despite most having been classified as of highest regional conservation priority[14].

20. The forests of the Peruvian Andes are among the highest altitude forests in the world, growing at between 2000 and 4000 m.a.s.l. and covering a total area of 703,121ha, equivalent to 2% of the national territory. Five types of Andean forests are recognised:

- **Relic Mesoandean forest**, consisting of dispersed forest patches in the Lima región, covering 142,029 ha
- **Conifer forest**, principally in the regions of Lambayeque and Cajamarca, covering 839 ha;
- **Relic high Andean forest**, in dispersed patches in the regions of Cuzco, Huaraz, Lima, Arequipa, Moquegua and Tacna, covering 67,277ha;
- **Dry savanna forest**, covering 8.89ha
- **Interandean valley dry forest**, covering 484,287ha.

21. These forests vary in their composition with altitude, among the most emblematic species being queñual (*Polylepis* sp.), quishuar (*Buddleja incana*), aliso (*Alnus jorullensis*), chachacomo (*Escallonia resinosa*), tara (*Caesalpinea tinctorea*) and colle (*Buddleja coriacea*).

22. ***Polylepis* forests** (named after the dominant tree genus) are of particular importance in terms of their own rarity and threatened conservation status, and also as reservoirs of crop wild relatives and providers of ecosystem services. These forests are today largely confined to ravines, rocky slopes and block fields in the high parts of the Andes; there is increasing evidence that this currently restricted distribution is largely the result of human activity including chronic overgrazing and pasture management by burning. The persistence of some of the larger patches of this forest type is thought to be partly attributable to active management by local communities, and the biologically most valuable areas are found close to ancient cultural centres. *Polylepis* forests play an important role in water capture and cycling: they often grow on mist-enshrouded slopes and have a dense microphyllic structure that can effectively "comb" water out of the atmosphere. The water is stored in the loose and fertile soil that typically forms in mature and dense *Polylepis* forests[15]. *Polylepis* forests occur in a number of regions of Peru, including Cusco, where the Lares target area of the project is located (see Table 2).

[12]Hijmans, RJ and Spooner DM (2001): Geographic Distribution of Wild Potato Species. American Journal of Botany 88(11): 2101–2112. 2001.

[13] Memoria Descriptiva – Mapa Nacional de Cobertura Vegetal (MINAM, 2015b)

[14] Cuesta et al. 2012

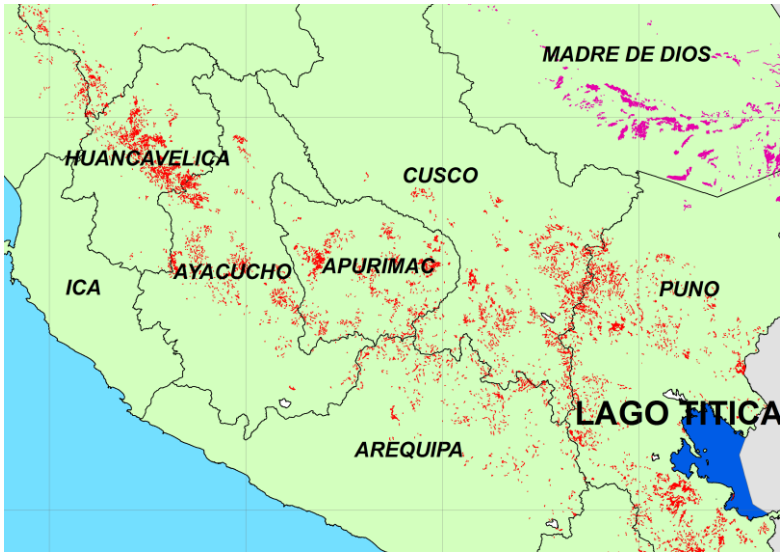
[15]Fjeldsa J (2002). Polylepis Forests – Vestiges of a Vanishing Ecosystem in the Andes. *Ecotropica* **8**: 111-123.

23. Another ecosystem, included solely within the Atiquipa intervention area of the project, in the coastal region, is the **Lomas forests**. These are unique and highly fragile, containing a large number of endemic genera and species, including *Mathewsia* spp., *Palaua* spp., *Weberbauerella* spp., *Domeykoa* spp. and *Nolana* spp. This forest type is located on sea-facing slopes between sea level and 1,300m.s.n.m., and is maintained by trapping moisture from sea fogs. Lomas forests currently cover 2,000km^2, compared to their prehispanic extent which is estimated at 15,000km^2. The Lomas in Atiquipa, which are dominated by *Caesalpinia spinosa,* have an estimated area of 22,800ha, making this the largest remant of this ecosystem, and also the most representative and best conserved.

24. **Non-forest formations** are more significant than forests in terms of area. Natural pastures cover 18,976,149ha and *bofedales* 544,562ha (14.76% and 5.83% of the national territory respectively).

25. ***Bofedales***, which are found in all the Andean target localities of the project, occupy areas that receive water from melting glaciers, rivers, lakes and underground aquifers (groundwater) in addition to precipitation, and store it in the upper basins of the cordillera. Runoff from bofedales is slow and, in many cases, water is filtered through the ground before resuming channelled flow at a lower level. In this way, *bofedal* ecosystems regulate the downhill flux of water and ensure the stability of the soil. Although they may not replace the water storage function of glaciers, bofedales also store considerable quantities of water, which is important in the context of climate change [16].

Figure 5. Locations of *bofedales* in the target area of the project



26. Ecosystem services provided by forests in the Andes include: i) the maintenance and regulation of hydrological cycles (water infiltration rates and storage, as well as replenishment of aquifers) essential in times of drought or pronounced seasonal variations; ii) soil conservation and erosion control, including the maintenance of water quality; iii) continuance of nutrient cycles, carbon storage, nitrogen and organic matter, critical for the preservation of species variety and diversity within species, including levels of productivity; iv) regulating climate, including humidity levels, thereby lessening the impact of climate change, such as prolonged droughts and/or frosts, both of which can severely affect Andean crops in both domestic and wild varieties; v) pollination, particularly in the case of wild relatives, ensuring

[16] http://mires-and-peat.net/media/map15/map_15_05.pdf

their perpetuity in the wild and their genetic contribution to domesticated varieties in terms of gene flow.

27. **Socio-economic context**: indigenous people constitute around 45% of the total national population. The two main indigenous or ethnic groups are the Quechuas (belonging to various cultural subgroups), followed by the Aymaras, mostly found in the extreme southern Andes. A large proportion of the indigenous population who live in the Andean highlands still speak Quechua or Aymara.

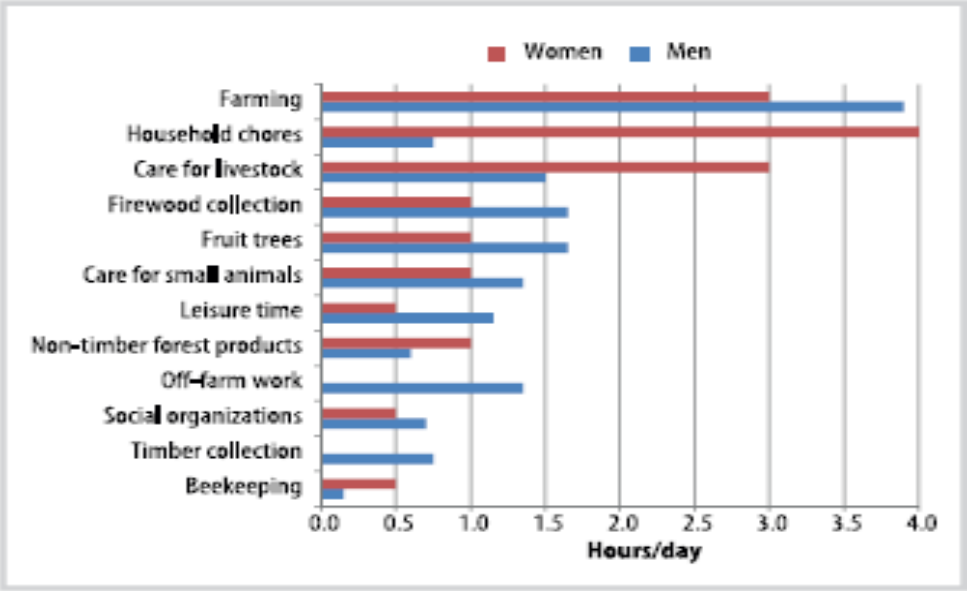
28. Today, inhabitants of the areas of the Andes targeted by the project continue to live in mainly indigenous communities utilizing the same agricultural practices their ancestors used to grow many of the same crops. Agro-biodiversity genetic resources are thus intrinsically linked to ancestral traditional practices and their conservation intertwined with their cultural affirmation. Most of these communities, however, live below the poverty line and represent the poorest segments of the Peruvian population. Dedicated to smallholder farming, and struggling to grow enough food for their families, native communities are increasingly faced with severe land and water degradation problems, which steadily undermine their productivity and livelihoods.

29. Progressive and often indiscriminate land use changes and deforestation, forest degradation and fragmentation, unsustainable wood extraction for construction and firewood, as well as clearings of vast tracks of land to establish pasture and farming areas, are all taking an expected toll on: (i) fragile Andean forest ecosystems, (ii) the indispensable ecological services and functions these provide, and by extension, (iii) the adjacent production landscapes they sustain, including the domestic and wild agro-genetic varieties they preserve.

30. Given that agriculture is the main sustenance and livelihood of Andean communities, the on-going erosion of the productive landscape and its supportive ecosystem has triggered serious socio-economic and environmental problems. At present, integrated landscape management practices in priority agro-ecosystems are either absent or ineffectual, resulting in faulty natural resource management, scarce food security gains, and limited livelihood contributions. The lack of opportunities also triggers a migration process to cities especially among youth, which leads to a severe loss of knowledge and traditional practices.

31. As shown in Figure 6, both men and women participate in agricultural activities: men tend to dedicate more time to crop production and women significantly more to livestock rearing. Timber collection and off-farm work are almost exclusively male activities, while household chores are predominantly carried out by women.

Figure 6. Typical division of roles between men and women in indigenous Andean communities[17]



Legal and policy framework

32. For decades, public policies in Peru failed to address environmental concerns. Short-term economic gains (achieved through deforestation, the introduction of commercial crops, excessive pesticide and fertilizer use) led to severe social and environmental consequences. The Andes area was very exposed to poverty and marginalization. After decades of failed assistance and ill-suited policies in Peru, substantive reforms are finally materializing. The Government of Peru (GoP) intends to integrate agriculture, forestry, and land-use planning policies and incentive mechanisms to address what were in the past, and still to a certain extent, the major drivers behind agro-biodiversity loss: 1) Loss of ecosystem integrity in key agrobiodiversity landscapes; and 2) Economic pressure on farmers to adopt "modern" monoculture crop varieties.

33. Article 68 of the *Political Constitution of Peru* states that the State is obliged to promote the conservation of biological diversity and natural protected areas. The National Agriculture Policy, approved through Supreme Decree 002-2016-MINAGRI, highlights in its Policy Axis 6 on agrarian innovation and technification and specifically its strategic guideline 7, that it seeks to promote processes of conservation and protection of genetic resources and intellectual property.

34. The Law 26839 *Conservation and Sustainable Use of Biological Diversity* and its regulations are the main legal instrument regarding biodiversity conservation. Article 7 identifies the national Biodiversity Strategy as the main planning instrument for the implementation of the law. The law also regulates ex situ and in situ conservation. Regarding ex situ conservation, it states that Ex Situ Conservation Centres must prioritize management of native species and wild relatives, their activities have to comply with the Regulation on Access to Genetic resources (DS N. 003-2009-MINAM) that is fully in line with the regional legal framework in this field (Decision 391 of the Andean community). Regarding in situ

[17] Pacchani community, Apurímac: Source: **Identifying Gender-Sensitive Agroforestry Options: Methodological Considerations from the Field**. Sarah-Lan Mathez-Stiefel, Jorge Ayquipa-Valenzuela, Ruben Corrales-Quispe, Luzmila Rosales-Richard, and Merelyn Valdivia-Díaz. *Mountain Research and Development*, 36(4):417-430.

conservation, Article 38 states that agrobiodiversity areas cultivated by indigenous peoples and aimed at conservation and sustainable use of native species cannot be used for other purposes than the conservation of such species.

35. The process of formalization of these areas is regulated through the *Regulation on Formalization and Recognition of Agrobiodiversity Zones for the Conservation and Sustainable Use of Native Species* (D.S. 020-2016-MINAGRI[18]), whose implementation is under the responsibility of MINAGRI and INIA (National Institute for Agricultural Innovation). Agrobiodiversity Zones are defined as geographic spaces determined by their richness in native, cultural and ecological agrobiodiversity, in which indigenous peoples, through their cultural traditions and in conjunction with biological, environmental and socio-economic elements, develop, manage and conserve the genetic resources of the Agrobiodiversity in their fields and in contiguous ecosystems. The objectives of recognizing an Agrobiodiversity area are i) to promote the conservation and sustainable use of native agrobiodiversity and agroecosystems; ii) to promote the articulation of Agrobiodiversity Zones to economic dynamics at local, regional and national level; iii) to promote the compensation of ecosystem services in Agrobiodiversity Zones in accordance with Law 30215 (see below) and iv) strengthen traditional knowledge systems, indigenous peoples' technologies and innovations and their cultural systems related to the conservation and sustainable use of native agrobiodiversity. Incentives for conservation and sustainable use of agrobiodiversity in these areas include the promotion of use of a brand or distinctive sign for products and goods produced in Agrobiodiversity Zones and the promotion of Mechanisms for Compensation of Ecosystem services, in accordance with Law 30215 (see below). The Law 26839 describes the administrative process for the recognition of Agrobiodiversity Zones and sets the requirements for the recognition.

36. Agrobiodiversity Zones are conceptually similar to the Nationally Important Agricultural Heritage Systems (NIAHS), which is the national level equivalent of the Globally Important Agricultural Heritage System (GIAHS) model[19]. Andean agriculture has been recognized as Globally-Important Agricultural Heritage System (GIAHS), and the transect that goes from Machupicchu to Lake Titicaca has been designed as a GIAHS site in 2011.

37. In 2014, the Law 30215 *Compensation Mechanisms for Ecosystem Services*[20] (CMES) was approved by the Peruvian Congress; its regulation was approved in 2016 through Supreme Decree Nro. 009-2016-MINAM. This Law calls for compensating producers (public or private) engaging in sustainable production practices, sustainable land uses, and/or conservation oriented resource management, thereby generating through their deliberate actions ecosystem goods and services. The Law includes 13 Articles detailing a variety of guiding

[18] http://www.minagri.gob.pe/portal/decreto-supremo/ds-2016/18002-decreto-supremo-n-020-2016-minagri

[19] The concept of GIAHS is distinct from, and more complex than, a conventional heritage site or protected area/landscape. GIAHS is a living, evolving system of human communities in an intricate relationship with their territory, cultural or agricultural landscape or biophysical and wider social environment. The humans and their livelihood activities have continually adapted to the potentials and constraints of the environment and also shaped the landscape and the biological environment to different degrees. GIAHS sites are expected to fulfil the following criteria which will demonstrate the characteristics of GIAHS which focus agricultural production as a basis and has both tangible and intangible effects: i) Food and Livelihood Security; ii) Agro-biodiversity iii) Local and Traditional Knowledge systems iv) Cultures, Value systems and Social Organisations v) Landscapes and Seascapes Features.

[20] Ley de *Mecanismos de Retribución por Servicios Ecosistémicos* (No. 30215). In Spanish "retribuciones" is equivalent to the words "repayment", "reimbursement", "compensation", "remuneration" for a service or good rendered. During the nation-wide consultative process for the drafting the Law, stakeholders unanimously favoured the term "retribuciones", rather than using the reference to "payments".

frameworks, the definition of terms and operational principles, provisions for contractual arrangements, mechanisms for their formal registration and review by the Ministry of Environment (MINAM), payment modalities and financing mechanisms, guidelines for the mutual valuation of services rendered, requirements and provisions for governance arrangements, standards for the roles and responsibilities of parties involved, including those of MINAM, regional and local governments, as well as the buyers and sellers of services, instruments and methodologies for monitoring and evaluating ensuing benefits derived from modified behaviours, among others. It comprises an ample range of environmental services, a varied group of buyers and sellers, the particularities of distinct regions of the country, as well as feedback from initiatives in different stages of development and implementation. The formulation of the Law has also benefited from substantive external guidance from Biodiversity International, among other institutions. The Law 30215 addresses globally and nationally recognized significant agricultural sites in the Peruvian Andes. The environmental services include maintained genetic resilience at the productive landscape level, safeguarding the underlying evolutionary processes between farmers and the genetic selection conducted over hundreds of years, preserving the unique cultural knowledge base and traditional know-how associated with agro-biodiversity, and securing the provisions of food security options in the face of increasing climate change and related socio-economic uncertainty.

38. The Law is consistent with the guidance of the GEF Scientific and Technical Advisory Panel (STAP) on payment for environmental services (PES) and ensures: (i) the voluntary nature of any contractual arrangement, (ii) contingent transactions between (a) at least one seller; and (b) one buyer, and (iii) a well-defined environmental service, or a land use likely to secure that service. The Law equally addresses the potential threats to the sustainability of payments for environmental services. Issues pertaining to: (i) non-compliance with contractual obligations are contemplated in Articles #7-8-9-10 and #12 of the Law; (ii) effective administrative selection in terms of areas or contracting parties, including their ability to effectively deliver the proposed services cost-effectively, are considered in Articles # 6-7-12 and 13; (iii) ensuring that the protection of a resource in a given area does not inadvertently stress or compromise another elsewhere, is secured in Articles # 1-6-12; and (iv) the ineffective selection of an area and corresponding stakeholder group where the intended service(s) would have been provided anyway without the incentive of compensation, is overseen in Articles 10-11-12-13.

39. This legal framework establishes six (6) key steps for the design of the CMES: i) Characterization of the structure and functioning of the ecosystem; ii) Identification and characterization of contributors and recipients; iii) Estimation of the economic value of the ecosystem service; iv) Establishment of agreements between contributors and recipients; v) Promotion of a governance platform; vi) Design of a monitoring system.

40. In order to promote the implementation of the Law and its regulation, the Ministry of Economy and Finance (MEF) developed the *Guidelines for the formulation of public investment project (PIP) in biodiversity and ecosystem services*, the so called green PIP. The guidelines describe three types of projects: i) PIP for Ecosystem services, which prioritize water regulation and soil erosion control services; ii) PIP for ecosystem, which prioritize rehabilitation of degraded ecosystems, and iii) PIP species, which prioritize the protection of genetic resources.

41. MINAM is working with the MEF along with the technical support of Bioversity International (formally IPGRI - International Plant Genetic Resources Institute) to identify the

indicators and parameters to assess public sector initiatives and investments that could receive the incentives foreseen in the Law 30215.

42. The production and commercialization of seeds is regulated by the Law 27262 *General Law on Seeds* and its regulations (General regulation, approved through Supreme Decree N. 024-2005-AG, Regulation on Seeds Certification, approved through Supreme Decree N. 024-2005-AG and regulations for specific species or group of species, including rice, maize, potato, forest seeds, among others). The national Seeds Authority is INIA.

43. The National Agrarian Policy, in its Policy Axis 8, indicates that for the development of capacities three strategic guidelines will be applied: the promotion of agrarian extensión and training based on providers who respond to differentiated and specific demands (yachachiq and field school models, etc); the promotion of interchanges of knowledge and learnings; and, in coordination with other sectors and regional and local governments, promote the training of rural women and youth. Furthermore, Law 30355 *Promotion and development of family farming* establishes State responsibilities in the promotion of and development of family farming, recognizing its role in food security, conservation and sustainable use of agrobiodiversity, and fostering of local economies. The law establishes that MINAGRI, in coordination with regional and local governments, will promote the development of family farming. Regarding financial resources for the promotion of Family Farming, the law states that the Agricultural Bank (AGROBANCO) strengthens, expands and, if necessary, creates credit programs, instruments and financial products that are appropriate to the productive units of family agriculture, while the Multisectorial Commission for the Promotion and Development of Family Farming promotes the creation of financing mechanisms and instruments adequate to the needs and possibilities of Family farming. For the implementation of the provisions of this law, local governments may allocate up to ten percent (10%) of budgeted resources for investment to finance productive projects in favour of family farming.

44. In 2015, the Ministry of Agriculture and Irrigation (MINAGRI) also approved the "National Strategy for the Promotion of Rural Talents to 2021", also known as the National School of Rural Talents. The purpose of this strategy is to contribute to the expansion and strengthening of extension services, technical assistance and rural training, adapted to the needs and demands of producers and producers of family agriculture, consolidating the rural extension model of Rural Talents in Framework of the National Agricultural Innovation System (SNIA). The National School of Rural Talents, which is managed through AGRORURAL and is supported by IFAD, is articulated to the Family Farming Strategy, as Rural Talents will help meet the demand for technical assistance that exists in small-scale agriculture. AGRORURAL is registered with the National System for Evaluation, Accreditation and Certification of Educational Quality (SINEACE) as certifier of the competency of extension agents; in addition, there exists in INIA a Register of Technical Assistance Providers, which lists 351 *yachachiqs*, of which 59 are in Cusco and 28 in Puno..

45. The *Forestry and Forest Fauna Law* N. 29763 was approved in 2011, aiming to promote the conservation, protection, increase and sustainable use of forest resources in Peru, integrating forest management and improvement of forest ecosystem services. The law is regulated through four Regulations: i) Forest Management Regulation, ii) Forest Fauna Management Regulation; iii) Regulation for Forest and Forest fauna Management in Rural Communities and Native Communities, and iv) Regulation for the management of Forest Plantations and Agroforestry Systems. The Law establishes that management plans are the

main tool for implementation, monitoring and control of forest management activities in native and rural communities. The Forestry and Forest Fauna Service (SERFOR) of MINAGRI is the authority in charge of providing guidelines for the development of forest management plans, taking into account the peculiarities of different types of forest in each ecological region of the country. The regulations foresee benefits and incentives such as technical assistance, assistance to the access to financing for forest management, among others.

46. At the international level, Peru signed the *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity* in 2011 and ratified it in 2014 through Supreme Decree 029-2014-RE.

47. Peru is also a member of the *International Treaty on Plant Genetic Resources for Food and Agriculture* (signed in 2001, ratified in 2003 and came into operation on 29th June 2004), that recognizes the enormous contribution of farmers to the diversity of crops that feed the world; establishing a global system to provide farmers, plant breeders and scientists with access to plant genetic materials and ensuring that recipients share benefits they derive from the use of these genetic materials with the countries where they have been originated. The national Regulation on Access to Genetic Resources (Ministerial Resolution N° 087-2008-MINAM of 31st December 2009) has as its objectives a) the provision of conditions for fair and equitable participation in the benefits derived from access to genetic resources; b) establishment of the bases for the recognition and valuation of genetic resources and its associated intangible components, especially in the case of indigenous communities and peoples; c) promotion of the conservation of biological diversity and the sustainable use of biological resources that contain genetic resources; d) promotion of the consolidation and development of scientific, technological and technical capacities at local, regional and national levels; and e) strengthening of the national negotiating capacity. Points a, b and e are the most closely related to the project and compliance with the regulation, in relation to access to genetic resources and the protection of traditional knowledge, will constitute the reference framework for the project.

<u>Land use planning and territorial management instruments</u>

48. Concerted Development Plans (CDPs) at regional, district and community level. The Organic Law on Regional Governments[21] states that one of the responsibilities of regional governments is the formulation of CDPs, in coordination with local governments and civil society. CDPs have a multidisciplinary territorial perspective, taking into account physical/geographical, eocsystemic and human (demographic, physical, sociocultural, institutional and symbolic) dimensions. CDPs are approved by Regional or Municipal Ordinances, and are linked, among others, to institutional strategic plans of the respective regional or local governments, and their annual plans of operations, sector plans, and participatory budgets and multiannual investment programmes.

49. Not all the districts have developed their development plans. In addition, in many cases the existing plans have not been developed in a participatory manner. Community level plans have not been developed yet.

50. Spatial Planning (*Ordenamiento Territorial*): the Policy Guidelines on Spatial Planning[22] aim to link different sector policies and orient the actions of local and regional governments with regard to the critical problems arising from the occupation and use of lands. The

[21] Ley N° 27867: Ley Orgánica de Gobiernos Regionales en su Artículo 9- inciso b

[22] Feb. 2010 - Resolución Ministerial n.° 026-2010-MINAM

Technical Instruments on Spatial Planning[23] sets out the methodology for the formulation of the technical instruments: Ecological and Economic Zoning (EEZ), specialized studies, Integrated Territorial Diagnoses (DIT), and Territorial Plan Use Plans (*Planes de Ordenamiento Territorial*), as well as the procedures for their validation and approval.

51. MINAM has established financing mechanisms and technical instruments for the planning of management through public investment in coordination with MEF, defining the conditions that must be met by Public Investment Projects (PIPs) in relation to Territorial Land Use Planning; MINAM is the competent authority for Territorial Land Use Planning and the General Directorate of Environmental Territorial Land Use Planning (DGOTA) is the responsible organism.

52. Ecologic and Economic Zoning (EEZ): established through D.S. 087-2004-PMC, EEZ is a dynamic and flexible process for the identification of different alternatives for the sustainable use of a defined territory, based on the evaluation of potential and limitations through biological, social, ecological and cultural criteria. Once approved, the EEZ is a technical instrument that provides guidance on sustainable use of a territory its natural resources. For the development of EEZ processes at regional and district level, a Technical Commission has to be created, including representatives of local authorities, scientific institutions, universities, sectorial institutions, the private sector, indigenous communities and non-governmental organizations. Nationally, 13 out of 25 regions have full EEZ, but in these, full use has not yet been made of the information available for the resolution of specific problems related to soil, vegetation, use conflicts, etc., and there are inadequate linkages between different levels of Government. In the project area, only the regions of Cusco, Huancavelica and Apurimac have developed EEZ, while no substantial advance has been made at district level. Technical Commissions have not been established.

53. The development of Land Use Plans is in progress in the five selected regions, while there is no substantial advance at district level. The development of Rural Development Plans is in progress in the five selected regions, while there is no substantial advance at district level.

54. The Law on Water Resources[24] established technical criteria for the identification and delimitation of watershed boundaries, allowing the National Environment Authority (ANA) to evaluate their vulnerability and take measures for their protection and conservation.

Markets and labelling schemes for agrobiodiversity products

55. More detailed information on markets, based on studies compiled during the PPG phase, is presented in APPENDIX 11.

i) Market linkages

56. Exports of Andean biodiversity products (non-conventional products) followed a significant upward trend in recent years, reaching USD433 million in December 2014, representing 3.72% of total exports of non-traditional products. Among the most notable products are quinoa, cochineal, maca, yacón, sacha inchi, huito, purple corn, camu camu, barbasco, aguaymanto, chirimoya, sangre de grado, guanábana, chancapiedra, tuna, granadilla, pasuchaca, chuchuhuasi, muña, cocona, copaiba and tumbo[25]. Regarding the domestic market, there are no complete statistics, however, it is estimated that the

[23] May. 2013 - Resolución Ministerial n.° 135-2013-MINAM, defines the technical instruments supporting land use planning

[24] Law N° 30640, modifying Article 75 of the Law on Water Resources (N°29338)-July 2017

[25] Programa Nacional Transversal de Ciencia, Tecnología e Innovación Tecnológica de Valorización de la Biodiversidad 2015-2021.

consumption of products of the Andean agro-biodiversity continues its growing trend started years ago, mainly due to the use of these as ingredients of the Recognized Peruvian gastronomy. The growing international consumption trends of healthy products such as quinoa, kiwicha, etc. would have contributed to this growth.

57. Increasing market linkages of small-scale producers of agrobiodiversity products is a key driver to enhance dynamic conservation of ABD products and to increase food and nutrition security. Accessing remunerative markets for ABD products (their nutritional and functional values) will provide small-scale producers with the means to preserve and increase the volume and diversity of their production of these products to address market demand, but also to benefit from their nutritional benefits through self consumption. Domestic market and non-monetary local exchanges of food are particularly important to contribute to a nutrition sensitive food system and value chains.

58. In this perspective, it is interesting to support the developpement of innovative or territorial markets that link producers more directly to consumers through territorial markets, such as farmers' fairs or ecofairs, and community supported agriculture[26]. The Law 29196 on farmer's markets will provide a framework to support such inititaives in the project.

ii) Labeling, distinctive signs and the related certification schemes

59. A way to preserve ABD is to differentiate ABD products from other conventional products in the market, through distinctive signs i.e. labeling and certifications, so buyers and consumers can make informed choice and prefer ABD products. Labelling helps consumers to recognize specific characteristics of the products claimed by the producers (such as ABD); the certification scheme provides the guarantees to buyer/consumer that the product complies with the claims on specific characteristics, by checking that the product and production process comply with the related standard. That is why an important strategy of this project, under component 2, is to support the development of appropriate labels referring to ABD characteristics, by supporting the definition and implementation of the labeling systems, including standard and certification scheme.

60. In Peru, many different public or private standards and labels are implemented depending on the targeted market. Some are particularly appropriate for promoting ABD products: organic (e.g. on quinoa, cacao, Brazil nut), geographical indications (or denomination of origin, 8 are registered by INDECOPI) or other local initiatives of private branding. In addition to them, a specific label can be designed and implemented specifically for the Peruvian ABD areas building on the experience of the GIAHS labeling system in other countries.

61. Certification is often undertaken by a third party, which can represent an approach for small-scale producers that is too expensive, is are therefore mostly used for export markets. An alternative for the certification for local market is the participative guarantee system (PGS). All these elements are described below.

62. **Participatory Guarantee System(s)**[27] **(PGS)** are locally focused assurance systems. PGS allow farmers to have certification based upon active participation of stakeholders and built on a foundation of trusts, social networks and knowledge exchanges. PGS represent an alternative to third party certification, especially adapted to local markets and short supply

[26] Community-supported agriculture is a system a system by which consumers purchase a share from a local farm or local network of farms, and periodically receive vegetables and other agricultural products throughout the farming season.

[27] Participatory Guarantee Systems (PGS) are locally focused quality assurance systems. They certify producers based on active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange.

chains. They enable the direct participation of producers, consumers and other stakeholders (as public authorities in some cases) in: i) The choice and definition of the standard; ii) The development and implementation of verification procedures; iii) The review and decision-making process to certify product/farmer plots. PGS integrate capacity building and allow farmers and reviewers to help solve practical problems [and meet consumers' specific expectations], while encouraging more responsibility and active involvement of stakeholders[28].

63. In Peru, PGS schemes are based on organic production standards, established through Law N. 29196, and the procedures manual issued by the National Council of PGS. The National Council of PGS is the lead entity in the country, in charge of promoting, developing and implementing the system at the national level, in coordination with the regions. It is composed of public-private institutions such as the Peruvian National Association of Ecologic producers (ANPE-Peru), the Development and Environment Institute (IDMA), the National Institute for Agricultural Innovation (INIA) and the Consumers and Users Association (ASPEC). The Regional Councils are in charge of adapting the processes to the local context.

64. MINAGRI is finalizing the design of the national certification system for organic products called the Ecological Participative Guarantee System (EPGS), an instrument that will allow expansion of the certification of agricultural products at lower costs. The aim of this system is to provide consumers with healthy and safe food, thus contributing to food security, and economic benefits to small producers of family and subsistence agriculture.

65. **Geographical indication (GI)** is a name or sign associated to a geographical location that is used on products originating from this place and presenting some specific qualities or reputation because of their link to origin, as a result of local traditional methods or natural resources involved in the production. Defined internationally[29] as an Intellectual Property Right (IPR), once the specific quality or reputation linked to geographical origin is demonstrated, the GI has to be protected on the markets against misleading or infringement. GI is linked to a collective heritage (reputation, *terroir* and the related local natural and cultural resources) and as such, it requires collective action from local stakeholders and has impacts on public goods (landscape, biodiversity, nutrition, etc.). The GI process is therefore a way to combine a collective marketing tool with the management of cultural and biodiversity heritage.

66. In Peru, GIs are called denomination of origin (DO) and are regulated through Legislative Decree No. 1075 (Supplementary provisions to Decision 486 CAN) and Law No. 28331 (Law of the Regulating Councils of Denomination of Origin), managed by National Institute for the Defense of Competition and Protection of Intellectual Property (INDECOPI)[30]. The use of the Denomination of Origin is subject to an authorization of use granted by INDECOPI's

28 The Peru PGS case is described in: http://www.ifoam-eu.org/sites/default/files/pgs_study_report_brief.pdf.

29 Article 22 of the World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) (1994) defines GIs as "*indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin.*

30 INDECOPI is a specialized autonomous public agency, created in 1992 and ascribed to the Presidency of the Council of Ministers. It is endowed with legal authority in domestic public law and has functional, technical, economic, budgetary and administrative autonomy. Its principal functions are market promotion and the oversight and protection of consumers' rights. In addition, it promotes fair and honest competition in the Peruvian economy, safeguarding all forms of intellectual property: from trademarks and copyrights to patents and biotechnology. Within this mandate INDECOPI also confers Denomination of Origin (DO) confirming the particular attributes, production methods, geographical location, and socio-economic factors linked to a given product of a specific region.

Directorate of Distinctive Signs. Each DO to be registered must define its link to origin and specifications (rules of production and product characteristics). Registered DO have to establish a Regulatory Council in order to guide, monitor and control the production and processing of products with DO, ensure the prestige of the DO in the national and foreign markets, act with legal capacity in representation and defense of the interests of the DO, guarantee the origin and quality of the product, establishing a quality control system, establish and apply sanctions to associates for non-compliance with the statute. To date INDECOPI has conferred 8 DOs in Peru, but only 2 are operational (Pisco and Chulkucunas) as a result of the establishment of the Regulation Council by producers. This is an indication of the need for building capacity of small-scale producers in the field of producer's organization, marketing and certification.

67. **Labelling for products and services located in Agrobiodiversity Zones or Globally Important Agricultural Heritage systems (GIAHS):** experiences of specific label and standards associated to GIAHs areas have been developed in some countries (e.g. Chile, China) and represent an interesting model for labeling proucts and services related to ABD in the Peruvian ABD areas. The objective is that areas can add value while preserving agrobiodiversity. These labels for goods and services localized in GIAHS and complying with a certain standard make visible to consumers the existence of a specific biodiversity area and guarantee the contribution to biodiversity of the goods having this label. Such a label has not been developed yet in Peru and the project will support such an approach, by building on other Latin American experiences[31].

68. Both GIs and GIAHS labels are based on territorial branding strategy linked to local products that can contribute to ABD conservation. Indeed, the GIs and GIAHS specifications are built upon participatory approaches with local stakeholders, and allow designing specifications that best fit to the local situation (i.e. values and needs to be addressed) and objectives (i.e. biodiversity typicality, and preservation and promotion of traditions), ensuring sustainability. The specific GI and GIAHS standard(s) (or specification) usually recognize traditional and agro-ecological practices already existing. Therefore no additional cost is generally foreseen at production level, and PGS or internal certification systems could also reduce, the certification cost [32]. GIs and GIAHS support public-private partnerships and thanks to protected geographical indication, which links the region and traditional knowledge with the product, producers can add value to their products, which can be sold to customers who are willing to pay a premium, and in turn bring in higher prices and improve producers' livelihoods[33].

69. **Labels developed in some interesting initiatives related to ABD in Peru.** Some private stakeholders in Peru have developed a labelling strategy with a specific branding and collective trademark and specifications, in particular: *Frutos de la Tierra*[34], a collective brand developed

[31] See the example of GIAHs in Chiloe (Chile), and specifically about the label specification. The scheme for Peru will be adapted to local conditions as will depend on the local needs and objectives. Chiloe: specification of the GIAHS label: https://www.feedingknowledge.net/02-search/-/bsdp/6750/en_GB. One product benefiting from the Chiloe label, with now market development in Europe: http://puntachilen.es.tl/Cooperativa-de-Ajos-de-Punta-Chilen.htm; https://www.facebook.com/chiloegourmet

[32] See FAO guidelines on GIs: http://www.fao.org/docrep/013/i1760s/i1760s00.htm

[33] http://www.wipo.int/geo_indications/en/ . For instance, in Cameroon, sale prices per kilogram of traditional Oku white honey increased 40% only a few years after the GI was registered. In China, following the GI registration of the traditional indigenous Pinggu peach the price of a Pinggu peach rose to a level 35% higher than other peach varieties.

[34] Asociación Nacional de Productores Ecológicos del Perú (ANPE Perú) es la organización que agrupa en el Perú a los pequeños productores agroecológicos

by the national association of agroecological product - ANPE), *Sumaq sonqo,* a territorial brand for native potato in Huancavelica, *AYNOK'A*, a territorial brand for organic quinoa in Puno and *Quinoa del sol*. The brand belongs to a legally recognized institution that is organized and represents the producers. The organization establishes its own rules (specifications) related to the elaboration of the products including the quality and origin of the ingredients, the methods used and the place of production. Slow food initiatives[35] can also represent an interesting option to link ABD proucts to relevant local and international markets.

70. All these labels and related standards and certification schemes (organic, GI, GIAHS, private brands) can be complementary or combined depending the products, local situations, and targeted markets. They can also be combined to different market linkage strategies (value chain or innovative/territorial markets). The strategy of this component is to provide a range of labeling tools and market linkages options, so to adapt the diversity of producers and territory conditions and characateristics.

71. For those farmers who can not comply with organic standard, GI or ABD territorial label will add value in relation to their place of production offering new opportunities for agro-ecological/typical producers to inform consumers about their specific values (agro-ecological, typicality) . For the other farmers who cannot afford third party certification scheme, PGS provide an interesting certification option that also enhances creation of local markets by linkg producres and consumers.

72. Urban consumers in developing countries represent an important market for these territorial-branded products as they look for local, identity-based and sustainable food products (see FAO guidelines and forthcoming assessment of economic impacts which will support the project strategy of the full project document in 2016)[36].

73. Peru is a member of the Mountain Partnership since its creation in 2002 and the second meeting of this UN alliance was hosted in Cusco in 2004. It was part of a regional TCP that promoted the setup of the Andean Initiative of the Mountain Partnership – a national assessment of Peruvian mountains was conducted as part of the TCP. Mountain Partnership label in collaboration with Slow Food has been granted by the MPS to some Peruvian products. This label is granted at no cost to mountain products that match the key values and requirements. The label is a narrative one, telling the story of product and the community, its tradition and values.

1.1.2 Areas of intervention

74. The project will work in five target localities located in five regions of Southern Peru (see Figure 7 and Table 2). The localities were originally defined on the basis of administrative divisions, consisting of one district each, but analyses and discussions during the PPG phase led to them being redefined on the basis of river sub-catchments, in order to allow the landscape management approach to be incorporated, with an emphasis on the maintenance of flows of ecosystem services.

[35] Slow Food is an international NGO, located in Italy, linking networks of producres and consumers. Slow Food Foundation for Biodiversity is the operational body for the protection of food biodiversity, by preserve and promote traditional and ABD food, through presidia, Ark of Taste, Earth'smarket… see in Peru:
https://www.fondazioneslowfood.com/en/nazioni-presidi/peru-en/ https://www.facebook.com/Slow-Food-Peru-194985747232673/

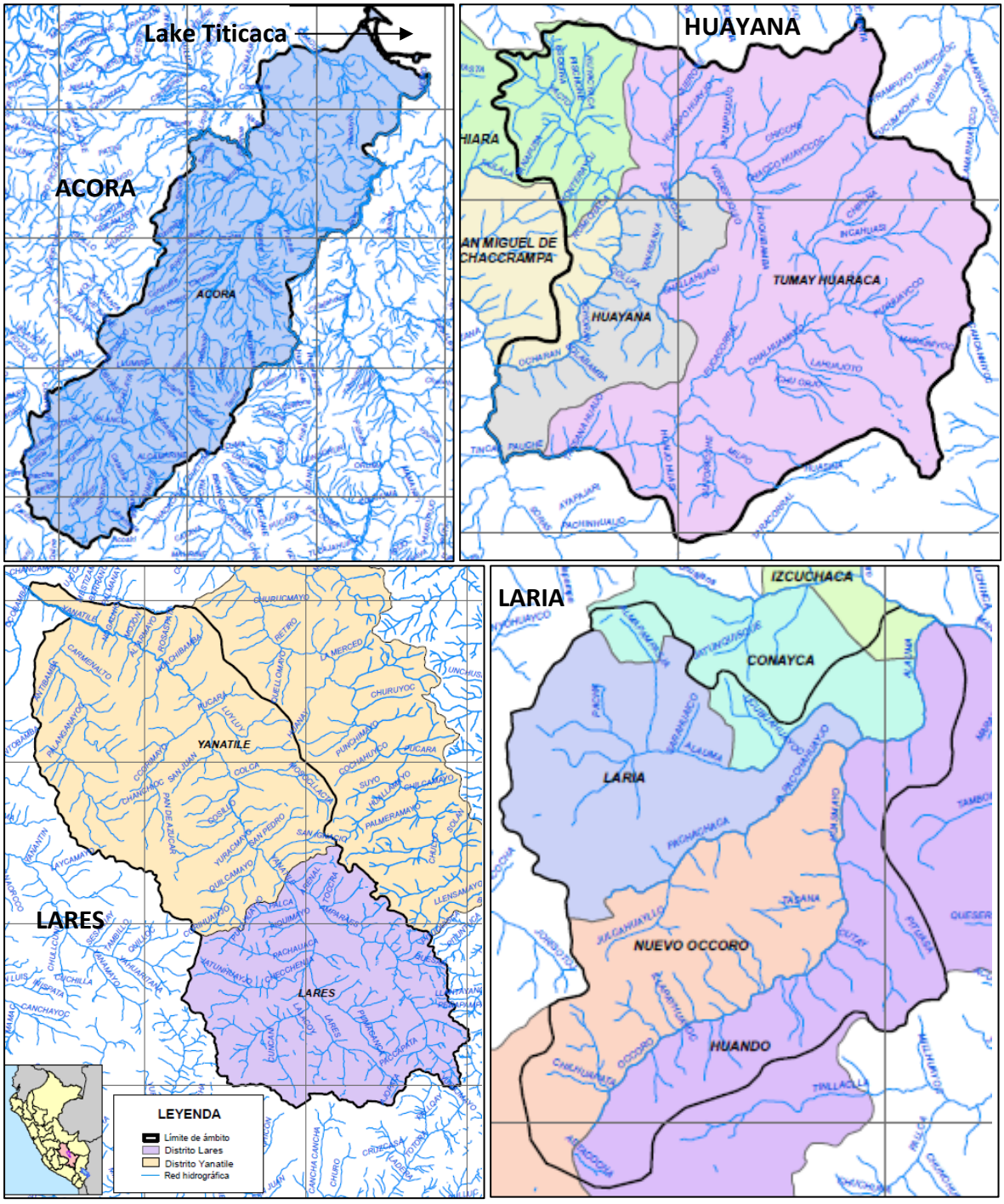
[36] Regarding economic impacts on GIs, FAO is carrying a global study based on 10 cases: the first results demonstrate premium price and better income with differences in the redistribution along the value chain according to the type of value chain governance.

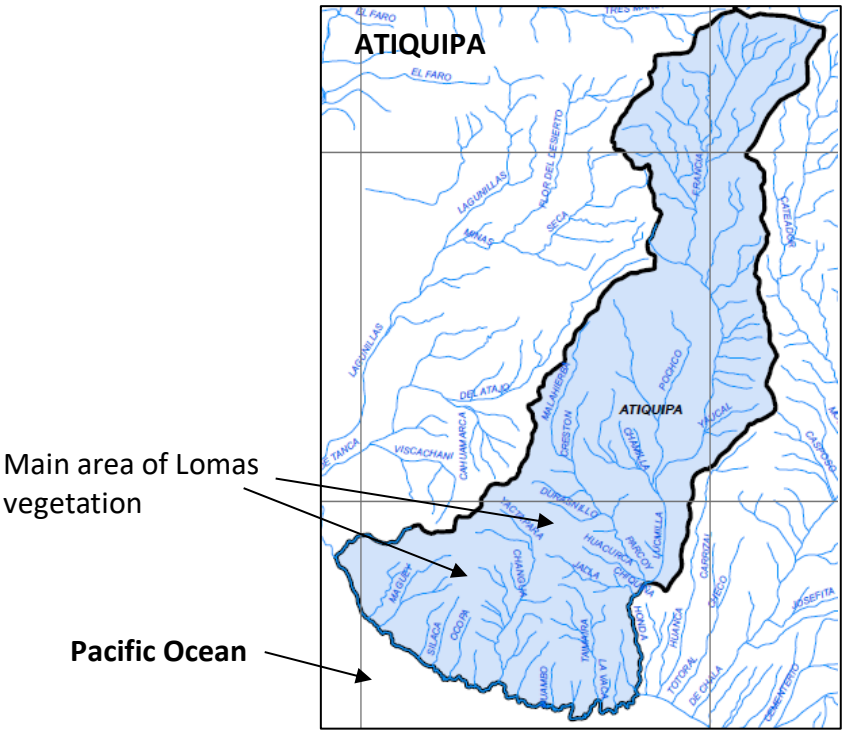
Figure 7. Location of target localities in southern Peru

Table 2. Locations of target areas

Target localities	Catchments	Province	Region	District	% of district included	Area by district (ha)	Total area (ha)
1. Acora	Blanco - Ilave	Puno	Puno	Acora	100%	192,979	192,979
2. Huayana	Ocharan-Pauche-Soras	Andahuaylas	Apurímac	Huayana	100%	9,530	64,287
				Chiara	47%	6,957	
				San Miguel de Chacrampa	29%	2,463	
				Tomay Huaracca	100%	45,337	
3. Lares	Lares - Yanatile	Calca	Cusco	Lares	100%	73,315	176,586
				Yanatile	52%	103,271	
4. Laria	Alauma - Mantaro	Huancavelica	Huancavelica	Laria	100%	6,432	21,327
				Conaya	45%	1,871	
				Izcuchaca	22%	269	
				Nuevo Occoro	28%	6,809	
				Huando	30%	5,946	
5. Atiquipa		Caraveli	Arequipa	Atiquipa	100%	42,306	42,306
						Total (ha)	497,485

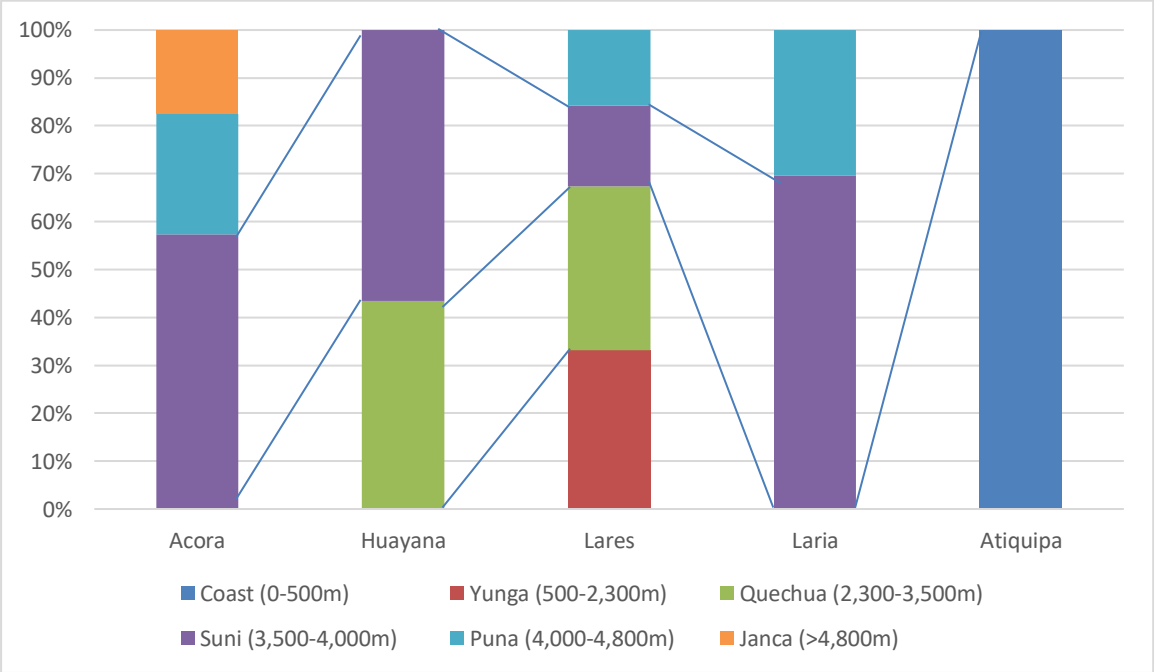
Figure 8. Target Localities, with district boundaries and drainage networks





75. The localities range from sea level to the high Andes (6,768m), covering six of the country's principal altitudinal categories (see Figure 9, and Figure 1 and Box 1 for definitions).

Figure 9. Altitudinal ranges of the target localities



The first four localities are principally Andean (Quechua, Suni, Puna and Janca, from 2,300 to 6,768m); in addition, Lares includes a significant proportion (around a third) of lower altitude *yungas*. These four localities contain a wide diversity of globally important Andean crops, detailed by locality and altitudinal category in APPENDIX 8. The types of crops, production systems and traditional management practices found in these areas are described in paragraphs 8-12. Puno and Cusco regions (locations of the Acora and Lares target areas) host the first GIAHS site in Peru, which includes the environment around the sacred city of the

Incas, Machu Picchu (1900 m.), follows the whole Vilcanota river watershed up to the divortium aquarium in the Raya (4,300 m), and crosses the northern part of the Peruvian high plateau to reach Lake Titicaca at 3,800 m.

76. In addition, these target localities contain significant areas of high altitude natural pastures, wetlands and woodlands. These have been included in the target localities by virtue of the crucial roles that they play in the maintenance of the ABD production systems, through hydrological regulation, and as reservoirs of crop wild relatives (CWRs) which interact in a dynamic manner with the cropping systems (for example in the *layme* rotation system described above, in which crop fields are established on a rotational basis in natural pastures and wetlands containing CWRs, and in the case of on-farm patches of *Polylepis* woodland).

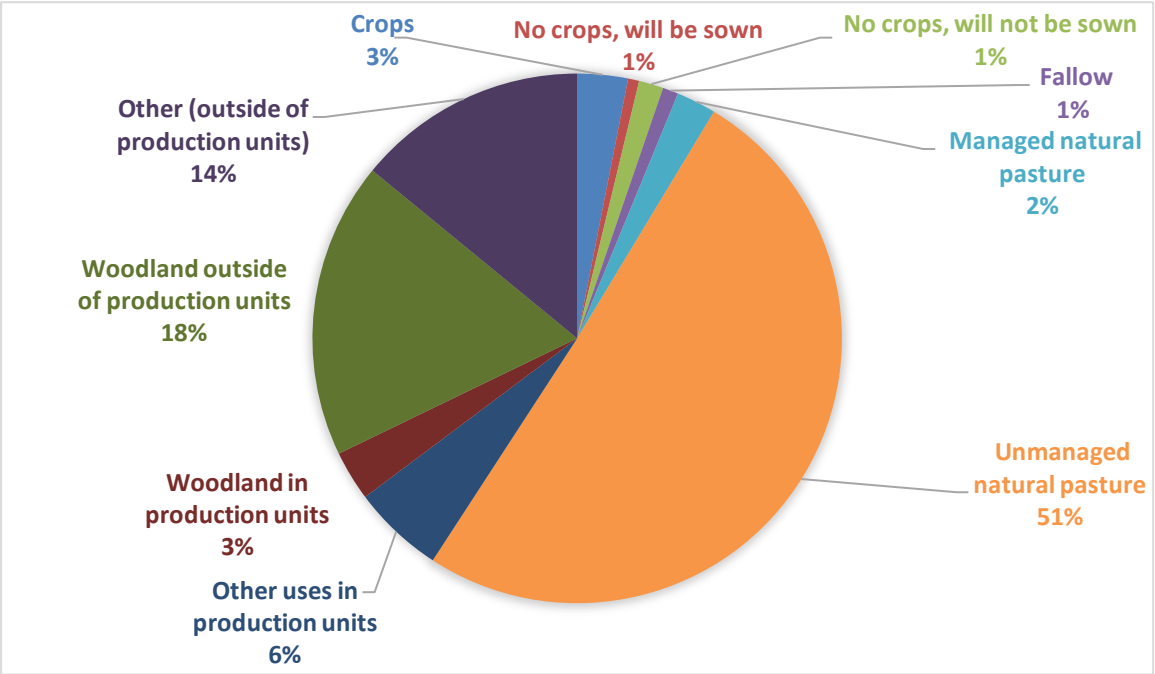
77. The inclusion in the Lares target locality of an area of yunga (500-2,300m) responds to the geographical configuration of the sub-catchments that constitute the locality, and also to the fact that the lower yunga area constitutes in itself an important landscape for agrobiodiversity, in which valley bottom crops and production systems are dependent on the maintenance of the premontane *yungas* forests that surround them, as well as the higher altitude cropping areas, pastures and wetlands that feed the Lares and Yanatile rivers.

78. As shown in Figure 10Figure 11, by far the most dominant land use in the target districts is pasture (53% of the total area and 78% of the area of production units, of which 96% is unmanaged). Areas under active cultivation at any one time only account for 4.5% of the total area.

Table 3. Land use breakdown in the target localities

	Acora	Huayana	Lares	Laria	Atiquipa	Total
Crops	5,462	2,816	8,367	1,558	139	**18,343**
No crops, will be sown	1,279	122	1,201	1,398	15	**4,015**
No crops, will not be sown	123	31	1,876	178	6,706	**8,914**
Fallow	1,981	595	557	2,335	192	**5,661**
Managed natural pasture	9,983	124	1,874	2,381	62	**14,425**
Unmanaged pasture	185,107	33,000	58,084	23,856	16	**300,063**
Other uses in production units	16,373	6,035	7,357	3,466	-	**33,231**
Woodland in production units	2,641	2,335	11,099	2,053	1	**18,128**
Woodland outside of production units	144	1,387	83,090	47	22,800	**107,468**
Total area	**192,979**	**64,287**	**272,905**	**21,327**	**42,306**	**593,804**

Figure 10. Overall land use breakdown in the target districts



79. The types of land use and production systems in all of the target landscapes are highly stratified by altitude: almost all of the higher altitude strata consist of unmanaged pasture, which accounts for 93% of the land above 4,500m, 88% between 4,000m and 4,500, and 79% between 3,500 and 4,000m (see Figure 11 and Table 4). There is no significant area of agricultural crops above 4,500m, but the area under crops gradually increases at lower levels. Woodland is also very scarce at higher levels, with none registered above 4,500m and less than 2% between 3,500m and 4,500m, while it covers around 15% of the area between 2,300m and 3,500m, and 12% of the yunga stratum between 500m and 2,300m.

80. The main exception to this pattern is the Costa altitude class (0-500m), found only in the Atiquipa target locality, which has less than 4% pasture area and only around 2% under crops. This area is classified climatically as “cold desert”, with annual rainfall of around 150mm and as a result largely unsuitable for cropping.

Figure 11. Land uses by altitude class in the districts included in the target localities[37]

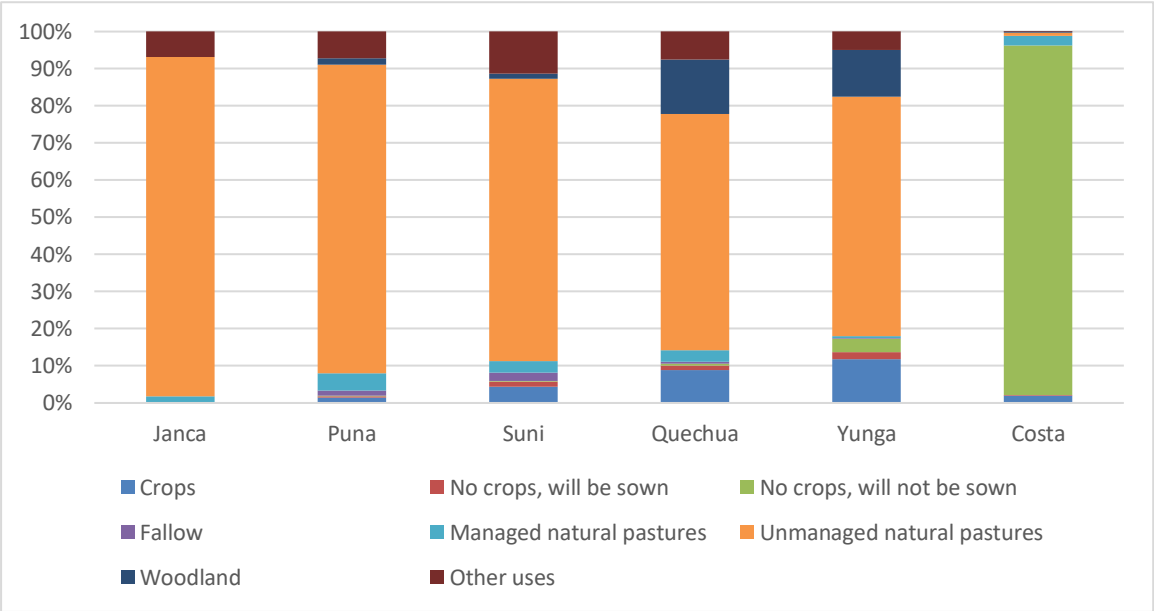


Table 4. Prioritized crops and production systems in the target localities

Target locality	Prioritized native crops/species	Prioritized production systems
1. Acora	Cañihua, quinoa, native potato (*S. tuberosum*), sour potato (*S. andigenum*), kiwicha, lupin	*Aynoca* (a soil rotation system similar to the *laymes*); *waru-waru* – cultivation of potato, quinoa y cañihua through a water saving system; terraces
2. Huayana	Quinoa, kiwicha, maize, olluco, mashua, native potato, native fruit trees such as tuna (*Opuntia ficus indica*)	Rotation systems (*laymes*), terraces combined with agroforestry, combinations of single crops and polyculture
3. Lares	Native potatoes, maize, quinoa, wild lupin, muña	
4. Laria	Native potato, quinoa, maca, mashua, olluco, oca	
5. Atiquipa	Tara (*Caesalpinia spinosa*), arrayan (*Myrcianthes ferreyrae*).	Capture of sea mists and aquifer recharge by threatened *lomas* forests, benefiting irrigated agriculture downstream

1.2 THE CURRENT SITUATION

1.2.1 Threats to Global Environmental Benefits

81. Despite the importance of native tubers for highland Andean peasants culture, signs of genetic erosion have been documented at both species and intraspecific levels, for example the loss of native varieties of *S. stenotomum* subsp. *stenotomum*, and *S. s*. subsp. *goniocalyx* in Cusco, as well as loss of native potatoes in Ancash and potato wild relatives in Cusco,

[37] The land use data correspond to the entire areas of the districts in question even if in many cases they only partially coincide with the project localities, as land use data are only available at district level.

Apurímac and Lima. This process appears to have been especially drastic during the last three decades[38].

82. Threats to the maintenance of agrobiodiversity by farmers include the following:

83. **Introduction of intensified agriculture and new crop varieties:** studies in Peru suggest that the introduction of improved potato cultivars may decrease the diversity of local potatoes, at least in the short term, but in the longer term this effect becomes less significant as farmers who have adopted improved cultivars still retain local landraces over a proportion of their land: the diverse local landraces tend to continue to be used for home consumption, in contrast to the demand by markets for a narrower range of varieties with a narrow range of characteristics[39].

84. **Demographic change**: over recent decades the Andes region of Peru has experienced major levels of emigration, partly driven by lack of economic opportunities and options for livelihood support in the highlands compared with other areas of the country, particularly the lowland forest areas of the Amazon basin: in 2010, poverty indices were 49% in the highlands and 37% in the Amazon. In the years of terrorism, many people were displaced, mainly from the highlands to the coast and to the Amazon[40]. This has led to significant weakening of the social capital on which the *in situ* conservation of agrobiodiversity based on traditional knowledge and traditional management systems depends, while labour shortages due to the emigration of economically active members of rural communities have affected the viability of some labour-intensive traditional management systems.

85. **Environmental degradation:** the functioning of the production systems within which the agrobiodiversity is found is highly dependent on the provision of environmental services from other ecosystems in the landscape, which play vital roles in the regulation of hydrological cycles and as reservoirs of crop wild relatives that interact in a dynamic manner with the crop populations. The flows of hydrological services are predominantly upstream-downstream in nature, at catchment/sub-catchment scale, from high altitude pastures and wetlands (especially in the Janca, Puna and Suni altitude classes, above 3,500m) and forests (predominantly located in the Quechua and Yunga altitude classes below 3,500m), to cropping areas which are predominantly located in the Quechua and Yunga belts (<3,500m) (see Figure 10). Flows of crop wild relatives tend to occur at a smaller scale, between the small forest remnants located on farm and the cropping areas, and also between the sequential components of open field rotation systems (*laymes*) in upland pastures.

86. Currently, highland and inter-Andean relic forests (representing the highest altitude forests in the world - between 2000 and 4000 masl) are being affected and transformed at an unprecedented rate. At present, national projections indicate that Andean forest cover has been reduced to 305,000 ha and the original Andean Keuna and Kolli forests coverage, estimated at about 3,000,000 ha, reduced to approximately 90,000 ha. Forest remnants in the target localities, such as the *Polylepis* woodlands described above, are threatened by the ***clearance of woodland for agriculture***, the ***grazing of livestock*** in the forests, the ***burning of***

[38] Ecological and sociocultural factors influencing in situ conservation of crop diversity by traditional Andean households in Peru. Dora Velásquez Milla, Alejandro Casas, Juan Torres Guevara, and Aldo Cruz Soriano J Ethnobiol Ethnomed. 2011; 7: 40. Published online 2011 Dec 6.

[39] Ecological and sociocultural factors influencing in situ conservation of crop diversity by traditional Andean households in Peru. Dora Velásquez Milla, Alejandro Casas, Juan Torres Guevara, and Aldo Cruz Soriano J Ethnobiol Ethnomed. 2011; 7: 40. Published online 2011 Dec 6.

[40] Piu HC and Menton M, 2014, The context of REDD+ in Peru: Drivers, agents and institutions. CIFOR Occasional Paper 106

nearby grasslands, and the ***cutting of trees for timber and firewood***[41]. In the vicinity of Lake Titicaca, for example (where the Acora target area is located), research has found that most households cut trees or bushes for cooking fuel, which affects the population, age and height distribution of remaining trees; in most areas, trees are harvested without replacement, although harvesters typically leave rooted branches of bushy species such as tola[42] and queñua (*Polylepis incana*)[43].

87. The *lomas* ecosystem in the Coast region is very fragile. It is estimated that the area of forest *lomas* has been reduced by 90% and the herbaceous *lomas* by 75%, due to overgrazing and logging. Overgrazing also prevents the natural regeneration of vegetation, aggravating deforestation and erosion on the slopes, leading to deterioration of the lomas ecosystem and the progressive reduction of water resources. Indiscriminate logging of tree species leads to the extinction of endemic species such as Myrtlethes (*Myrcianthes ferreyrae*). The degradation of the vegetation of the Lomas de Atiquipa has diminished the interception of the fog and therefore the availability of water in the soil.

88. The degradation of non-forest ecosystems also constitutes a threat to ABD production systems; this degradation includes, for example, the burning and overgrazing of natural pastures and wetlands (*bofedales*), and their increasing conversion to agriculture due to the overall expansion in cropping areas, which is driven in large part by market factors. These ecosystems play an important role in water infiltration and aquifer recharge, and also form part of the *layme* fallow rotation system in which ABD crops are produced on a cyclical basis.

89. **Pests and diseases:** the survival of genetic material of traditional crop varieties is also subject to threats related to agronomic management. For example, many farmers use as seed potatoes part of the previous year's harvest, which unless adequately managed can result in diseases being transmitted from one cropping season to the next. The incidence of pests and diseases, and their impacts on agrobiodiversity, are also affected by climate change (see below).

90. **Climate risks**: Peru is one of the most vulnerable countries to climate change. Increased climate variability due to climate change is expected to have serious consequences on the resilience of existing species and varieties for food production. According to the Intergovernmental Panel on Climate Change (IPCC), around 25-30% of the plant species could be extinguished or endangered in the next century. Amongst the existing varieties of potatoes (*Solanum*), *S. demissum*, which is resistant to the late potato blight, would only be able to survive in 33-90% of its current areas due to a potential rise in temperatures. *S. chacoense* and *S. berthaultii*, resistant to the potato beetle (*Leptinotarsa decemlineata*) would lose 40-53% and 2-65% of their distribution area, respectively. The actual distribution area of the *S. microdontum*, which can be used in genetic enhancement for calcium content increase, could either extend up to a 28% or be reduced by 9%[44]. In this unpredictable climatic context, degraded natural systems, combined with the genetic erosion and/or losses of agro-biodiversity would translate into less resilience and a loss of options for the adaptation of

[41]Fjeldsa J (2002). Polylepis Forests – Vestiges of a Vanishing Ecosystem in the Andes. *Ecotropica* **8**: 111-123.

[42] *Baccharis* spp., *Diplostephium* spp., *Parastrephia lediphylla* or *Lepidophyllum cuadrangulare*

[43] Swinton S and Quiroz R (2003): Is Poverty to Blame for Soil, Pasture and Forest Degradation in Peru's Altiplano? World Development. https://cipotato.org/site/inrm/home/publicat/0310nrm.pdf.

[44] JARVIS, A.; LANE, A. & HIJMANS, R.J. (2008). The effect of climate change on crop wild relatives. Agriculture Ecosystem and Environment, 126 (1-2):13-23.

agriculture to climate change and the assurance of food security not only in Peru but worldwide.

Box 2. Determinants of environmental degradation in the Peruvian altiplano[45]

"Multiple regression analysis of 1999 farm survey data from the Peruvian Altiplano finds that natural resource sustainability is not correlated with poverty; rather it varies by management activity. Soil erosion and fertility loss are reduced by fallowing, a practice of poorer farmers. Overgrazing and range species loss are increased by herd size (a measure of wealth) but reduced by rotational grazing, which is size-neutral. Deforestation—the only case of a clear poverty–environment link—results from fuel wood harvesting by the poorest households. Social and human capital variables favor the choice of more sustainable practices. When government investment is unavailable, change agents in poor areas can limit natural resource degradation by diffusing knowledge about natural resource stewardship using affordable practices.

…relative improvements can be made in natural resource stewardship—even among the very poor. Awareness of sustainability problems and lowcost steps to address them, combined with closely knit community structures are the key factors that support good stewardship in such a setting. Traditional social institutions like the aynoca continue to play a valuable role in a setting where fallow rotations are the primary means of restoring soil fertility and preventing erosion.

The long slow emigration from the Andean highlands gives ample evidence that residents view life chances elsewhere as more favorable. Continuing emigration may leave Altiplano agriculture stagnating in a low-productivity equilibrium where the relative price of labor to land never triggers the kind of investments that raise land productivity beyond the bottom of Templeton and Scherr's (1999) U-curve. Unspoken in the literature about intensification is that as economies develop, some regions see agricultural intensification while others see agricultural abandonment. The latter can also offer environmental benefits. The fact that Altiplano farmers are not making significant investments in agricultural conservation may be due to their poverty, but it may also be due to a belief that their scarce funds are better invested elsewhere— perhaps not in agriculture and perhaps not in the Altiplano. Only dramatic changes in market access and local employment opportunities are likely to change this in a fundamental way. The results here show that even incremental changes in market and credit access can reduce deforestation. But the effects for agricultural natural resources may be hidden by a low-level poverty equilibrium.

In the absence of dramatic changes in market access and employment opportunities, the policy lesson from this research is that incremental natural resource benefits can be had at very low cost. In areas where the social fabric is strong and capital is scarce, natural resource policies should focus on diffusing knowledge about natural resource stewardship using affordable practices. Traditional social norms and institutions such as the aynoca already provide incentives for sustainable farming. These institutions should be understood and built upon if the objective is to encourage marginal changes to effect better stewardship using traditional practices."

1.2.2 Baseline initiatives

Support to sustainable production and natural resource management in the agricultural and forestry sectors

91. Baseline initiatives supported by the Government focus on improving agricultural production in accordance with principles of environmental sustainability, and within a context of sustainably managed and restored landscapes. This large baseline of initiatives presents

[45] Swinton S and Quiroz R (2003): Is Poverty to Blame for Soil, Pasture and Forest Degradation in Peru's Altiplano? World Development

favourable conditions for the insertion of the project, as well as excellent opportunities for concrete collaboration, with GEF resources being used in an incremental manner to ensure that provision is made for the maintenance and promotion of traditional ABD production systems, which will be integrated with and complement the technical approaches foreseen in the baseline investments.

92. Initiatives led by MINAGRI focus strongly on the strengthening of agricultural production as a contribution to the mandate of MINAGRI of reducing poverty and improving living conditions in rural areas.

93. The Sierra Azul Fund (initially called *Mi Riego*) has to date invested more than USD100 million (380 million Peruvian soles) in irrigation infrastructure, with an additional investment in the coming years of around USD300 million (1,000 million soles) planned[46]. By July 2017, the Fund had resulted in the construction of 100 *cochas* (small reservoirs), as well as 100ha of infiltration ditches, including the planting of 100,000 trees of *quinual* and pine over 100ha. This Fund is executed by MINAGRI and provides public financing for the preparation of upstream technical and economic feasibility studies, as well as the implementation of irrigation civil works. The areas of intervention are primarily poor rural areas and include Ayacucho, Huancavelica, Junín, Apurimac, Huánuco and Cajamarca. These investments respond to the Government's policy aim of supporting water harvesting, water infrastructure (canals, reservoirs, dams etc.) in order to improve the management and use of water resources in agriculture. These initiatives are being implemented in close collaboration with regional and local governments, communities, and farmers families, once again with the aim of improving the livelihoods of impoverished rural communities through sustainable resource use and conservation considerations in the productive landscape. The target of Sierra Azul for 2021 is to have established 3,000 water harvesting systems, as well as 1,000 reservoirs and micro-reservoirs, executed irrigation projects that will benefit 500,000ha of cropping area, rehabilitated 100,000ha of terraces and established more than 100,000ha of technified irrigation.

94. Recently, efforts have focused on promoting family agriculture and resulted in the preparation of a ***National Strategy on Family Farming*****,** with a corresponding budget and legal framework currently under development. Interventions are focused on strengthening the competitiveness and profitability of small producers, paying particular attention to: (i) Andean and Amazonian indigenous communities; (ii) increasing the profitability of available resources; (iii) contributing to household food security and nutrition; and (iv) building smallholder capacities to take advantage of nascent market opportunities. This baseline programme illustrates a radical shift from past agricultural policy by now focussing on small-scale farmers and their insertion into local, regional and national economies by enhancing their productive, entrepreneurial and technical skills, including the promotion of new native local products the majority of which originate from agro-biodiversity resources.

95. The Agricultural Development Programme (**AGRORURAL)** directed by MINAGRI is implementing from 2014 to 2018 the ***Andean Agricultural Recovery Project*** with the Inter-American Development Bank (USD 40 million). Its objective is to improve the productivity of main native crops through the rehabilitation and recovery of traditional/ancestral terraces in 11 regions of the country (Junín, Lima, Huancavelica, Ayacucho, Apurímac, Cusco, Puno,

[46] http://www.minagri.gob.pe/portal/publicaciones-y-prensa/noticias-2017/19449-ministro-jose-hernandez-sierra-azul-invertira-s-380-millones-para-riego-y-potenciara-el-agro-en-sierra

Arequipa, Moquegua, Tacna and Amazonas). It is aimed at increasing productivity by returning to tested ingenious ancestral methods and the native crops which through generations have evolved as opposed to introduced commercial varieties ill-suited for the climatic and rigours of the Andean landscape. This would ensure that farmers produce enough food to satisfy family needs and may derive a surplus to be sold in local and regional markets. This project is implemented at watershed level in 47 provinces of the 11 regions of intervention, out of which 5 are included in the proposed FAO/GEF project. The *Andean Agricultural Project* activities are mainly directed towards improvements in irrigation infrastructure, efficient use of water resources, capacity building of small-scale farmers to support their insertion into markets, promotion of sustainable management of prairies, and artisanal practices in pond management. Reforestation activities associated to the rehabilitation of ancestral terraces will also be implemented at watershed level. The *Andean Agricultural Recovery Project* will plant native forest clump plantations in six of the seven regions[47] identified by this proposed FAO/GEF project. That project's reforestation efforts will help stabilize steep slopes while also contributing to climate change mitigation, absorbing up to 2 tons of carbon/ha per year[48]. It will also create new economic opportunities for small-scale farmers through the exploitation of non-timber products, while reducing unsustainable practices. The *Andean Agricultural Project* reflects the significant shift in the GoP's agricultural policy and rural assistance programmes towards sustainable productive practices, and the promotion of native crops in the Andes.

96. The baseline also includes significant investments in reforestation and landscape restoration.

97. The National Program for Recovery of Degraded Areas[49], implemented in collaboration between SERFOR, Agro Rural, INIA and MINAGRI, and supported by FAO, IUCN, Swiss Cooperation and the World Resources Institute (WRI), aims to restore 3.2 million ha of forests in degraded and deforested areas (covering the Andes, the Amazon basin and the coast), as part of the country's strateguy for adaptation and mitigation of climate change. This forms part of the 20x20 Initiative, which was launched within the framework of COP20, hosted in Lima in December 2015. Currently, SERFOR is working with other institutions, the private sector, international cooperation and civil society in the establishment of rehabilitation pilots in the regions of Apurímac, Amazonas and San Martín, and is in the process of including Piura and Ucayali.

98. The Andean Forests Programme[50], financed by the Swiss Agency for Development and Cooperation (COSUDE), is a regional initiative covering Venezuela, Colombia, Ecuador, Peru, Bolivia, Chile and Argentina, that helps the Andean population living in and around Andean Forests to reduce their vulnerability to climate change and receive social, economic and environmental benefits from the conservation of Andean Forests. To this end, information is generated and disseminated through applied research in the Andean forests, to detect,

[47] Puno, Cusco, Apurimac, Arequipa, Huancavelica, Junín and Ancash.

[48] Calculated using table 3A.6 (p. 163) in the ANNEX 3A.1 Biomass Default Tables for Section 3.2 Forest Land. Available at http://www.ipcc.ch/meetings/session21/doc5to8/chapter3a1.pdf . The calculation was made as follows: Value: 4t dry material/ha/yr of increase, which corresponds to America, Montane Moist, other broadleaved. Carbon fraction: 0.47. The value was estimated for 23,000ha, as follows: 23.000ha x 4t of dry material/ha/year x 4 project years x 0.47 = 172.960tC, using IPCC values.

[49] http://www.serfor.gob.pe/noticias/negocios-sostenibles/peru-avanza-en-su-compromiso-de-cumplir-con-la-restauracion-de-areas-degradadas

[50] www.bosquesandinos.org

validate and share existing good practices, which will eventually be raised to a political level. The Andean Forests program seeks to encourage regional, national and local interest in the conservation of Andean forests and, in turn, promote synergies in strategies for adaptation and mitigation of climate change. The implementation period of the programme is from October 2014 to August 2018, with a total budget of CHF16 million (USD16.6 million), iincluding CHF6,272,000 (USD6.5 million) from COSUDE.

99. Recognizing the interdependence between the conservation of genetic resources, and the ecological integrity of the landscape from which it evolves, the ***National Conservation and Mitigation Forest Programme*** is led by MINAM[51], with a national budget contribution of USD19.95 million. This Programme has identified an estimated 7 million ha of land deemed suitable for reforestation in the Andean region. It promotes the incorporation of sustainable production systems based on native species and their wild relatives to generate new economic opportunities for the local population whilst strengthening forest conservation capacities in local governments and communities. Some of the activities will be implemented in the Cusco, Puno and Junín regions, although the Program is mainly focused on the Amazon.

100. MINAM is also implementing the ***Sustainable Economic Development and Strategic Management of Natural Resources Programme*** **(PRODERN),** which was established through a bilateral agreement between Peru and Belgium in 2011. In alignment with the GoP's strategy, which emphasizes economic growth through social inclusion to alleviate poverty in rural areas, the objective of the programme is to support the management of natural resources and biodiversity through landscape management approaches in Apurimac, Ayacucho, Huancavelica, Junín and Pasco. The key areas of work focus on land use management, valuation of ecosystems goods and services, and the incorporation of biodiversity conservation in value chains. The programme works closely with national, regional and local governments to ensure consistency in the strategic management of natural resources and the implementation of Peru's National Environmental Policy. MINAM is also working with INIA in the elaboration of a results based national budget program to assess 17 native crops and adapted breeds, including close relatives to wild crops in Andean areas. The specific objectives of this program are: (i) conservation and access to alternative markets; (ii) promotion of alternative conservation practices based on biotechnology; and (iii) biosafety and implementation of the Cartagena Protocol. The national budget associated with this project is estimated at USD 6.7 million[52] with a 2015-2021 implementation horizon.

101. There is also a sound baseline of initiatives in support of the provision of incentives for sustainable natural resource management, on which the project will build. **The Ministry of Economy and Finance (MEF)** is currently in the process of devising a system of incentives for the development of public investment projects incorporating agro-biodiversity considerations and sustainable resource use in the productive landscape. The MEF is planning to provide additional non-monetary incentives (technical assistance, capacity building) to rural producers. The MEF is also exploring similar incentives with the private sector involving tax exemptions and/or reductions based on private investments supportive of conservation goals, including the maintenance of agro-biodiversity resources. This set of MEF incentives will be further analysed in coordination with the project activities during full project preparation.

[51] http://www.bosques.gob.pe/
[52] 20 million *nuevos soles* (PEN)

102. Public investment projects currently in execution in relation to the above issues include the following at national level, and others at local level listed in APPENDIX 12.

Table 5. Public Investment Projects in relation to natural resource management

Project title	Institution responsible	Geographic area	Objectives
Budget Programme 0042: Use of water resources for agriculture	General Directorate of Hydraulic Infrastructure, MINAGRI	Ayacucho, Cusco, Huancavelica, Huánuco, Junín, Puno, Áncash, Apurímac, Cajamarca, Arequipa, La Libertad, Ica, Piura, Lambayeque, Lima	Improvement of water use efficiency in agriculture
Budget Programme 0089: Reduction of degradation of agricultural soils	MINAGRI	Ancash, Ayacucho, Cajamarca, Huánuco, Huancavelica, Pasco y Puno	Sustainable use of soils in the agricultural sector
Budget Programme 0130: Competitiveness and sustainable use of forest resources and wildlife	SERFOR (ANFFS) /MINAGRI		Capacity development on sustainable management of forests and wildlife, recovery and improved management of forest areas.
Budget Programme 011 (Project 2235888): AGRORURAL: Strengthening of the management of microcatchments in relation to small scale irrigation	AGRORURAL (MINAGRI)	34 microcatchments in the high Andes, in 9 regions	Improved management, recovery and conservation of micro-watersheds in the upper and middle parts of high Andean catchments
Budget Programme 011 (Project 2249921): Recovery and conservation of degraded soils for adaptation to climate change	AGRORURAL (MINAGRI)	Pichigua microcatchment, Pichigua District, Espinar Province, Cusco Region	Technical assistance and awareness raising for practices to promote aquifer recharge, reforestation, silvopastoral systems, soil conservation
Budget Programme 011 (Project 2250154): Environmental recovery and improvement through reforestation, soil and pasture conservation	AGRORURAL (MINAGRI)	Lambrana and Atancama communities, Lambrama District, Apuímac Region	Establishment of forest areas, construction of soil conservation works, recovery of natural pastures, environmental education, farmer organization for natural resource management

Agricultural value chains

103. A development priority for the GoP is promoting inclusive economic development to address poverty reduction particularly in the Andean region, where many rural poor live. Baseline agricultural and forest programmes are aligned with this goal to respond to the complex and unique socio-economic and cultural demands of Andean communities. The GoP's

objective is to improve productivity, facilitate the integration of small-scale and subsistence farmers into the market and improve their living conditions. The GoP has worked with FAO in supporting the access of subsistence and small-scale farmers to local markets. These farmers are organized in Andean communities, apply traditional knowledge, and have been central in the conservation of ABD crops over the centuries.

104. The ***National Programme on Promotion of Biotrade*** (*biocomercio*) en Peru (PNPB), led by the Ministry of External Commerce and Tourism (MINCETUR), aims to support the use of biodiversity in the trade (export) with sustainability criteria as a way to preserve biodiversity. A national and mutisectoral commission under MINCETUR has been constituted for the implementation and the secretariat for its coordination is managed by the Commission for the Promotion of Peru for Export and Tourism (PROMPERU) and the IIAP. The programme is being supported by the CNUCED and link with the regional biotrade programe.

105. The Peruvian Commission for the Promotion of Exports and Tourism (**PromPeru**), which depends upon MINCETUR, is the technical entity in charge of promoting exports, tourism and national image. Prom-Peru promotes the "exports route"[53], and provides with technical assistance and quality control to the export sector, including agriculture. PromPeru is promoting the export of natural products (grains, fruits, almonds, roots, herbs[54]), and has a stand-alone program to support the export of quinoa[55] (highly demanded in the US and the EU).

106. The National Institute for the Defense of Competition and Intellectual Property (INDECOPI) has played an important part in the promotion of the use of distinctive signs (especially collective marks and appellations of origin) by groups of SMEs through training and also by publicizing the various mechanisms for the registration and promotion of intellectual property. In this connection, the SME assistance service goes beyond guidance on the registration of distinctive signs: it means guidance also, and assistance, in organizing the system and writing the rules of use of the distinctive signs. Today 8 denominations of origin (the Peruvian equivalent of GI) have been registered by INDECOPI thanks to their support to producers to develop the specifications. In particular in the highland region can be mentioned: Maiz Blanco gigante de Cusco, café de Machu Pichu, café Villa Rica. Only two are effectively used (Pisco and Chulucanas) as a result of the establishment of their Regulation Council by producers. Learning from this experience, INDECOPI is aware of the importance to build capacity of small scale producers so they can develop such Council in charge of control, and the need to better link the producers to markets. Component 2 of the project will address these needs (and component 3 will also provide recommendations and support to facilitate the implementation of the institutional framework regarding the certification scheme for GIs).

107. **The National Association of Ecological Producers (ANPE Perú)** is a national association integrating 20 regional bases with their local leaders, which gathers 12,000 family producers engaged in agroecological (organic) production. They promote healthy diets and the preservation of bio and cultural diversity, and they support the development of market linkages for organic products. In particular, they created the brand "Frutos de la Tierra" for the organic products from their producer's network, which can be sold in three types of local outlet:

[53] http://www.siicex.gob.pe/siicex/portal5es.asp?_page_=791.00000
[54] http://www.siicex.gob.pe/siicex/resources/sectoresproductivos/Catalogo%20productos.pdf
[55] http://www.siicex.gob.pe/siicex/resources/sectoresproductivos/final%20quinoa%20referencia.pdf

- "Ecoferia": the first ecoferia started in Abancay, en 1998, and then in 2002 Ecoferias of Huánuco and Huancayo strated. They are open market places where producers sell directly to consumer and where education on food and agroecology is promoted;
- "Ecocanasta" (basket of organic products": three baskets exist now gathering products from different producers to a network of conumers, with the following products: arveja, ají, apio, betarraga, camote, choclo, col crespa, granadilla, haba, lechuga, limón sutil, mango, papa nativa, poro, y rabanito.
- Online selling: consumers can directly sell organic products form the ANPe network through the online platform www.frutosdelatierra.com.

108.ANPE is promoting public-private alliances and therefore represents a key partner for component 2 of the project in relation with the development or strengthening of territorial markets (ecoferia and canasta) for agrobiodiversity products while promoting healthy diets.

109.The ***Peruvian Agro-ecological Consortium*** **(CAP)[56],** through its civil society member organizations, has worked for more than 25 years on designing strategies to support organic production. CAP has been promoting the development of inclusive organic value chains as an alternative to support small producers in increasing their productivity and linking them to markets. Insofar, the steady growth and increasing demand for organic produce has benefited small producers supplying additional income to improve their livelihoods.

110.**RIMISP** is the Latin American Center for Rural Development, and has been working for 30 years on the development of multi-level cooperations on a rural and territorial scale. In particular the working group on Biocultural Diversity and Territories has carried out the following initiatives:

- Research-Action activities in the thematic area of Territorial Development with Cultural Identity (TD-CI), biocultural heritage valorization in partnership with the Institute for Peruvian Studies (IEP)[57]
- Three editions of the Diploma on Territorial Development with Cultural Identity "Valuing the cultural heritage and gastronomy of the territory" through a framework agreement with the "Pontificia Universidad Católica del Perú" (PUCP);
- Framework agreements and joint activities with: i) "APEGA" (Sociedad Peruana de Gastronomía - Peruvian Gastronomy Association); ii) Cocina, Identidad y Territorio (CIT) which is a member of the Biocultural Diversity and Territories Platform;
- Territorial Habilitation and dinamization in Valle del Colca through the realization of participatory and multi-stakeholder activities in the following thematic areas: Valorization of Biocultural and agri-food heritage, Tourism, Territorial articulation.
- Collaboration in the FIDA Development Project in the Sierra Norte which was implemented in those territories which are lagging furthest behind and which focused in enhancing rural development policies, markets and biocultural heritage valorization[58]
- Incidence in Public Policies: through research, training and territorial activities Rimisp has been developing different spaces for collaboration with public entities such as:

[56] http://www.ideas.org.pe/index.php/videos/item/28-centro-ideas-y-los-10-hitos-agroecologicos-de-peru
[57]http://www.bioculturaldiversityandterritory.org/documenti/26_300000176_09_apostandoporeldtric.pdf - http://repositorio.iep.org.pe/bitstream/IEP/19/1/hernandez_crecimientoeconomico.pdf
[58] https://rimisp.org/noticia/finalizaproyecto-desarrollo-sierra-norte-peru/

Ministerio de Desarrollo e Inclusión Social (MIDIS), Ministerio de Agricultura y Riego (MINAGRI), Programa de Desarrollo Productivo Agrario Rural (AGRO RURAL).

111.**The Slow Food movement** began to spread in Peru in 2003 with the creation of the first three Presidia (small-scale advice projects for artisan food producers and support to their marketing strategy): Sweet potatoes from Pampacorral (Cusco), Kañihua (Puno) and Andean fruits from San Marcos (Cajamarca)[59]. As a result, the local Slow Food network has been developed in the country, strengthening relations with Peruvian organizations representing small producers, realities focused on the valorization of Peruvian gastronomy and groups of chefs involved in the rescue of products of local biodiversity. In recent years, Slow Food in Peru includes academics, young network, food producers with interest in sustainable food. The Slow Food network in Peru is organized in 5 local groups (Convivia) located in Lima, Cuzco, Piura and Pucallpa. Slow Food in Peru is linked to more than 37 Food Communities which work for a good, fair and clean food, in 16 Provinces of the country. The Slow Food Ark of Taste project aims at identifying traditional and agrobiodiversity products, especially the ones that may be at risk of extinction. More than 150 Peruvian products[60] have been identified, in particular in the region of Cusco-Puno. A catalogue is being published about them and will be presented in the context of the gastronomic festival Mistura[61], in Lima in September 2017. Slow Food in Peru is currently working on organizing an event from the 23 to the 25 of September, in Huancayo involving 200 young urban and rural young Peruvians from all different parts of the country, to debate and deal with the most pressing challenges that young generations must face in agriculture. Interesting allainces could be developed around the promotion of the agrobiodiversity products, in relation with the Ark of Taste and existing (or future) presidia, in particular by developing linkage with Peruvian gastronomy network and consumer education.

112.Through Budget programme 0121 on Improved linkages of farmers to markets, MINAGRI is providing organizational and enterprise support to farmers, technology transfer, access to financial services, information access and agricultural best practice. Other Public Investment Projects at regional level include the following (see APPENDIX 12 for more detail):

- Apurímac: Project 2177883 on improvement of the competitiveness of the productive chain of quinoa in the Apurímac Region.
- Cusco: Project 2161591 on improvement of the competitiveness of the productive chain of organic quinoa and cañihua
- Puno: Project 2318520 on improvement of the agroproductive capacities for organic Andean grains (quinoa, cañihua, broad vean and tarwi)

Improvement of institutional and regulatory frameworks

113.Since 2013, MINAM has been working on the design and implementation of the Genetic Resources and Biosafety Information Platform - GENESPERU. This platform is an institutional and human network that uses information and communication technology to provide information services for citizens, to contribute to decision making on the conservation and sustainable use of the country's genetic diversity. MINAM partners in this effort are MINAGRI through its agencies National Forest Service (SERFOR) and National Institute of Agriculture Innovation (INIA), the Ministry of Production (PRODUCE), the National Service of Protected

[59] https://www.fondazioneslowfood.com/it/nazioni-presidi/peru/
[60] https://www.fondazioneslowfood.com/it/nazioni-arca/peru-it/
[61] http://mistura.pe/mistura-2017-celebrando-diez-anos/

Areas by the State (SERNANP), the Health sector through the General Directorate of Environmental Health (DIGESA), the Fishery sector represented by the Deputy Minister of Fisheries and the Institute for the Defense of Competition and Intellectual Property (INDECOPI).

114. This platform is composed of four (4) modules: i) Biosafety; ii) Access to genetic resources; iii) Information on genetic resources; and iv) Conservation of genetic resources.

115. While the platform has made significant progress in terms of design, information and functionality, it is still in a first version. Some content of the modules is yet to be developed, there is extensive public, private and public information in the country at the national, regional and local level that has not yet been integrated.

116. Public Investment Projects in support of the improvement of aspects of institutional frameworks of relevance to the project include the following (see APPENDIX 12 for more information):

- Nationwide: Project 2194085 on Consolidation of the Agrarian Innovation System (INIA)
- Nationwide: Project 2250051 on Improvement of the Agrarian Statistical Information System and the Agrarian Information Service for Rural Development (AgroRural)
- Nationwide: Project 2194993 on Improvement of strategic services for agrarian innovation (AgroRural)
- Apurímac: Project 2234045 on Improvement of Institutional Management in Forestry Activity in 20 Microwatersheds and 4 Subwatersheds in Apurímac Region
- Puno: Project 2260735 on Improvement of the Integrated Management of Water resources in Puno Region.

Baseline initiatives of FAO

117. This project will complement the FAO-funded regional project "Development of capacities for information on soils for the sustainable management of natural resources in countries of South America"[62], which will develop national capacities for the recovery, compilation, storage and harmonization of data/information on soils, and methods of laboratory analysis, as well as digital soil mapping. The amount corresponding to Peru is yet to be confirmed but would be at least USD25,000, by the end of 2018.

118. This GEF project will also complement the FAO-funded project "Support to the design and implementation of public policies for rural development in Peru"[63], the objective of which is that public institutions with actions related to rural development carry out harmonized management with a territorial approach, and are able to evaluate their results. That project will complement the GEF project through its Product 1 (local governments and family farmers of high Andean zones participating in Sierra Azul adopt good practices for water resource management) and Product 2 (strengthened capacity of SERVIAGRO to provide services), with an investment if USD148,000 by the end of 2018.

119. The FAO project "Recovery of degraded areas", the objective of which is to support the planning and implementation of measures for the recovery of degraded lands in the country

[62] Regional project TCP/RLA/3613, with a total budget of USD256,000. Finishes 31/12/2018

[63] TCP/PER/3605 with a total budget of USD 207,000. Only components 1 and 2 are considered as cofinancing. Finishes 31/11/2018.

and the diffusion of related best practices, in order for the country to meet its goals for the recovery of such areas. FAO is supporting several countries in the planning and execution of the recovery of degraded and/or deforested areas within the framework of the Forest and Landscape Restoration Programme, an initiative principally financed by Sweden and the Republic of Korea. The Programme has a participatory approach and contributes to the achievement of the Bonn Challenge – the restoration of 150 million ha of lands – and the Aichi Targets on Biodiversity related to the conservation and restoration of ecosystems. Peru is one of the seven countries eligible for support from the mechanism. The Programme seeks to contribute efforts rather than duplicate them, supporting initiatives under way in the country. The main four specific objectives of the project are: 1) to support the process of mapping of potential areas for recovery of degraded areas in the country; 2) to implement concrete actions in two defined pilot sites, with required conditions for scaling up; 3) to promote innovative strategic activities with potential impacts on recovery of degraded areas in Peru and 4) to conclude the process of formulation, consultation, validation, final drafting and publication of the National Programme on Recovery of Degraded Areas. The project has a total budget of approximately USD197,170 to 2019.

120.A regional FAO project for 6 Latin American countries including Peru aimed at supporting the development of GIs as a way to preserve and promote products linked to geographical origin[64], from 2009 to 2011. In Peru, INDECOPI was a key partner who shared its experience with the other countries about the development of GIs, and the project provided support has been provided to the pilot product "Pallar de Ica" to build capacity of small scale producers in organizing their association and marketing strategy. The project also developed guidelines about the identification of origin-linked products and guidelines for the examination by national authorities of request for GI registration.

Baseline initiatives led by regional governments

121. Huancavelica: baseline initiatives of the regional government include agrarian extension services for farmers for rootcrop production, pasture improvement and the conservation of Andean soils, services for the protection and conservation of vicuñas, the recovery of environmental services and the improvement of the competitiveness of potato production chains, with a total value of USD14,666,105.

122. Apurímac: baseline initiatives of the regional government include the recovery and improvement of forest cover to promote environmental services, improvement of communal and institutional management for the development of forestry activities, and improvement of the competitiveness of the production chain of quinoa, with a total value of USD8,208,862.

123. Cusco: baseline initiatives of the regional government include the strengthening of capacities for the establishment of conservation areas, integrated management of water resources, sustainable management of vicuña, adaptation to climate change, conservation and management of biodiversity, installation of *tara* in agroforestry systems in peasant communities, and improvement of the competitiveness of the production chain of quinoa and organic cañihua, with a total value of USD11,926,214.

124. Puno: baseline initiatives of the regional government include the strengthening of productive capacities for improving the competitiveness of the value chain of alpaca, the establishment and recovery of forest cover, improvement of services for biodiversity conservation, improvement of the agroproductive capacity of organic Andean grains (quinoa,

[64] http://www.fao.org/in-action/quality-and-origin-program/projects/latin-america/en/

cañihua, haba and tarwi) and the management of water resources in watersheds, with a total value of USD28,167,193.

125. In Arequipa, baseline initiatives of the provincial government include the recovery of environmental services of water regulation and erosion control in the Lomas of Atiquipa and the improvement of water services for irrigation, with a total value of USD3,466,947.

1.2.3 Remaining barriers

Limited capacities to adapt traditional ABD management systems to evolving social, economic and environmental pressures

126.Traditional systems of agriculture embody a cumulative legacy comprised of a wealth of accumulated knowledge in the management and use of agro-biodiverse resources, which holds invaluable insights to the challenges of agricultural production and natural resource management. However, by definition these globally significant agro-biodiverse systems are not static and are characterized by their dynamic nature which needs to be recognized and supported.

127.The combination of new techniques with traditional practices may represent an alternative to support agro-biodiversity-based knowledge systems without compromising their resilience, sustainability and integrity. This is hampered at present, however, by inadequate integration in extension programmes between traditional endogenous approaches and modern exogenous approaches; despite increasing recognition at various levels in recent years of the value of traditional knowledge, there is a continuing legacy of technicians tending to prioritize the vertical communication of exogenous approaches at the expense of endogenous approaches. Furthermore, despite important advances having been made in prioritizing culturally-appropriate participatory approaches to technology generation and transfer (such as the use of farmer field schools, *yachachiq* or leader farmers, and *kamayoq* or community-based extensionists), there is still much work to be done in developing capacities among farmers to identify how to adjust their production practices to evolving conditions.

Inadequate understanding of and provision for the interdependence between agro-biodiversity conservation and the associated landscapes on which it depends.

128.Native relic forests and other high altitude ecosystems such as natural pastures and wetlands provide ecosystem services that are crucial for the maintenance of agrobiodiversity production systems, as well as being of global importance in their own right, including carbon sequestration, biodiversity conservation, soil enrichment, critical watershed functions, water quality maintenance, water flow regulation, recharging underground aquifers, mitigating flood risks and moderating sediment flows. Any strategy that is to successfully preserve agro-genetic diversity *in situ* in the Peruvian Andes would need concomitantly to address the degradation and loss of these associated ecosystems.

129.Currently, the crucial importance of these interactions between different ecosystems and production systems at landscape level is inadequately understood by planners and decision-makers, and is inadequately provided for in land use plans and regulations. As a result, landscape management actions are not planned and prioritized in such a way as to ensure the protection of these associated ecosystems and to optimize their capacity to generate ecosystem services, and there is the risk that continued intensification of productive management in high altitude ecosystems will have unintended and disproportionate impacts

on traditional production systems downstream, and on the livelihoods of those managing them.

Incipient experience in compensatory mechanisms/payment for environmental services related to agro-biodiversity

130.Important advances have been made recently with the development of legal provisions for incentives for environmental protection, including the *in situ* conservation of agrobiodiversity. Such mechanisms have significant potential to increase the economic attractiveness of agrobiodiversity production systems, given the relatively limited potential that exists for generating income through market-based instruments at national and international levels, due to their small scale of production[65] (see more under Component 2 in section 1.3 below). The principal barrier that exists at present for realizing the potential of such incentive mechanisms is the limited amount of experience that has been generated to date with applying them in practice, meaning that key elements have not yet adequately been tested, such as benefit distribution mechanisms (potentially complicated by the mixed individual/communal nature of some Andean production systems), and the behavioural responsiveness of farmers to incentives.

131.Similar challenges exist in the case of incentives for the conservation and sustainable management of high altitude ecosystems that generate ecosystem services of benefit for ABD: benefit distribution is likely to be complicated by the largely communal tenure models that apply in many of these open-access ecosystems; and it may be difficult to require the beneficiaries of the ecosystem services, in the form of often poor small and medium-scale farmers, to take on the role of "buyers".

Limited capacities and know-how regarding the economic profitability and marketing potential of agro-biodiversity, limiting its promotion and the potential of its future uses

132.This is particularly the case in relation to the alternative, specialized, or niche markets for some specific agro-biodiversity products which have the potential to fill market opportunities. Capacities related to the marketing cycle, at local, regional, national levels are low among small- and medium-scale producers in the Andes. The production is absorbed by the marketers, who have capital and resources and are in a better position to keep prices low. Small-scale producers have little or no marketing experience and do not have timely access to price and market information, which results in a weak negotiation power. Low levels of organization and difficult access to credit and technical assistance further difficult small- and medium-scale producers' access to market. Skills and competencies should be strengthened for adding value in local markets associated with agro-biodiversity production and conservation.

[65] Drucker, A.G. and Appels, J. Value chain development: a silver bullet for agrobiodiversity conservation and use? In: Maxted, N., Dulloo, E. and Ford-Lloyd (eds). In Press. Enhancing Crop Genepool Use: Capturing wild relative and landrace diversity for crop improvement. CABI
Narloch, U., Drucker A.G. and Pascual, U. 2011. Payments for agrobiodiversity conservation services (PACS) for sustained on-farm utilization of plant and animal genetic resources. Ecological Economics 70(11): 1837-1845.
Narloch, U., Pascual, U. and Drucker A.G. 2011. Cost-effectiveness targeting under multiple conservation goals and equity considerations in the Andes. Environmental Conservation 38(4): 417-425.

Sub-optimal information management and dissemination for policy formulation and reform.

133.Sector policies remain inconsistently informed regarding sustainable natural resource use. Existing information on the functional characteristics of a dynamic productive landscape and its elements remains scattered and ineffectively interpreted in practical terms to act as guiding frameworks for policy reform, innovative approaches, or the application of more sustainable alternatives. In addition, while some institutions may receive relevant resource based data, others may not. Availability also differs among government levels and the operational capacities of the institutions receiving this information, all leading to disparities and resulting in uncoordinated approaches in the application of policies and the potential benefits they may generate when properly developed in a complementary coordinated manner.

Limited and/or inconsistent coordination in the implementation of guidelines, plans and regulatory frameworks for the sustainable management of agro-biodiversity-rich landscapes between national, regional and local levels.

134.Planning has been often uncoordinated in the three government levels. In the past, public initiatives and reforestation programmes have tended to favour quick fixes by promoting competitive, fast growing commercial varieties at the risk of inadvertently displacing agro-biodiversity products. The short-term gains derived from commodity driven markets often placed local producers and native farming communities at an economic disadvantage, creating growing disincentives for the maintenance of ancestral agricultural practices consistent with GIAHS principles. In other cases, outdated subsidies pertaining to the application of fertilizers and pesticides, or simply supportive of other unsustainable approaches, degraded the productive landscapes harbouring globally important plant and animal genetic diversity. Consequently, a combination of greater coherence, coordination, and information management amongst relevant institutions at corresponding government levels needs to materialize and further develop to ensure that any progressive policies and institutional advances supporting ecosystem integrity, agro-biodiversity conservation, and integrated landscape management is not compromised but rather promoted and enhanced.

Limited capacities for the implementation of policies and regulations related to the recognition and valuation of agrobiodiversity conservation.

135.After decades of ill-suited policies in Peru, substantive reforms are finally materializing. Sub-section 1.1.1 above gives an overview of recent advances in the legal and policy framework. However limited institutional capacities at the regional and local level hamper the implementation of these instruments.

Limited public awareness regarding the importance of agro-biodiversity conservation.

136.As mentioned above agro-biodiversity remains a rather unclear concept to most (particularly in urban areas) where the majority of the population remains uninformed of its vast cultural heritage, but most importantly the vital link between agro-biodiversity and food security through the adaptation and resilience it confers to a wide variety of crops and animal species. National recognition, awareness and improved understanding of the threats that such traditional and sustainable agricultural systems face, the socio-economic and environmental implications resulting from agro-biodiversity loss, including its global importance, and the

benefits it provides at all levels, is fundamental for its conservation and the institutional support required for its maintenance.[66]

Absence of integrated monitoring and evaluation system for productive ecosystems and the **agro-biodiversity** they harbour **at local, regional levels and national levels.**

137.Currently, the benefits and services provided by land, water and forest resources, including their attendant agro-biodiversity are not effectively valued, monitored, nor collectively evaluated. This has not only hindered their effective estimation, validation and contribution to development strategies, but also limited their integrated management and that of agro-biodiversity into national agricultural and forest policies, including the definition of strategies for its promotion and sustainable use. This, coupled with fragmented information channels regarding sustainable resource use level, and the benefits of the goods and services they provide, has also further hampered effective policy formulation and/or reform in favour of more sustainable approaches. The absence of monitoring frameworks, or protocols for development strategies or assistance programmes, has limited their ability to effectively measure their impact and on agro-biodiversity resources.

[66] Parviz Koohafkan and Miguel A. Altieri. *Globally Important Agricultural Heritage Systems: A legacy for the Future* - GIAHS, FAO, Rome, 2011.

1.3 THE GEF ALTERNATIVE

1.3.1 Project strategy

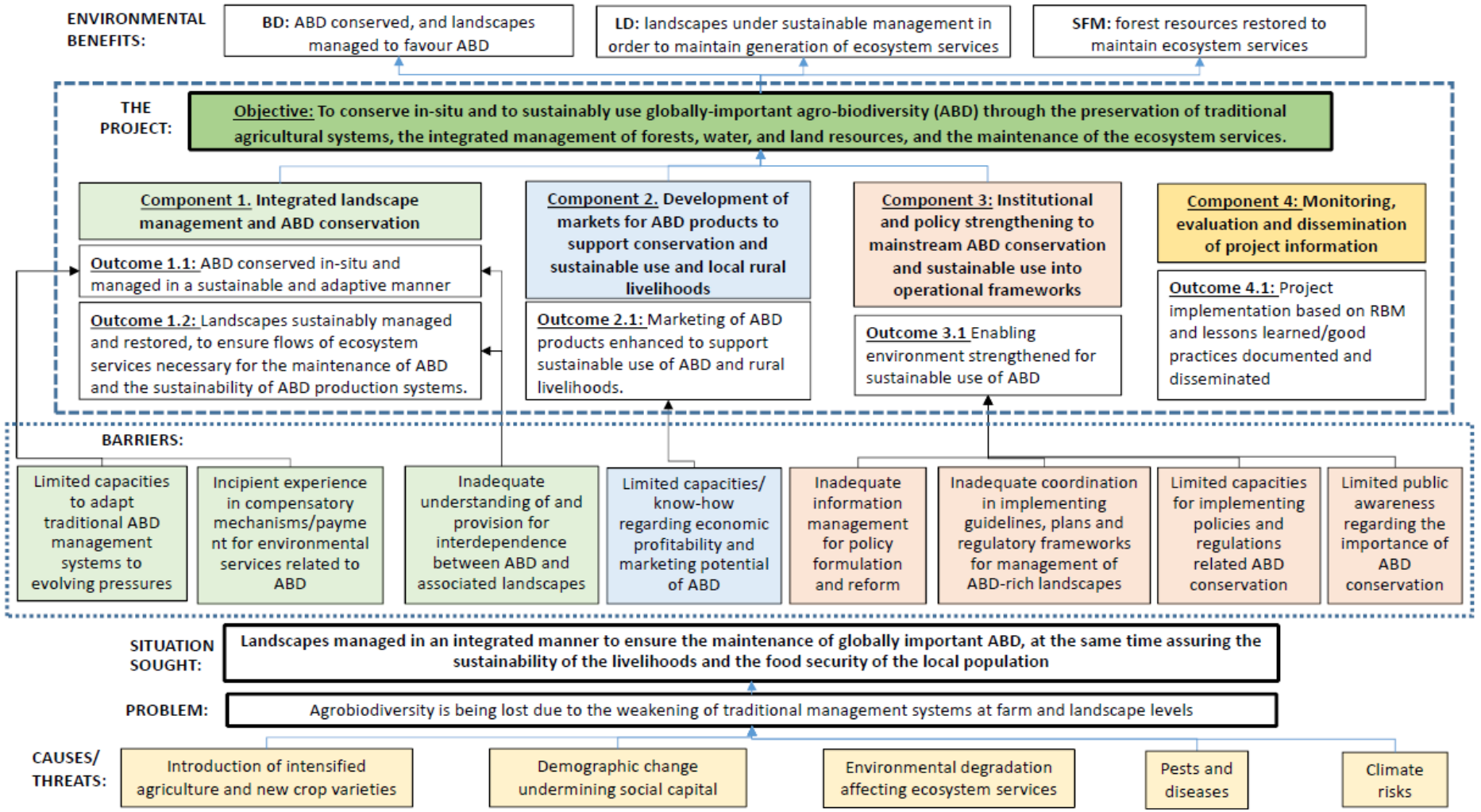
138.The proposed project adopts a multi-focal landscape approach (BD-SLM-SFM) for the conservation of globally significant genetic resources and the recuperation of the fragile Andean ecosystems on which the genetic resources depend for the provision of essential ecosystem services. Integrated landscape management, including the management and restoration of forests, wetlands and pastures in the broader landscape, is indispensable for delivering the multiple environmental benefits required for maintaining a multi-functional and biodiversity-rich productive landscape. The maintenance of domestic varieties and wild relatives demands a functional ecosystem in which sustainable forest and landscape management are inextricable parts. Without these elements, any strategy towards the conservation of domestic and wild genetic resources would prove unsuccessful. The project will support the application of the Agrobiodiversity Zones model recognised in Peruvian legislation, which features a landscape-level vision regarding the recognition of management and conservation systems containing important agrobiodiversity: this is conceptually similar to the NIAHS model, which in turn is a national equivalent of the GIAHS model recognised by the FAO. Promotion of the endogenous model of Agrobiodiversity Zones within the framework of the project may lead to the subsequent definition of NIAHS zones and the eventual recognition of further GIAHS sites, in accordance with the procedures recognised by FAO.

139.The long-term solution for agrobiodiversity conservation and sustainable use is: a) to reverse the loss of ecosystem integrity in key agrobiodiversity regions in order to ensure healthy agro-ecosystems in which agrobiodiversity can be sustained and; b) to incentivize the dynamic process of agrobiodiversity creation, use and promotion through farmer-effort incentive structures such as compensation for environmental services and appropriate marketing approaches, i.e. specific labelling and improved access to markets.

140.Integrated landscape management will be complemented through a two-pronged strategy aimed at ensuring social, economic and financial viability. First, market-based incentives will preserve and promote agrobiodiversity products through i) differentiation and labelling strategies (for example GI, organic, nationally recognised agrobiodiversity zones, GIAHS/NIAHS, including the related certification systems, third party for export market, and participatory guarantee systems for local/regional ones) and ii) market linkages through value chain approach (especially for export) where supply and producers charcateritics allow it, and “territorial markets” that link more directly small/family farmers to consumers through local initiatives embedded in a local community. Second, the State will buy environmental services from farmers and communities that set aside forests for conservation, and from subsistence agriculture farmers or families that cannot access the market, but protect agrodioversity with their traditional practices.

141.The project's strategy has been designed in response to identified threats and barriers (see barriers above) affecting the conservation of agro-biodiversity. The unit of intervention will be hydrological sub-catchments, selected on the basis of the following criteria: (i) high concentrations of biodiversity (in different ecological zones, where possible); (ii) vulnerability risk; (iii) existence of producer organizations and/or conservationist farmer families actively involved in agro-biodiversity conservation and sustainable uses; and (iv) the presence of engaged and committed environmental institutions.

Figure 12. Project Theory of Change



1.3.2 Project objectives, outcomes and outputs

142.The project **overall objective** is to conserve in-situ and to sustainably use globally-important agro-biodiversity through the preservation of traditional agricultural systems, the integrated management of forests, water, and land resources, and the maintenance of the ecosystem services in selected Andean regions.

143.The **project specific objectives** are: **(i)** to support the sustainable use, management, and regeneration of the natural resources on which agro-biodiversity depends, i.e. forests, land/soil and water; **(ii)** to develop, test and consolidate incentives to ensure the sustainable use of agro-biodiversity and associated rural livelihoods; **(iii)** to strengthen planning, policy and regulatory frameworks for its ABD conservation, commercialization and sustainable use; and **(iv)** to mainstream ABD in the agriculture, forestry, and land-use planning policies.

Component 1. Integrated landscape management and agrobiodiversity conservation in Andean regions of Peru

144.Activities under this component will focus on developing the capacities, knowledge and conditions required at field level for the active *in situ* conservation of ABD within the context of landscape-scale resource management systems, in accordance with the concept of Agrobiodiversity Zones[67] provided for in Peruvian legislation, and also following the principles of the GIAHS approach. Outcome 1.1 will focus on the ABD production systems themselves, while Outcome 1.2 will focus on the management and restoration of ecosystems within the landscape as a whole, on which the diversity and sustainability of the ABD production systems depend.

<u>Outcome 1.1:</u> Agro-biodiversity is conserved *in-situ* and managed in a sustainable and adaptive manner

<u>Key Targets:</u> *i) 312,046 hectares of production landscapes under sustainable land management that have Globally and Nationally Significant Landraces (Traditional Varieties)* *<u>ii)</u> Integrated management practices adopted by local communities based on gender-sensitive needs: 7,760 families in 58 communities, including at least 35% of women beneficiaries.* *<u>iii)</u> 40 native crops are managed over 15,970ha*

145.The project will help communities in the target localities to continue to manage and conserve native agrobiodiversity within the context of farm, ecosystem and landscape management systems. Reflecting the results of consultations with stakeholders during the PPG phase, the focus of the project will be on supporting farmers in maintaining and building on their cultural traditions in relation to resource management. Emphasis will therefore be placed on recovering and maintaining traditional practices and on the application of agroecological principles in order to maximise diversity, sustainability and resilience: at the same time, farmers will also be supported in improving the systems where necessary in order to ensure their viability and resilience in the light of changing social, economic and climatic conditions, through the incorporation of new technical approaches that respect sociocultural conditions and agroecological principles. The practices to be supported will deliver benefits

[67] Communities of San José de Belén and Zunipampa in the district of Laria have initiated the procees for the formal recognition as Agrobiodiversity area as per Regulation 020-2016-MINAGRI.

not only for the condition of native agrobiodiversity, but also in terms of sustainable land management: the benefits to be delivered per focal area are explained in Section 1.3.4.

146. The project will improve farmers' access to, and ability to implement, practices that provide them with direct benefits, for example through the generation of quality and nutritive food and fodder products, the provision of opportunities to supply local markets, contribution to farm sustainability by promoting soil health and the availability and quality of water, and contribution to livelihood sustainability and gender equality, for example by reducing women's workloads and increasing their social and economic status. The focus on traditional systems under this component will contribute to the marketing opportunities to be promoted under component 2, by for example allowing preservation of values that can be promoted through labelling based on GI, Agrobiodiversity Zones and/or NIAHS/GIAHS. The project's approach also recognises the need for additional, external incentives to increase farmers' motivations to maintain sustainable ABD production systems and the ecosystem goods and services that these provide.

147. During the project formulation phase, stakeholders identified the following priorities for maintaining the viability and sustainability of ABD production systems:

- The protection and conservation of water resources through the capture and storage of water, including the construction of small dams and the modification of existing ponds to increase their capacity (this was mentioned in the upper areas of Huancavelica, Puno, Apurimac and Cusco, covering the ecological altitudinal levels of Suni and Puna);
- Efficient management of water for irrigation;
- Management and recovery of soil fertility, health, and water infiltration and retention capacity, through the use of organic fertilizers, ecological pest management, and crop rotation systems
- Improved soil cultivation and erosion control practices, including the strengthening of ancestral practices such as the use of terraces.

148. In recognition of these priorities, and taking into account the evolving pressures facing livelihoods, production systems and ecosystems in the target areas, the project will strengthen farmers' capacities in applying and adapting their traditional production practices, including the approaches shown in Box 1.

Box 1. Examples of priorities for strengthening of farmers' capacities in improving production systems

Traditional agricultural and livestock practices:

- Agroforestry systems for increasing crop resilience to climate change:
- Strategies and actions to diversify rural livelihoods to reduce risks to climate change;
- Improvements or changes in crop cultivation or in the composition of cattle herds, with species and agricultural varieties and/or breeds that are more resistant to the conditions of the area, prioritizing ancestral knowledge;
- Improvement or changes in agricultural and/or livestock practices to improve resistance to changing weather, such as changes in planting and harvesting schedules, adaptation through phenological calendars, and exchange of knowledge of bio-climatic indicators for agricultural activities.

***Biodiversity conservation**:*

- Ecosystem protection and conservation (with an emphasis on community-based governance systems;
- Maintenance, management and use of native biodiversity, including medicinal and indicator plants;
- Restoration of fragmented habitats;
- Seed banks and/or *in situ* conservation of crop varieties resistant to climate change.

Water, soil and vegetation management:

- Optimization of the use of water resources (through soil and water conservation, water harvesting, efficient irrigation methods and techniques);
- Conservation and sustainable management of soil (e.g. practices to protect natural vegetation and optimize soil cover, prevent erosion and nutrient mining, and restore soil biodiversity, organic matter, natural soil fertility and physical, biological and chemical properties).

149.These practices will be complemented with some innovations, be these technological or processes such as:

- Agro tourism initiatives (a modality of community rural tourism) as a way of taking advantage of the scenic beauty, as well as micro-systems of irrigation technified in native crops.
- The management of multifunctional, climatically resilient landscapes, based on the experience developed with the PRODERN project, as well as exchange experiences and knowledge on the Territorial Management Agreements, implemented in the Huayana - Pomacocha and Pampachiri areas and the native crops seed supplier experience.
- Experiences on management of bofedales for the development of native camelida breeding.
- Practice of preparation and use of organic fertilizers, use of biocidal plants for pest control in Agrobiodiversity crops.

<u>Output 1.1.1</u> Participatory systems established in pilot localities for the recovery, generation, transfer and interchange of knowledge on the management and in situ conservation of ABD, combining traditional productive practices with conservation-minded technological advances.

150.The primary focus of this output will be on facilitating the participatory review, reanimation and systematization of traditional knowledge and practices related to the management and conservation of ABD and the associated production systems. This process will involve a series of steps and methodologies.

151.To this end, during Project Year (PY) 1, an **overall review of current practices** will be carried out in each of the target localities, including agriculture, livestock, water management and agrobiodiversity conservation practices; based on this assessment, pilot sites will be selected in a participatory manner, with the participation of communities and local authorities. Tools to be used for this review may include those developed by the World Overview of Conservation Approaches and Methodologies (WOCAT) initiative[68], adapted as necessary to local needs and conditions.

[68] https://www.wocat.net/en/methods.html

152.The project will then focus in from this overall review, to facilitate more **participatory assessments of ABD use and management in each of the selected target sites**, as the basis for the selection of the practices to be promoted in the target communities and beyond. These assessments will pay particular attention to factors including i) sources of traditional learning; ii) traditional knowledge; iii) traditional agroecological zoning and agrobiodiversity; iv) local knowledge on soils and its relation to agrobiodiversity conservation; v) knowledge and practices for agrobiodiversity crops; vi) regeneration, adaptation and seed supply; vii) distribution of traditional knowledge among the population.

153.The project will then facilitate the **systematization of the ABD use and management practices** identified through these processes, in the form of traditional knowledge compendia; these will be designed and compiled in consultation with and with participation of the local communities, and their content and use will be subject to the approval of local communities, and in accordance with the provisions of the Nagoya Protocol on access and benefit sharing. This will be coordinated with INDECOPI, which has responsibility for registering traditional knowledge.

154.Based on this, during PY2 the project will support the **establishment of Farmer Field Schools (FFS)** in each of the target localities, for the generation, management and transfer of knowledge in relation to ABD practices, including farmer-based experimentation. Adapted as appropriate to local needs and conditions, the use of FFS approach will serve to maximize relevance, ownership and uptake of the management practices; it will take advantage of the considerable body of experiences that have been generated to date in Peru with participatory approaches to extension, including culturally appropriate models such as *yachachiq* (leader farmers, nominated by community assemblies)[69] and *kamayoq* (community-based extensionists); this approach also forms the basis for the National Strategy of Rural Talents implemented by MINAGRI, which involves the certification of farmers for the provision of technical assistance and support in FFS.

155.The project will also support **exchanges of experiences** within and between the target localities, in order to permit practical learning through direct dialogue and comparison of experiences. This will build upon models such as that reported in Acora, where farmers visit houses on a rotating basis to compare experiences with the production of chickens, guinea pigs and vegetables.

<u>Output 1.1.2</u> Seed production, management and supply systems ensuring farmers' access to high quality and diverse ABD genetic material in accordance with their needs and conditions

156.The availability of most native varieties of potatoes depends on small farmers, who preserve these varieties. In most cases, seed of native varieties is produced under *campesino* systems, mainly for self-consumption and, in a lower degree, for the market; mixed and campesino systems have been identified as the most promising alternatives for potato seed production with small farmers in the Andes to respond to market demands[70].

157.The project will support the strengthening of systems for the production, management and supply of seed that integrate traditional *in situ* practices with *ex situ* conservation, management and breeding, most notably by the National Institute for Agricultural Research

[69] http://www.interactuem.org/ficheros/definicion_de_yachachiq(1).pdf

[70] Diagnostic of seed potato systems in Bolivia, Ecuador and Peru focusing on native varieties. Oscar A. Hidalgo, Kurt Manrique, Claudio Velasco, André Devaux, and Jorge Andrade-Piedra. International Society for Tropical Root Crops (ISTRC) 15th Triennial ISTRC Symposium.

INIA. Project actions in this regard will take into account the provisions of national legislation and international treaties to which Peru is signatory (including the Nagoya Protocol on Access and Benefit Distribution and the International Treaty on Plant Genetic Resources for Food and Agriculture) regarding the protection of their traditional knowledge, their control over the use and management of the genetic material, and the equitable distribution of any resulting benefits. These provisions, within the context of the project, are set out in the Project Risk Management Plan (APPENDIX 6), point 2.5.

158. Elements of these integrated seed/genetic resource management systems will include the following:

- Inventories of genetic resources, to define their current status and identify which varieties are at risk.
- Selection of producers to collect genetic material and manage it through ancestral practices and traditional knowledge. The capacities of the selected producers will be strengthened so that they can be recognized as seed providers at regional level.
- Seed fairs and competitions, bringing together actors from different communities and areas in order to exhibit and exchange varieties; these fairs will serve to broaden farmers' access to planting material, and also as a means for raising interest in ABD among community members, especially young people.
- Community-managed seed banks in each of the selected regions, allowing communities to have germplasm reserve.
- Articulation of the community seed banks with the National Germplasm Bank and the National Centre of Genetic Resources, led by INIA, allowing two-way exchange. Tjos will be coordinated with SENASA. Traditional varieties will be shared with INIA for *ex situ* conservation and breeding work, subject to prior, free and informed consent by the members of their communities of origin and in accordance with the provisions of the Nagoya Protocol on Access and Benefit Sharing; while INIA will make available to farmers varieties resulting from breeding for characteristics such as disease resistance.

<u>Output 1.1.3</u> Schemes to reward ecosystem goods and services generated by ABD production systems, agreed in pilot localities

159. Under this output, the project will explore, design and validate a range of options of schemes that reward and motivate the generation of ecosystem goods and services through the sustainable management and conservation of ABD production systems in the pilot areas, and will then support their negotiation and agreement between the providers and consumers of the goods and services. The schemes to be explored and promoted under this output will be directly related to the ABD production systems themselves, in contrast to those promoted under output 1.2.2 which will focus on rewarding good management practices in the broader landscape.

160. There are already precedents for such incentive schemes in Peru. In the Paruro – Cusco area, a group of producers of organic kiwicha orgánica (*Amaranthus caudatus*) are due to receive incentives (in the form of equipment and tools for organic/ecological crop

management) in recognition of their conservation of diverse varieties of kiwichi using traditional production systems combined with environmentally friendly practices[71].

161.One of the instruments to be applied will be the Reward for the the Service of Conservation of Agrobiodiversity (*Retribución de Servicios de Conservación de la Agrobiodiversidad* or ReSCA), which is currently being developed by MINAM and Biodiversity International in support of the EUROECOTRADE project[72]; however, the project will provide the opportunity to evaluate other schemes and to identify those that are best suited to specific local conditions, in consultation with local communities.

162.Project support to the application of incentive schemes will involve three lines of action: i) advocacy and technical and institutional strengthening for the implementation of incentives for conservation, ii) valuation studies of ecosystem services to be conserved and iii) integration of these ecosystem services into planning.

163.In PY1, the project will develop a **capacity development programme** in relation to the ReSCA and other potential incentive models, aimed at communities and producers' organizations, using a combined methodology that includes training of trainers, in order to reach a wider number of producers and ensure sustainability; specialized technical assistance to community organizations; exchange of experiences; dissemination of information on incentives through the radio; development of support material for dissemination and training. Community leaders will be identified and selected to participate in the training sessions and supported in the replication to a wider audience. The programme will cover the following modules: i) traditional crops and conservation methods; ii) services provided by forests and other ecosystems throughout the landscapes, especially in terms of water regulation and agrobiodiversity; iii) traditional management of wetlands and Andean grasslands. The program will be implemented throughout the life of the project.

164.Also in PY1, the project will carry out **studies of ecosystem services** in the project intervention areas. In each of these cases, it will assess the impacts of current management practices on the range of ecosystem services, including the following:

- Productive services: yields of primary and secondary goods;
- Ecological/hydrological services: e.g. water cycle, soil formation, carbon sequestration, nutrient cycling;
- Sociocultural services: e.g. landscape value, aesthetics, and heritage value.

165.These studies will also identify and characterize the providers and consumers of the ecosystem services in question, who would potentially be involved in the reward schemes under consideration. The study will also include an Opportunities and Risks Analysis of the identified ES that will allow potential bottlenecks in its implementation to be identified and anticipated. This process will also involve the clarification of definitions and criteria related to concepts such as sustainable conservation, on which the incentive systems will be based: this may vary site by site depending on the nature of the biodiversity, ecosystems and social context, and may also evolve through time.

[71] http://www.bioversityinternational.org/news/detail/cooperation-and-competition-to-conserve-native-diversity-in-peru/
[72] http://genesperu.minam.gob.pe/retribucion-por-conservacion-agrobiodiversidad/

<u>Output 1.1.4</u> Agrobiodiversity zones in the target localities evaluated for recognition in accordance with Peruvian legislation, with associated monitoring and management tools

166.In PY1, the project will provide advisory and facilitation support to selected local communities in the submission of proposals for the official recognition of ABD production systems and associated landscapes as "agrobiodiversity zones", in accordance with the Regulation on Formalization and Recognition of Agrobiodiversity Zones for the Conservation and Sustainable Use of Native Species: this recognition will facilitate farmers' participation in incentive and marketing schemes under Output 1.1.3 and Component 2. The model of ABD zones has been developed by the Peruvian Government and is enshrined in national legislation, but corresponds in general terms to the concept of Nationally Important Agricultural Heritage Systems (NIAHS) concept inasmush as it provides for the recognition of culturally and traditionally important production landscapes.

167.The project will support an initial screening of the target localities in terms of their potential to be qualified as ABD zones. The project will also develop an integrated tool to monitor the status of agrobiodiversity in these sites; this will permit the adaptive adjustment of the management practices in the sites, as needed, generate concrete evidence to be included in systematization processes, and also serve to evaluate the overall effectiveness of the ABD zone and GIAHS/NIAHS models in support of ABD conservation.

168.In the past years, many methods and indicators have been developed to measure agrobiodiversity. However, some of these methods have failed in developing methodologies and tools to systematize information collected from different disciplines (conservation, ecology, agriculture, markets, nutrition) and at different scales (varieties, species and ecosystems). The tool will be developed in PY 1, in close cooperation with INIA. Other stakeholders, such as Conservation International and the International Potato Centre (CIP), may be involved at this stage. Subsequently, the tool will be validated by the project, in collaboration with farmers, MINAM and INIA. In PY 2 the tool will be applied in project sites in close coordination with INIA's Agricultural Experimental Stations in terrain.

<u>Output 1.1.5</u> Capacities and strategies strengthened for dissemination and communication of knowledge and lessons generated in the pilot sites

169.The lessons generated in the target localities will be systematized in the form of guidelines for best practices of ABD management and conservation. These will represent an important legacy output of the project, in the form of accessibly-presented and widely available reference documents for a wide range of actors who may be involved in ABD issues in the future, including local communities, local governments, NGOs and agencies of central Government.

<u>Outcome 1.2:</u> Andean landscapes are sustainably managed and restored, to ensure flows of the ecosystem services necessary for the maintenance of ABD and the sustainability of ABD production systems.

***Key Targets**:*

- *83,000ha of forest restored and/or sustainably managed to enhance their capacity to provide ecosystem services required for ABD conservation and production (20,750ha covered by direct intervention in the landscapes, and 62,250ha covered by indirect effect of the project intervention (replication)*
- *10,000ha of wetlands (bofedales) restored and/or sustainably managed*
- *30,000ha of grasslands restored and/or sustainably managed*

170.Consultations and studies during the PPG phase indicated that the long-term sustainability of the *in situ* conservation of ABD is dependent on the ABD production systems themselves receiving a continuous and reliable flow of ecosystem services from the landscapes that surround them. These services include the maintenance of hydrological flows needed for irrigation; the maintenance of microclimatic conditions, buffering the production sysystems against climatic extremes; and the maintenance of genetic resources of crop wild relatives (CWR) of native crop varieties. The landscape elements that provide these services include the following:

- Small patches of shrubs and woodland distributed throughout farmers' lands, often in inaccessible and unproductive areas: these areas tend to be especially important in terms of CWR;
- Agroforestry systems, which typically contribute to microclimatic stability;
- Wetlands (*bofedales*) and natural pastures, which are particularly important in terms of water infiltration and regulation;
- Forests in the wider landscape, which are particularly important for maintaining hydrological functions and flows at the watershed level, which are vital in terms of irrigation opportunities for ABD production systems.

171.The ecosystems to be prioritized in each locality, and the management/restoration practices to be applied, will be defined on a case-by-case basis, through specific studies and consultations with local actors. Exogenous technical solutions may need to be adapted to local needs and conditions; for example, stakeholders from the Acora target locality mentioned that tree planting may not necessarily be welcome in the vicinity of crops, as the trees may provide refuge for a dove that feeds on quinoa crops; reforestation with native shrubs such as thola (*Parastrephia lepidophylla*) may however be acceptable. In order to maximise benefits in terms of ecosystem services, tree planting and agroforestry activities will be focused in particular on areas such as springs (*puquiales*) and the banks of rivers and channels, as well as roadsides and in fencelines.

172.The project will promote a combination of strategies, including:

- **Restoration of forest cover** (of Andean *Polylepis* forests and coastal *lomas* forests) in order to restore their hydrological functions and their roles as reservoirs of crop wild relatives, through a range of alternative methods including assisted natural regeneration and enrichment planting, complemented by community-based governance to reduce threats from tree felling, overgrazing and burning.
- **Protection, conservation, restoration and development of water sources and recharge areas**, including springs (*puquiales*), wetlands (*bofedales*), lagoons, wetlands and rivers, for example through community-based governance measure to prevent grazing in their vicinity, and the establishment of infiltration ditches in the vicinity of wetlands in order to favour moisture infiltration and retention.
- **Management of high altitude natural pastures** (*Agrostys*, *Calamagrostys*, *Festuca*, *Stipa* spp.): these make up around 80% of the surface area of the target localities and play a vital role in water infiltration and maintaining water cycles, as well as acting as reservoirs of crop wild relatives which are integrated into rotational cropping systems (*laymes*). In order to limit problems of overgrazing by camelids, cows and sheep, which is causing erosion and affecting water infiltration, with negative implications for the

availability of water for ABD production systems downstream, the Project will promote improved grazing governance. Rotational grazing will be promoted, with limits on stocking numbers, in order to permit pasture regeneration: this will be achieved by a combination of fencing (using low technology electric fences with solar panels) and the strengthening of traditional community-based governance systems.

- **Agroforestry and silvopastoral systems**, in areas with sufficient rain (> 1000 mm / year). Andean farmers have important knowledge on the buffering role of shrubs and trees for increased temperatures and soil and water conservation, including erosion control, promotion of soil fertility and the management of increasingly scarce resources[73].

Output 1.2.1: Planning and management instruments established and strengthened at different scales in the landscape, to promote the flows of ecosystem services needed for the maintenance of ABD and the sustainability of ABD production systems

173.Activities under this output will serve to ensure that the landscape management and restoration investments that are proposed are appropriately planned and located in the landscape in accordance with biophysical, socioeconomic and productive conditions, within the framework of development priorities and planning frameworks at different levels.

174.The project will support selected districts in the implementation of **Ecologic and Economic Zoning** (*Zonificación Ecológica y Económica* or EEZ), including as appropriate more specific forest zoning studies and agroecological zoning studies, in support of the spatial prioritisation of landscape management and restoration activities, taking into account the importance of watersheds as biophysical planning units.

175.At community level, the project will support 13 districts in the development and implementation of their **Development Plans (*Planes de Desarrollo Concertados* or CDPs)** aligned with the EEZ, providing training to rural and indigenous communities and officials of local institutions on the CDP formulation processes. Special consideration will be given to criteria of bio-ecological value and cultural and historical value, to identify those Ecological and Economic Units (UEE) that deserve special strategies for the conservation of agro-biodiversity and ecosystem services and ancestral and cultural practices, respectively. Training workshops will also serve as a means to strengthen mechanisms of interinstitutional coordination. The project will also support the establishment of Technical Commissions, ensuring the participation of all relevant stakeholders.

176.As appropriate, the project will support local communities and gender specific groups in the formulation of **forest management plans** in the target landscapes, defining sustainable use limits, identifying alternatives to unsustainable practices, articulating corresponding guidelines for conservation, and payment mechanisms for ecosystem services. In complement to this, the project will also support local communities in the design, coordination and implementation of **Territorial Management Agreements** for the promotion of good management practices in native forests: it will replicate pilot experiences developed in Apurimac, where such agreements have been developed in order to simplify the forest management plan instrument and achieve its operationalization in a short timeframe. The

[73] Local knowledge and valuation of agroforestry practices and species for climate change adaptation in the Peruvian Andes. Sarah-Lan Mathez-Stiefel, World Agroforestry Centre (ICRAF). In: Davidson-Hunt, I.J., Suich, H., Meijer, S.S. and Olsen, N. (eds.) (2016). People in Nature: Valuing the diversity of interrelationships between people and nature. Gland, Switzerland: IUCN. Gland, Switzerland: IUCN. 108pp.

project will encourage full participation of local stakeholders, including in particular young people and women.

177. Support to the processes of forest management planning will start with the establishment of a technical group in PY1: this group will oversee the elaboration of the forest management plan and provide follow up to the related agreements. It will be comprised of project technicians, district conservation leaders, and district and regional authorities. The technical group, in coordination with a participatory management planning specialist, will carry out an assessment and characterization of the native forests in the pilot localities, including the following elements: i) inventories of native forests (herbaceous, shrub and tree flora and wildlife); ii) assessment of the potential of native forest development, and iii) socioeconomic, environmental and organizational aspects. Based on the assessment, during PY2 the following aspects will be developed to make these Forest Management Plans operational:

i) Definition of strategies for the adoption of SFM;

ii) Generation of a portfolio of adequate SFM practices to be used in the pilot areas that will allow addressing the connectivity of habitats, network of conservation areas, protection of habitats upstream, Protection of riparian ecosystems and ancient forests.

178. During PY2 and 3, public investment projects will be formulated to implement the management plans and generate a manual of good practices for the management of Andean forests for the conservation of agrobiodiversity. Other mechanisms to support the implementation of management plans will also be explored, including for example public-private partnerships. Each proposal will be discussed and analysed in a participatory manner, including the communities, authorities of Regional Governments and Municipalities, Universities and institutions involved in forest management.

179. The nature and intensity of project support will vary between localities on the basis of the advances already achieved with planning at these different levels. In the target districts of Huayana, Acora and Laria, significant progress has been made to date with EEZ, as a result of support from international cooperation projects such as PRODERN or Government initiatives, while in other districts the process is more incipient and more support is needed. In Huayana, a technical microzoning document has been produced, together with forest microzoning, a forest inventory, a forest development plan and a forest fire risk management plan, all with support from PRODERN.

180. In close coordination with SERFOR, regional and local governments, the project will support the implementation of SERFOR's *Guidelines for restoration of forest ecosystems and other wild vegetation ecosystems* using the Restoration Opportunities Assessment Methodology (ROAM) developed by the International Union for the Conservation of Nature (IUCN) and the World Resources Institute (WRI). ROAM provides a flexible and practical framework allowing countries to identify and analyse rapidly the potential for restoration of forest landscape and to locate specific areas of opportunity at national or sub-national levels, and offers a variety of tools, including: i) establishment of stakeholder priorities in terms of restoration interventions; ii) mapping of restoration opportunities; iii) valuation and economic modeling of restoration; iv) Cost-benefit-carbon model of restoration; v) restoration diagnosis; vi) financial and resources analysis of restoration intervention. The tool will be adapted to the context of the specific project sites.

181.The project will also support the strengthening of organizations involved in conservation activities, to ensure sound management and sustainability, such as community-based forest protection groups, including the provision as appropriate of incentives to recognize the best organized initiatives.

<u>Output 1.2.2</u> Financial and economic instruments supporting ecosystem restoration and the maintenance of ecosystem services of importance for ABD

182.The instruments to be promoted under this output will complement those proposed under Output 1.1.3, but rather than working at farm level they will focus on support investments in ecosystem restoration and management at landscape level, in order to further the generation of the ecosystem services on which the maintenance of agrobiodiversity depends.

183.Schemes for the Payment for Environmental Services (PES), as provided for in national legislation, will be negotiated on a case by case basis between the different target localities, in order to reflect variations in the nature of the ecosystem services to be rewarded and in the nature of the participating stakeholders and the relations between them. The project will provide advisory and facilitation support to the identification and negotiation of appropriate PES modalities. The project will also support stakeholders in formulating and presenting proposals for Investment Projects (IPs), as a source of financial support for ecosystem management and restoration.

184.Action Plans will be developed for the integration of these incentive schemes into the planning instruments of national government and sub-national governments, namely the development plans of MEF, Local Land Management Plans, Concerted Development Plans at district and province level and land Management Agreements in the District of Huayana.

<u>Output 1.2.3:</u> Support programmes implemented for ecosystem restoration, for the maintenance of ecosystem services of importance for ABD.

185.The project will support the development of technical assistance programmes, and their delivery to local communities, indigenous groups, farmer's organizations and local governments, on the principles of sustainable forest management, degraded land recovery, and the combination of technological innovations with traditional practices to maintain the provision of ecological services related to agro-biodiversity conservation. This will result by project end in key ecosystems having been restored, using a combination of direct funding by the GEF project and the leverage of investments by other actors. The prioritization of restoration investments will be guided by the planning processes set out under Output 1.2.1 above, including the use of the ROAM tool for the Evaluation of Landscape Restoration Opportunities

186.In PY 1, in partnership with SERFOR (as National Authority for Fauna and Wildlife or ANFFS), Local Governments (as Regional Authorities for Fauna and Wildlife or ARFFS), universities and municipalities, the project will implement strategies to raise awareness in communities, producer associations and local authorities on key aspects of forests and ABD, provision of ecosystem services, and Gender issues. Technical assistance and capacity building in degraded areas, management of forest resources to avoid degradation, ecosystem services and access to Mechanisms for Compensation of Ecosystem Services will be provided, as well as technical assistance and capacity development to implement the management plans developed under output 1.2.1.

187.This will be achieved through the following steps: (i) adapting FAO training modules and materials to the district context; (ii) training leaders in the development of these modules; and (iii) supporting leaders in replication in their communities. A toolbox will be developed containing various training materials and technical assistance, such as: participatory forest zoning guides, guides to management plans, guides and manuals for the selection of reforestation or restoration pilots, learning modules on forests and AGBD, climate change and ecosystem services among others. The project will promote the use of the SERVIAGRO - MINAGRI platform as a technical assistance space for the technical specialists of the municipalities and Regional Governments. Awareness raising and dissemination activities will be carried out in coordination with technical groups (see output 1.2.1).

188.During PY1, pilot areas for restoration will be identified based on criteria including their importance for the generation of ecosystem services for ABD management systems, levels of degradation and practicality of restoration, and levels of community organization and commitment. A preliminary ecologic and socio-economic assessment will be carried out to achieve a characterization of forests to be restored, causes of deforestation/forest degradation, local stakeholders and their interest in the restoration process, mechanisms of participation and organization, land tenure.

189.In PY 2, restoration proposals will be prepared for each pilot site. The proposals will include: intervention strategy, scope, land use capacity map and perimeter map (at an appropriate scale of the area) indicators, monitoring parameters, financing sources. The preparation of the proposal will be carried out in a participatory manner, involving local stakeholders in all phases, and in close consultation with the National Forest and Wildlife Authority (ANFFS) and the Regional Forestry and Wildlife Authority (ARFFS).

190.Implementation of restoration proposals will start in PY 2.

191.In PY 3 and 4, monitoring activities, together with systematization and dissemination, will be carried out in close coordination with ANFFS, ARFFS and MINAM.

Component 2. Development of markets for agrobiodiversity products to support conservation and sustainable use and local rural livelihoods

192.FAO and the GoP have been working together to promote agriobiodiversity products and connect family farmers and rural communities in the Andean areas to relevant markets. The project will help ensure better market access to Andean family farmers for their ABD products, by : i) improving market linkages, ii) supporting labeling strategies, iii) strengthening multistakeholders networks and alliances for these market strategies and iv) increasing access to guidance tools.

193.The development objective is to link family / agro-ecological / traditional farmers to appropriate markets through differentiated market approaches. Markets include local, national and export ones. The project will promote and focus on local nutrition and food security for both small farmers and local consumers.

194.The main Andean biodiversity products identified to benefit from this strategy are:

- Crops: Native potato (*Solanum tuberosum*), maize (*Zea mays*), quinoa (Chenopodium quinoa), mashua-añu (*Tropaeolum tuberosum*), oca (*Oxalis Tuberosus*), maca (*Lepidium peruavainum*), tarwi (*Lupinus mutabilis*), *muña* (*Minthostachys mollis*), cañihua (*Chenopodium pallidicaule*), kiwicha (*Amaranthus caudatus*), Olluco (*Ullucus*

tuberosus), Tuna (*Opuntia ficus indica*); Tara (*Caesalpinia spinosa*); Arrayan (*Myrcianthes ferreyrae*), medicinal plants, essential oils.

- Breeds: Alpaca (*Vicugna pacos*), Vicuña (*Vicugna vicugna*), cuy (*Cavia porcellus*).

195. Stakeholder consultations during the PPG phase confirmed these priorities, as well as identifying other candidate products such as the giant bulrush sedge *totora* (*Schoenoplectus californicus* subsp. *tatora*), which is used for human and animal food, as a natural filter, for construction material and for handicrafts.

196. Regarding market linkages, depending of the local situation (e.g. volume that can be sold, localization, etc.) some family farmers can either be part of value chains[74] for national or export market, or better benefit from local markets by valorizing their agrobiodiversity values in a more direct contact with end-consumers (e.g. farmers' markets and community-supported agriculture). Therefore, these two approaches, value chains and territorial markets, are combined in the project as a strategy to provide appropriate support to address the different needs of all producers linked to ABD.

- The territorial market approach[75] concerned output 2.1.1. Territorial markets will be key for local sales strategies, with a direct link between the producer and the consumer/tourist or through a maximum of one intermediary. Territorial markets can take various forms: farmers fairs, baskets of goods, eco fairs, alliances with recognized chefs, gourmet establishments, gastronomic routes, etc. They could be also developed to supply institutional markets in particular public institutions. This type of market is suitable for smaller production available for selling, or where producers want to develop their own market strategies (and not depend on upstream segment of value chain).
- The value chain approach corresponds to output 2.1.2. and will be implemented primarily for export oriented markets where the strengthening of value chains will be used as a mechanism to facilitate the articulation between actors of a productive chain, in particular SMEs, the implementation of good practices related to the sustainable use and conservation of biodiversity and the equitable distribution of environmental, social and economic benefits among the participants of said chain.

197. Specific labelling strategies and their associated certifications have demonstrated their relevance to promote agrobiodiversity products by differentiating them on the market but also by sustaining preservation of local resources (biodiversity and local knowledge for example) through the inclusion of specific requirements in the related standard. This is particularly the case for geographical indications (that highlight the link to local resources, in particular local knowledge, biodiversity), organic labels (sustainable agricultural practices) and labels associated to agrobiodiversity zones and/or GIAHS/NIAHS areas[76]. Implementation of

[74] Definition of sustainable value chains (FAO. 2014. Developing sustainable food value chains – Guiding principles. Rome): "the full range of farms and firms and their successive coordinated value-adding activities that produce particular raw agricultural materials and transform them into particular food products that are sold to final consumers and disposed of after use, in a manner that is profitable throughout, has broad-based benefits for society and does not permanently deplete natural resources".

[75] These markets are extremely diverse but they are all distinguished by certain characteristics, as compared with global food supply systems, including the following: - They are directly linked to local, national and/or regional food systems: the food concerned is produced, processed, traded and consumed within a given "territory", the gap between producers and end users is narrowed, and the length of the circuit is shortened. - They perform multiple economic, social and cultural functions within their given territories - starting with but not limited to food provision. - They are the most remunerative for smallholders since they provide them with more control over conditions of access and prices than mainstream value chains.

[76] See for example http://www.gobernacionchiloe.gov.cl/sello-sipam-chiloe/

these labeling strategies together with their appropriate certification schemes concern output 2.1.3.

198.The labelling strategies will be combined with strategies for promoting market linkages. When combined with the value chain approach, especially for export market (for organic and GI in particular) it will be necessary to consider third-party certification; when combined with a territorial market, the Participative Guarantee Systems (PGS) will be considered for the certification. PGS are well developed in Latin America[77] for agro-ecological (organic, ecological) products and could be developed for other types of standards and labels such as geographical indications (GI) and agrobiodiversity zone/GIAHS/NIAHS labels.

199.The project will particularly encourage the participation of women and youth. This will be ensured through training and workshops organized with young, women and community leaders as ways to increase women and youth participation in the market strategies. Specific indicators are related such as number of training and events with number of youth and women trained; impact survey on involvement of young and women after the project).

<u>Outcome 2.1</u>: The marketing of agro-BD products has been enhanced to support the sustainable use of ABD and rural livelihoods.

<u>Key Target:</u> *At least 25% increase in total incomes among the 7,800 farm families participating in the FFS, attributable to ABD marketing, without detriment to gender distribution of economic benefits or to nutritional status of family members*

<u>Output 2.1.1</u> Strengthened market linkages between the small-scale farmers (family farmers and indigenous communities) and local and regional markets, to support conservation through sustainable production of food and goods based on ABD present in the Andes.

200.The first activity under this output will be a mapping of producers, products and markets in each territory, in order to gather detailed information about the agro-BD in plots, quantity, and quality of assets, the destination of production, (capacities, organization link to urban centers, etc.), taking also into consideration the role that could be played by local authorities and other local stakeholders (e.g. NGOs and civil society) in each territory. Based on this mapping, pilots will be selected for each of the approaches where it fits best (market linkages and labels) and a detailed work plan for each pilot, including the local partners to collaborate with, will be designed and shared. Among the partners to be associated: local authorities, ANPE, RIMISP, IFOAM, Slow Food and other local NGOs. The information will be processed and analyzed and finally channeled to each Community through the Community Directive to be disseminated in the community assemblies.

201.Identification of pilots will be a bottom-up process, with full participation of producers and communities. The pilot cases will be selected based on the following criteria: representativeness, importance of ABD crops, gender balance, inclusion, potential for replication and demonstration. For each pilot, specific strategies will be identified in a participatory manner. The minimum number of pilots foreseen are:

- Value chain supported: 3

77 For more details: *Agro-ecological labels in Peru certified through a participatory guarantee system* (PGS), FAO. FAO has studied this approach in neighbor countries (Bolivia, Columbia, Ecuador), and will soon publish the results demonstrating their efficiency in linking small holders to market. Other studies from IFOAM about PGS: http://www.ifoam-eu.org/sites/default/files/pgs_study_report_brief.pdf

- Territorial market initiatives: 8 to 10
- 3 GIs (already registered or to be registered)
- Organic label: 2
- Agrobiodiversity zone/GIAHS/NIAHS label: one national labelling system, 6 products categories standard and 2 standards for service (e.g. for use of ABD product in restaurant or local shop)

202. Once pilots and related strategies are identified, the project will support the development of territorial markets through the following interventions:

- Capacity development not only in marketing but also in enhancing sustainable and healthy food systems for example with training on the link between biodiversity and nutrition, balancing self consumption and market selling etc
- Strengthening of producer associations and cooperatives through capacity building, identification of collective action they could develop, knowledge exchanges, support to their establishment and support in defining of their strategies through participative workshops
- Support to the organization/development of territorial markets with the involvement of local authorities and partners having an experience in this field to build on existing network and activities. On this basis, the project could support: the organization and/or participation in fairs, organization and/or strengthening of producers' market, identification and establishment of baskets of products and/or services of ABD, relation with the association of cooks, supply of nutritious ABD products to institutional markets.
- Promotion. The project will facilitate identification and access to commercial promotion spaces in events that are recognized for the volume of buyers, their level of organization, etc. Participation in these events, seeks to position the products and/or services and establish contacts. These events will be previously identified in an inventory by category and importance, thanks to the support of the multistakeholders'networks (output 2.1.4).
- Study tours and "knowledge route". In order to foster involvement in innovative local markets (bio fairs, local tourism shops, eco-markets, link with gastronomy or institutional market), a group of producers (maximum 5 leaders per community) will be selected to participate in different initiatives and commercial promotion spaces so that they can learn from them and then replicate in their respective communities.
- Support to the definition and implementation of the marketing strategy in each pilot. This will include participative meeting to identify best approaches and tools, design promotional material, identification of additional market players to link with (e.g. consumers group, institutional market).
- Sharing experience between the pilots, through local workshops and field visits to share difficulties, solutions, perspectives.

203. In recognition of the priorities expressed by stakeholders consulted during the PPG phase, the above interventions will also provide for the strengthening of traditional marketing systems for ABD, including barter markets (*mercados de trueque*), communal fairs and gastronomic fairs and competitions, as well as the establishment of direct "farmer to kitchen" linkages.

<u>Output 2.1.2.</u> Value Chain Strategy supported and strengthened to improve inclusion of small-scale producers, young and women, and creation of employment while enhancing the marketing of ABD products in the Andes

204.The mapping conducted under Output 2.1.1 (see above) will be used to select at least three pilot value chains to be strengthened through the project. Criteria for the identification of the pilot value chains are: interest of products from ABD point of view, volume, inclusiveness and sustainability potentialities, and demonstrative character of the potential chain. The project will hire services of specialized consultants, including a consultant specifically responsible for linking production to markets through sales commitments, two for the selected value chains, who will lead the following activities:

i) ***Capacity development***. The value chain specialists will provide training to producers in the following topics: importance of ABD, good practices, associativity and its importance, certification options and the certification process, marketing strategies and the importance of inclusiveness, participation of men, women and young in equal conditions and opportunities.
ii) ***Support to development of marketing strategies and establishment of business partnerships*** (alianzas productivas) with activities such as market studies with the identification of potential buyers, organization of business roundtables and support contracts negotiations.
iii) ***Support to the improvement of processing activities*** through SMEs: around the territories, technical assistance will be provided to existing SMEs that are buying raw products from the ABD in order to add values and create local employment. Activities will be related with support in marketing, organization of supply from small farmers, quality control and food safety, but also mainstreaming ABD in their requirements and introducing more ABD products and insuring sustainable practices.
iv) ***Promotion of ABD all along the value chains***, with buyers, traders, food processors, exporters, retailers, etc, in order to ensure better considerations to sustainable practices, conservation of various varieties and breed, inclusiveness of women and youth.
v) ***Implementation of a user-friendly information system*** on prices and markets. Under the responsibility of the Communications specialist and in partnership with MINAGRI SERVIAGRO and local governments, a simple and user-friendly system for access to information on prices and markets will be designed and implemented. The system will be developed building on existing experiences in the agriculture sector[78], and based on lessons learned from experiences developed in the region.

<u>Output 2.1.3:</u> Geographical indication (GI), area labelling or certification standards developed for ABD-based products.

205.The mapping carried out under output 2.1.1 (see above) will allow the definition of pilot cases and work plans for each labelling pilot, including:

a) Agrobiodiversity zone/GIAHS/NIAHS label: the different goods and services that could benefit from the territorial label for the ABD areas;
b) Geographic Indication/GI (*Denominación de origen*/DO): three pilots will be identified among already registered GI/DO (e.g white giant maiz of Cusco, maca of Junin-Pusco) to support family producers to establish the producers association and certification

[78] Such as SERVIAGRO http://www.serviagro.gob.pe/que-es/

system, and new GI/DO to be registered (e.g. Kiwicha of San Salvador, Cuy of san Salvador) and implementation supported.

c) Organic labels: at least 3 certifications implemented.
d) Producers and their organizations (at least 4) articulated to existing labelling initiative.

206. Development of labels based on agrobiodiversity zones, GIAHS and/or NIAHS in Peru and establishment of its certification system: This will include the following activities:

i) Identification of the requirements that the standard must fulfill through a participatory process with participation of producers and local governments;
ii) Establishment of the network of actors for the management of the label;
iii) Definition of standards for 6 product categories and 2 services (e.g. restaurants cooking ABD products; agritourism at ABD farm, etc.) promoting ABD products in the area;
iv) Implementation of a PGS certification system; field testing in some pilot products and validation of the certification scheme with all stakeholders and institutions involved;
v) Capacity development for the proper management of the label, and for producers willing to use the label, this training will take into account an exchange of experiences with producers of Chiloé (Chile) [79].
vi) Promotional activities linking with tourism, partners related to the tourism sector will be involved in these initiatives and multistakeholders networks and alliances will provide support in this area.

207. All these activities for the development of labels will build on a participative process, and the key roles of local communities involved through their leaders and local authorities.

208. Development of Geographic Indications and establishment of related certification system. The project will work in three pilot cases, in order i) to support the implementation of registered GIs in the project area, where producers meet difficulties, by addressing the gaps, and ii) developing new GIs in order to provide demonstrative case on how to use a product as pivot for a origin-linked quality virtuous circle (see FAO guidelines) by ensuring the key steps identification, qualification, remuneration and reproduction of local resources.

209. The project could support registered GI to develop their Regulation Council and marketing stategy. If necessary, revision of the specification could be made through participatory process with producers to allow applicability and sustainability of the requirements.

210. For new GIs, once confirmed the GI potential of selected ABD products, characterization of the link to origin will be made and a participatory process with producers will allow defining the specific local standard for the GI product. This specification will in particular reflect the ABD values of the product and define practices to ensure their preservation. Denomination of Origin will be registered by producer associations, with the support of local and / or regional governments whose jurisdictions are linked to the DO. The Regulation Council will be established and strengthened, and capacity built for managing the GI.

211. Activities will include:

i) Support to the preparation (for new DOs) and revision (if needed for existing DOs), of the specification, based on technical files describing the characteristics of the

[79] See in particular the example of Chiloé in Chile that could be use as a model to learn from for the Peru project (http://www.gobernacionchiloe.gov.cl/sello-sipam-chiloe/)

product and how they are linked to the geographical environment and the culture of the territory and each of its cultural expressions;

ii) Strengthening of associativity, both at horizontal level (producer associations) and vertical level (value chain);
iii) Capacity development, including exchanges of experiences with other successful DOs in Peru and other Latin American countries;
iv) Identification of the most suitable certification system by linking with PGS principles, and test of the scheme with all relevant stakeholders (producers and institutions) – the results could lead to proposals for adapting the law on DO with regard to the Regulation council when dealing with control and certification;
v) Support to the Regulatory Council management;
vi) Knowledge sharing with other producers and producer associations concerned by the registered GIs in Perú to disseminate the lessons learned.

212.Support to the implementation of Organic Certification (third party or PGS): Small-scale producers will be supported in accessing organic certification by third parties or the PGS certification, depending on the case. Activities will be developed in collaboration with IFOAM, especially to support the development and strengthening of PGS systems. The support provided by the project includes in the case of third-party certifications the following aspects: i) facilitate the contact of the producers' or producer's associations with the certifying agency, ii) support the preparation of the required forms, iii) if changes in practices are required to comply with the standard of organic certification, the project will provide support and technical assistance. Subsequently, the project will accompany the producers to comply with the necessary actions to maintain the certification in the long term.

213.Incorporation of small scale producer associations in existing initiatives linked to national and territorial brands. The project will support producers and producer associations in being part of existing initiatives that promote ABD products through the use of brands such as *Frutos de la Tierra*, Sumaq Sonqo, Aynoka, as a cost-effective strategy to position ABD product in the market. These are recognized brands already positioned, which would facilitate the marketing of ABD products.

Output 2.1.4: Multi-stakeholder networks and alliances established to promote the commercialization ABD-based products, increase market access and improve livelihoods.

214.The project will facilitate the articulation and synergies between initiatives at territorial, national and international levels, by:

- Providing an exchange platform between stakeholders from multiple sectors (multi-stakeholders platform) to support linkages between market initiatives;
- Supporting alliances with key stakeholders to implement activities in relation with consumer education and information, linkages with tourism and gastronomy, field research, nutrition etc. This will aim in particular to raise awareness, especially among consumers and tourists about the importance of agro-BD in order to influence the consumption of these goods and services;

215.Activities will include:

- Identification of the stakeholders to be part of the network(s), and in particular, producer associations, the product and/or service of the BD agro and the actors;

- Knowledge sharing among partners to identify alliances, their objectives, their activities (participation in gastronomy fairs, festivals, gastronomy network, nutrition activities);
- Definition of awareness strategy and activities: printed material, audio visual, theater, artistic expressions and the use of means and communication appropriate to the different market niches.
- Regular information sharing about project activities, results;
- Organization of producers' tours to interesting alliances initiatives to learn from their experience and replicate element sin their territories.

<u>Output 2.1.5:</u> Toolkit for improved access to guidance for promoting ABD products through market linkages and labelling strategies.

216.A number of tools, publications, handbooks already exist in Peru and in Latin America that will be helpful to guide stakeholders (producers, facilitators, practitioners) in promoting ABD products through market linkages and labeling strategies, but they are not all well-known nor accessible to all practitioners. The project will develop a toolkit based on the existing tools and increase their accessibility and availability.

217.Activities will include:

i) Identification of all materials, tools and publications that can guide stakeholders in the promotion of ABD through market linkages and labeling;
ii) Translation in local languages and adaptation to the level of farmers;
iii) Definition and establishment of the toolkit to improve access to all these materials (e.g. on-line portal);
iv) Dissemination of these tools hard copies distributed in local communities.

Component 3: Institutional and policy strengthening to mainstream agro-biodiversity conservation and sustainable use into operational frameworks

<u>Outcome 3.1</u> Enabling environment for the sustainable use of Agrobiodiversity strengthened

Key Target:
5 Regions, covering 184,853km^2, have an enabling environment strengthened for the sustainable use of ABD, including access to information by decision makers, policies, planning instruments and regulations that provide for ABD conservation, interinstitutional coordination and institutional capacities for territorial planning and sustainabe use of ABD

<u>Output 3.1.1:</u> ABD information collected, systematized and disseminated among the institutions involved to improve decision-making, monitoring and evaluation of ABD conservation programs.

218.In PY 1, an analysis will be carried out of information requirements at national and regional levels: information on the location and identity of agrobiodiversity, and data on biophysical and socioeconomic conditions with implications for conservation, are expected to be of particular importance. On the basis of this analysis of information needs, the project will help to strengthen of the Regional Environmental Information Systems (SIAR in Spanish) to meet these information needs in each region; The SIARs are regional arms of the National Environmental Information System (SINIA) which is managed by MINAM (but are multi-sector in nature); MINAM has installed software for the SIARs in Regional Governments, as well as providing some training, but to date most regions do not have an adequate understanding of

how to use the SIARs; to fill this gap, the project will invest further in training functionaries of regional governments in the use of the SIARs.

219.A plan of prioritization of information to be included in the SIAR will be prepared, according to the needs of each region. Information exchange protocols will be designed, together with the development of the logical model of information storage. The project will assist with the incorporation into the SIAR of the genetic information managed through the GENESPERU platform (http://genesperu.minam.gob.pe/), which has recently been developed, and will also feed into the database and platforms managed by INIA, SENASA and SERFOR; it will also support the integration of data from different sector databases, and the generation of maps to allow the visualization of spatial information to facilitate decision-making. In PY 2 the processing and production of data will be conducted, 50 officials (25 regional and 25 local) will be trained in the use of SIAR, and the platform will be operational, permitting information to be fed to users during PY 3 and 4.

220.The Project will implement institutional mechanisms, such as cooperation agreements between institutions, that will facilitate the management of information between sectors and institutions of the State at different levels, as well as technological mechanisms for the use of the generated information in decision-making (e.g. map viewers, applications to facilitate access).

<u>Output 3.1.2:</u> Revised policies and planning instruments to incorporate the principles of Agro-BD conservation and integrated landscape management into 5 project regions.

221.During PY1, 5 Regional Biodiversity Strategies[80] (2019-2021) will be updated in order to ensure that they address ABD issues, and their implementation plans will be designed. Five Provincial/District Development Plans (*Planes Concertados de Desarrollo*) will be updated and reviewed in order to incorporate the principles of Agro-BD conservation and integrated landscape management. During PY2 and 3, consultancy support will be provided for the formulation of Public Investment Projects for the implementation of the above-mentioned instruments, and the inclusion of the PIPs in the multi-year investment programme.

222.Currently, decisions on the approval of investment projects are principally taken by functionaries with limited knowledge of issues of ABD and natural resource management. The project will advise on the required profiles of decision-makers in this role, coordinating with the databases of PNIA and CONCYTEC to identify professionals with the required profiles, and will support the training of decision-makers in these issues.

<u>Output 3.1.3:</u> Revised specific regulations and legal aspects are ready to allow the development and marketing of agro-biodiversity products.

223.This output focuses on establishing, consolidating and disseminating the mechanisms that are proposed to be implemented under the previous components, with a focus on ensuring that the mechanisms are adapted to local conditions. During PY 1, the project will support SENASA through the organization workshops for the promotion and dissemination of the Participatory Guarantee System, and will support the Regional Government of Cusco in the creation of the Regional Council of Participatory Guarantees, in order to make the scheme fully operational in the region.

224.Also in PY 1, INIA and SENASA will be supported in the formulation of a proposal for a Regulation on seeds of native potatoes, including provisions for incentives for farmers as

[80] Aligned with Aichi target 13 on *in situ* conservation and centres of origin

providers of seeds; if approved, in the following years printed and audiovisual material will be prepared on the Regulation and workshops will be organized to disseminate it.

225.The project will support the ABD Technical Group in the development of methodological guidelines for the formulation of Investment Projects for promoting the conservation of ABD. To this end, the technical group will be provided with a consultant to carry out the required systematization of information and analyses.

Output 3.1.4: Inter-institutional coordination mechanism to ensure alignment and consistency in the management of agro-ecosystems based on agro-biodiversity principles

226.The project will support the operation of mechanisms to promote coordination of efforts between institutional actors involved in the management of agroecosystems and the conservation of agrobiodiversity, in order to ensure coherence and consistency in their approaches. If possible, the project will seek to work with and strengthen existing institutional entities in this role, rather than creating new ones: a number of options have been explored during the PPG phase, and the identity, membership and roles of these entities will be confirmed through negotiations to be held during PY1.

227.At national level, it is foreseen that the Technical Working Group on Agrobiodiversity (which is led by INIA and forms part of the National Commission on Biodiversity) will play an important role in this regard. This will, however, require investments in raising the profile of the TWG (which is currently little-known outside of MINAM and CONADIB), for the implementation of its activities, as well as training and the generation of ABD conservation initiatives, linkage of its work with coordination mechanisms at regional and local levels.

228.At regional level, opportunities exist to work in this regard through a number of different institutional coordination mechanisms that already exist, including Regional Environmental Authorities, Regional Environmental Commissions (CARs), Regional Food Security Councils, Forest Management Committees and Provincial Environment Commissions. The precise identities of the mechanisms with which the project will work in each of the target localities will be confirmed during PY1 in function of their levels of participation, dynamism and effectiveness, which tend to vary significantly between localities and over time. Stakeholders from Lares, for example, proposed strengthening the regional platform for agrarian coordination led by the Regional Agricultural Directorate in Lares, while those in Huayana emphasized the importance of working with and strengthening Regional Agricultural and Environmental Committees. Support will be provided for the implementation of the activities of these entities, and in particular for improved coordination.

229.The project will support the actions foreseen in the Coalition of Centre of Origin Countries for agriculture and food[81], which is under development by Peru and Mexico, in the context of Aichi target 13 on the conservation of ABD and especially genetic diversity. The focal points of MINAM and MINAGRI will be supported in participating in the Conferences of Parties of the CBD, and support will also be provided to the development of international fora to consolidate the scientific basis of the status of Peru as a centre of origin and domestication of plant and animal species of global importance for ABD and food security.

230.The project will support local organizations so that they include in their work agendas ABD conservation actions with a landscape approach that ensure or improves the provision of

[81] Peru has taken on the responsibility of developing, together with Mexico, Egypt and China, the new world agend for biodiversity to 2050 in the intersessional meeting in Lima at the end of 2019, as well as compliance with the 2011-2020 Strategic Plan for Biodiversity and the Aichi Targets.

ecosystem services in the pilot localities. Thiis strengthening will be based on existing organizations and will give priority to local initiatives. This will be implemented through exchanges of experiences between farming communities, facilitating the implementation of communal agreements based on good practices and successful lessons learned.

<u>Output 3.1.5:</u> Capacity building programme for institutional actors in territorial planning and sustainable use of ABD in the Andes

231.The project will develop a training programme to strengthen institutional actors' capacities in management of ABD, Land Use Planning, data analysis and application, sustainable forest management and reforestation, the development of Public Investment Programs, and information management. In addition to ensuring an appropriate gender balance in the selection of the participants, gender issues will be included in a cross-cutting manner into the content of the capacity development activities, and specific training will be provided to functionaries on how to take women's needs and situations into account in their initiatives.

232.The programme will target regional and local officials, including those on all types of contracts. Training will also be provided, in separate spaces and with distinct methodologies, for members of local communities.

233.The content and methodology of the training modules to be delivered to different actors will be confirmed at project start through detailed Capacity Building Needs Analyses (CBNA). While it will be tailored differentially to the needs and capacities of different stakeholder groups, it is foreseen that training will consist of a mix of theory and practice, with a strong emphasis on learning through doing, exchanges and discussion of knowledge and experiences, and contextualization of the subject matter to the participants' specific areas of origin. The capacities to be developed will be related to the proposals developed under Output 3.1.2.

234.Wherever possible, training will be delivered through universities or other academic/research institutions operating at national or preferably local levels (for example PNIA); this is likely to be more attractive to participants, and will also provide an opportunity for the training modules to be permanently adopted by the institutions in question as part of their curricula at diploma and masters levels, thereby helping to place capacity development on a sustainable basis, benefiting future generations of participants, instead of being targeted on a one-off basis solely at those in place during the time of project implementation.

235.The conversion of the results of the capacity development processes into durable impacts on the operation of the institutions to which the participants belong will depend in large part on the concepts transmitted being incorporated effectively into policies, and being backed up by financial resources that will enable them to be put into practice. The development of capacities under this Output (which will include capacities for the development of PIs), the revised policy, planning and regulatory instruments under Outputs 3.1.2 and 3.1.3, and the financial instruments foreseen under Outcomes 1.1.3 and 1.2.2, will all therefore play complementary roles in this regard.

<u>Output 3.1.6:</u> Communication and knowledge sharing strategies in Agro-biodiversity Services and benefits, traditional production practices, and the NIAHS concept are available to a wide variety of audiences for awareness, dissemination and replication.

236.In the first year, awareness of the project will be raised among national, regional, local and community level entities, to which end diffusion materials will be produced such as

videos, leaflets (in native languages where appropriate), and the project will be presented officially at national, regional and local levels.

237.In PY2, a communication strategy will be designed aiming to position and disseminate project activities developed to date, in order to give visibility to its actions, actors and achievements. In a first phase, the communication messages should aim to familiarize the public with the concept of ABD zones and its key elements. In a second phase the communication will focus on the activities developed and results and benefits achieved. The messages should also highlight cultural and traditional aspects. The strategy will take into account different tools and languages for different audiences. Communications will be directed to different audiences by age, level of education, knowledge of the project, and use of media. The project will sign contracts for the production of information and communication materials and for the design and printing of the same.

238.The implementation of the strategy will be developed in coordination with MINAM, MINAGRI, INIA, AGRORURAL, SERFOR, Regional Governments of Cusco, Puno, Arequipa, Huancavelica and Apurimac, Civil society organizations, Indigenous Authorities, guilds and research institutes. The strategy will include the following elements: i) Project web page: will be located on the MINAM websites and linked to the websites of MINAGRI and regional governments, ii) Newsletters: they will be prepared quarterly; iii) Management with the media: including contacts with the media, press releases, tours with journalists, press conferences; articles published in local and national press; iv) Social networks (Facebook and Twitter): primarily aimed at young people with permanent updating of photos, videos, news and links related to the project; v) slots in national, local and community radio: 52 radio slots will be prepared and issued in order to inform and sensitize the population; v) Television Shows: 10 mini-documentaries of 5 minutes. Documentaries will also show the results and success stories of pilots supported by the project, in PY3-4; vi) Posters: to be placed in strategic locations and distributed to the beneficiaries; vii) Tours and field days: field visits to pilot activities implemented under Component 3 for officials from national, regional and local institutions.

Component 4: Monitoring, evaluation and dissemination of project information

Outcome 4.1: Project implementation based on RBM and lessons learned/good practices documented and disseminated

<u>Output 4.1.1</u> Monitoring system project operating and providing systematic information on progress in reaching expected outcomes and targets

239.Between PY 1 and PY4, the Project Coordinator will prepare six-monthly Project Progress Reports (PPRs). The PPRs include the project results framework with project outputs and outcomes indicators, baseline and six-monthly target indicators, the monitoring of the risk matrix, and identifies potential risks and mitigation measures to reduce those unexpected risks. At the end of each year, the Project Coordinator will provide appropriate inputs to the Lead Technical Officer (LTO). The LTO-FAO will be responsible for preparing the yearly Project Implementation Review (PIR). The PIR includes the project results framework with project outputs and outcomes indicators, baseline and yearly target indicators, the monitoring of the risk matrix, and will identify potential risks and mitigation measures to reduce those unexpected risks. The project will issue a publication on lessons learned.

240.After 24 months of project implementation, a mid-term project evaluation will be conducted by an external consultant, who will work in consultation with the project team including the FAO Independent Evaluation Office (OED), the FAO-GEF Coordination Unit, the LTO, and other partners. Three months before the end of project implementation (month 45) a final project evaluation will be conducted by an international external consultant under the supervision of FAO OED, in consultation with the project team including the FAO-GEF Coordination Unit, the LTO, and other partners.

Output 4.1.2 Instruments for stakeholder participation in project management

241.A project inception workshop will be held during the first quarter of project implementation in which key stakeholders will participate in the validation of the results framework and of the proposed arrangements for project implementation and stakeholder participation. During PY1, the stakeholder and gender strategies developed during the PPG phase will be updated, validated and finalized, in the specific context of the target localities and in full consultation with the relevant project stakeholders. Processes of consultation will be held with indigenous stakeholders and their representatives in order to obtain their Free, Prior and Informed Consent (FPIC) for the project's actions in their communities, in accordance with national legislation and with the principles of the Protocol of Nagoya on access and benefit sharing[82]. Stakeholder representatives will be involved in the mid-term and final external evaluations, at which time they will be consulted as to the adequacy of their participation in project design and implementation.

Output 4.1.3 Project-related best practices and lessons learned systematized and published for a variety of audiences and stakeholder groups

242.Systematization protocols will be developed during the first quarter of the project implementation phase, and target audiences identified and characterised. Regular meetings will be held between project team members and with project participants in local communities to review lessons learned and identify best practices, and these will be systematized throughout the project period in formats tailored to the characteristics of each target group. Farmer field schools (see Output 1.1.1) will provide particularly significant opportunities for the generation and systematization of lessons and best practices.

1.3.3 Project Stakeholders

Primary stakeholders

243.The primary stakeholders of the project will be small- and medium-scale farmers managing threatened and globally-important agrobiodiversity in the 5 target localities. Around 80-90% of the actors are small-scale producers with plots of less than half a hectare, 90-95% of whose production is used for food security (consumption, barter and seeds) and 5-10% is for sale. The remaining 5-10% of farmers are medium-scale[83]. The members of the

[82] Members of indigenous organizations were fully involved in consultations and design processes during the formulation phase at both regional and central levels, but formal FPIC was not obtained due to time and resource constraints.

[83] In the National Agrarian Policy, the term "small farmer" is usedm but there is no clear definition that relates this to the number of hectares of the farm unit. According to the Multiannual Strategic Sector Plan 2015-2021, small farmers are defined as those who adopt the principal decisions on the use of the available resources and the use of soils for agrarian ends, assuming technological and economic responsibility for the agrarian production process, characterised principally by the predominant use of family labour, limited access to land, water and working capital, oriented at self consumption, with insufficient availability of land and income to guarantee family reproduction, which leads them to resort to salaried employment within or outside agriculture. Likewise, medium and small producers are defined as natural people whose

target communities, including the participating farmers, are almost exclusively indigenous, from the Quechua and Aymara speaking ethnic groups. Other stakeholders at local level will include members of other communities upstream, carrying out agriculture, grazing, forest management/extraction and other activities that affect the generation of ecosystem services of benefit to the target ABD systems.

244. PPG studies indicated that most of the target producers have diverse livelihood support strategies, combining subsistence production with varying levels of market production of grains and vegetables, complemented by the raising of livestock (cattle, camelids and/or guinea pigs and poultry), collection of tree and forest products, off-farm labour and commerce. The relative importance of each of these elements in any given family depends on a range of factors, including availability of family labour and land, and access to financial capital or complementary income such as remittances. Producers who specialize in specific productive activities, or who have developed collaborative forms of production and business, are in many cases represented by community-based organizations. The following such organizations were identified during PPG studies in the target communities:

- Association of camelid producers (Apurímac, Cusco, Huancavelica, Puno)
- Association of improved cattle producers (Puno)
- Associations of entrepreneurial women (Apurímac, Arequipa)
- Association of female producers of artisan dairy products (Puno)
- Associations of producers of native potatoes (Apurímac, Cusco, Huancavelica y Puno)
- Organized groups of women who work on artisan textiles (Apurímac, Cusco, Huancavelica, Arequipa)
- Associations of ecological and organic producers (Apurímac, Cusco, Huancavelica)
- Associations of guinea pig producers (Apurímac, Cusco, Huancavelica and Puno).

245. Where possible, the project will work in association with these groups to take advantage of their existing levels of organization and market linkages: they will also be used by the project as channels for the representation of the different specialized interest groups within the communities, which will help the project in the application of its proposed approach focused on integrated landscapes and diversified livelihood support systems, through the identification of the synergies between the management, marketing and conservation of ABD crops and other landscape/livelihood elements. At the same time, the project will recognize the existence of other sectors of the community who are not necessarily represented by the associations listed above: these typically include poorer farmers who lack the resource required to invest in the forms of productive specialization on which these associations are based.

246. The project will also interact closely with other established organizations in the target communities, which function as mechanisms for stakeholder representation and natural resource governance. These include:

- Association of peasant communities (comunidades campesinas) in Cusco
- Communal authorities (Apurímac, Arequipa, Cusco, Huancavelica, Puno).
- Local authorities (Apurímac, Arequipa, Cusco, Huancavelica, Puno).
- Commission of users of water from the rio Blanco (Puno-Acora).

principal economic activity is agriculture, ranching and/or agroforestry, including activities of primary processing and transformation of the products generated, in accordance with the definitions established for this type of activities by Legislative Decree Nº 1062, which approves the Law for Food Safety.

- Community leaders and peasant facilitators (Puno, Arequipa).
- Yacahchiq and Local Peasant Technicians (Apurímac, Cusco).

247. Based on these analyses, and complemented with more detailed locality-specific participatory analyses at the start of the project, detailed engagement plans will be developed within the first year of implementation, that will ensure the effective participation of the different stakeholder groups described above in project implementation, including effective representation of their interests in project decision-making and the equitable distribution of benefits. Key elements of this engagement plan, identified in consultation with stakeholders during the PPG phase, include the following:

- Innovative and complementary alliances with other development actors with established presence and capacities in the target areas, to facilitate interactions with the different stakeholder sectors of the target communities.
- Emphasis on ensuring the representation and participation of women, young people and the poor in project activities and the distribution of benefits
- Strengthening of the capacities of community leaders and authorities to influence policies and institutions in the public sector in favour of the target communities
- Broad consultation and dialogue with the local communities, authorities, leaders and grassroots organizations within the framework of Free, Prior and Informed Consent (FPIC)
- Strengthening of *yachachiq* (leader farmers) in their roles in training of other community members.

248. Another important group of stakeholders to be involved in the project will be the indigenous communities responsible for the management of the Private Conservation Areas (ACPs) in the project area. These groups will be closely involved, in particular, in the activities of the project in relation to environmental governance and ecosystem restoration, in order to maintain flows of ecosystem services from high altitude forest and wetlands.

Key institutional stakeholders

Institution	Role	Responsibilities in the project
Ministry of Environment (MINAM)	GEF Operational Focal Point and National Environmental Authority	Responsible for project execution and overall coordination.
Ministry of Agriculture and Irrigation (MINAGRI) through the AGRORURAL programme, SERFOR and INIA,	Implementing partner, and member of the Project Direction in coordination with MINAM and FAO.	Component 1: AGRORURAL will coordinate at the basin level and will also provide co-financing resources or execute projects to complement GEF project activities. INIA will collaborate on innovation and technology adoption, through its experimental stations and national level organization. SERFOR will support with its team of specialists linked to the management of forests and wildlife and Will coordinate with MINAM and regional governments through the Technical Administrations of Forestry and Wildlife (ATFFS) in the 5 regions of the project.
Regional Governments	Regional authorities	Components 1 and 3 regional coordination ensures integration of conservation and sustainable use of

Institution	Role	Responsibilities in the project
through the Regional Directorate of Natural Resources and Environmental Management		biodiversity, land and forest management in regional strategies, plans, and zoning frameworks, including the necessary allocation of resources to support these activities. Specifically, all of the economic and technical efforts oriented at forest restoration
Local Governments in Project intervention areas through PROCOMPITE[84]	Local authorities	Component 1 and 2: Value chain related activities will be coordinated through the Local Development Management Departments in the prioritized watersheds. They will also provide support in the organization of producers on activities related to sustainable use of agricultural biodiversity, including funding for agro-biodiversity, conservation and sustainable use of land and forest.
FAO	GEF Implementing Agency	Provision of technical assistance on sustainable natural resource management, rural development, biodiversity preservation, land degradation, and sustainable forest management. Support of methodologies according to international standards. Support and monitoring of project implementation. FAO will closely supervise the execution of the project, supervise the OP in the provisions of the OP Agreement, and will provide overall orientation.
PROFONANPE	Operational Partner	PROFONANPE will ensure compliance with requirements of project planning, review, monitoring and review; that coordination between participants is effective; and that decisions are put into practice. PROFONANPE is responsible for ensuring that results and outcomes are produced on time and are of good technical quality. PROFONANPE will manage the budget, the achievement of results and monitoring of progress in full compliance with the terms and conditions of the Operative Partner Agreement to be signed between PROFONANPE and FAO.
RIMISP, in relation with Slow Food, Agrorural, APEGA (Peruvian gastronomic association, Promperu, Instituto de Estudios Peruanos), Asociación Gastronómica Arequipa	Implementing partner	Component 2 : RIMISP will cooperate in the implementation of activities related to *Market linkages strengthening and inclusion of small-scale producers, young and women, and creation of employment, by developing local markets and specific alliances linked to gatsronomy ; Geographical indication (GI), labelling and certification standards: Capacity Development, research and networking, and* strengthening the linkages between the market and public policies for the valorization of agri-food biological and and cultural heritage on a territorial basis.

[84] Law No. 29337 establishes a framework to allow regional and local governments to assign up to 10% of their Budget to support actions to improve competitiveness of productive systems.

Institution	Role	Responsibilities in the project
Peruvian Agro-ecological Consortium (CAP):[85]	Implementing partner	Component 2: The CAP will cooperate in the implementation of activities supporting improvement in the management of the production system and developing value chains based on agro-biodiversity resources.
CCTA, RAP, PRATEC, ARARIWA, CESA[86]	Implementing partner	Component 1 and 2: These institutions will support implementation of activities linked to traditional knowledge recognition and related activities.
Regional Universities [87]	Contributors	Component 1: Regional universities will help prepare studies and support training actions related to sustainable use of biodiversity, land and forest resources. Component 1: Student support will also be encouraged in project implementation activities through pre-professional training programmes or thesis-related work.
Local communities including indigenous communities (including children studying in schools to promote models of sustainable production on biodiversity)	Beneficiaries	Component 1 and 2: Models of sustainable production on biodiversity, forest, land. Biodiversity Conservationist pilots and GIAHs systems. Component 3: mechanisms to strengthen and consolidate the participation in and for policy decision making processes.

249.The target population of ABD farmers is mostly made up of indigenous people. As explained under Output 4.1.2 above, members of indigenous organizations were fully involved in consultations and design processes during the formulation phase at both regional and central levels: further processes will be held with indigenous stakeholders and their representatives at the beginning of the projecy implementation phase in order to obtain their Free, Prior and Informed Consent (FPIC) for the project's actions in their communities, in accordance with national legislation and with the principles of the Protocol of Nagoya on access and benefit sharing.

1.3.4 Expected global environmental and adaptation benefits

250.GEF investment in the project will result in the delivery of the following GEBs:

- **Biodiversity:** the genetic diversity of 40 globally important agrobiodiversity species and varieties will be improved over 15,970ha of ABD farming systems[88], and 642,136ha

[85] This includes the following organizations: Agro-Ecology Network (RAE); Alternative Agriculture Action Network (RAAA); National Association of Ecological Products (ANPE); Peruvian Association of Consumers and Users (ASPEC); Environment and Development Institute (IDMA).

[86] CCTA – Science and Technology Andean Coordinator; PRATEC - Andean Farmers Technology Project; ARARIWA Association;CESA - Centro de Servicios Agropecuarios-CESA; Peruvian Environmental Network (RAP), which is made up of the NGOs Tierra Firme, Soluciones prácticas, Mundo Sostenible, Asociación para pa Investigación y Desarrollo Integral (AIDER), Centros de Estudios y Promoción del Desarrollo (DESCO), Centro de Conservación, Investigación y Manejo de Areas Naturales (CIMA) and PRONATURALEZA

[87] University of Altiplano, University of Cusco, University of San Agustín, University of *Centro del Perú*, University of Huancavelica, University Santiago Antúnez de Mayolo

[88] Outcome 1.1 target: 40 native crops are managed over 15,970ha

of landscapes in the 5 target localities will be subject to planning, management and restoration that promotes the active *in situ* conservation of globally important agrobiodiversity in production systems and optimizes flows of ecosystem services on which the conservation status of the ABD depends[89].

- **Sustainable Land Management:** 642,136ha of landscapes in the 5 target localities will be subject to planning and management that promotes ecological and productive sustainability and optimizes flows of ecosystem services[90].
- **Forest Ecosystem Services:** 83,000ha of forest ecosystems (including on-farm trees and off farm forests in upper watershed areas) will be subject to restoration in order to maintain and recover their capacities to generate ecosystem services on which the conservation status of ABD crops depends, and which are also of importance for the livelihoods of local communities[91].
- **Climate change mitigation:** the project will result in net carbon benefits of 3,772,623tCO_{2eq}~~7,811,324tCO2eq~~, as a result of increases (relative to the without project scenario) in the tree content of the target landscapes, due to restoration activities.

251. This proposed project will also generate GEBs by contributing to Aichi Targets #1, 2, 7, and 14 through the following outputs:

Aichi Biodiversity Target	Project Outputs	Selected SMART Indicators[92]
Target 1 - By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.	1.1.1. 1.1.2. 1.1.3. 1.1.4. 1.1.5. 1.1.6. 1.1.7.	Trends in awareness, attitudes and public engagement in support of biodiversity Trends in identification, assessment and establishment and strengthening of incentives that reward positive contribution to biodiversity and ecosystem services penalize adverse impacts
Target 2- By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.	3.1.1 3.1.2. 3.1.3. 3.1.4. 3.1.5.	Trends in integration of biodiversity and ecosystem service values into integrated in sector and development policies
Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	1.1.1 2.1.2	Trends in pressures from unsustainable agriculture, forestry, fisheries and aquaculture[93]

[89] Output 1.2.1 target: All 13 districts included in target localities (642,136ha) with Ecological-economic Zoning (Micro zoning) identifying ABD zones developed with farmers
[90] Output 1.2.1 target.
[91] Output 1.2.1 target: 83,000ha of forest covered by restoration and zoning plans
[92] The intermediate milestones to be achieved during project implementation will be established in the full project formulation phase.
[93] In the proposed project, this SMART indicator will be measured through 1 operative indicator: (i) Trends in areas of forest, agricultural and aquaculture ecosystems under sustainable management.

Aichi Biodiversity Target	Project Outputs	Selected SMART Indicators[92]
		Trends in proportion of products derived from sustainable sources[94]
Target 13 - By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	All	Improved conservation status of targeted ABD species in target localities
Target 14 - By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	2.2.2 2.2.3	Trends in area of degraded ecosystems restored or being restored Trends in benefits that humans derive from selected ecosystem services

1.4 LESSONS LEARNED

252. The proposed project is based on lessons learned from:

1) The Project *"**In-situ conservation of native cultivars and wild relatives**"* (UNDP/GEF). This GEF-1 project represented a shift from the prevailing ex-situ conservation approach by working locally with small-scale farmers to promote *in situ* conservation. It generated important knowledge and baseline information on Andean agriculture systems (i.e. production of *camu camu,* sweet granadilla, *kiwicha*, maize, quinoa, Lima beans, *arracacha*, *maca*, manioc, sweet potato and potato). Data generated by this project still represents an important contribution to Peru's agro-biodiversity, in particular, the list of traditional practices and social structures that sustain ABD. The proposed Project will start from existing analyses while ensuring that data from a variety of sources and new actors is updated and systematized (see outcome 3.2, Table B) for: (i) decision-making, (ii) local and regional planning, and (iii) the evaluation and monitoring of development initiatives and their effects on agro-ecosystems and fragile Andean production landscapes.

2) The global project ***"Globally Important Agricultural Heritage Systems (GIAHS)"*** (FAO/GEF). Peru was a pilot country. The GIAHS global project produced valuable information and lessons from micro pilot sites of Lamay and Lares (Cusco) that will be replicated in selected Andean areas through this proposed FAO/GEF project. The Peru pilot country component of the global project had an operational budget of approximately USD 600,000 in 5 years. Its impact was positive considering the scale, available resources, scope and coverage. One major project outcome has been the political will and commitment that generated at ministerial levels in the MINAM, MINAGRI and MEF.

[94] In the proposed project, this SMART indicator will be measured through 2 operative indicators: (i) number and quantity of certified products commercialized under certification schemes; and (ii) number of producers which have adapted sustainable production systems.

253.Replicable experiences tested by the global GIAHS project in Peru include: (i) the integration of GIAHS principles and operational guidelines in the preparation of local development plans, as was the case in Lamay and Lares, including: (i) the participatory processes to assign local government representatives to consolidate activities with communal and local civil society organizations; (ii) best practices resulting from the implementation of agro-biodiversity zoning by the Regional Government of Cusco aimed at increasing the protection and sustainable use of agro-biodiversity in seven Departments; and (iii) experiences with local governments supporting livestock activities initiated by the project in the Puno Region.

254.The global GIAHS project (Peru component) has provided valuable insights for designing this proposed project. These include the importance of fostering systematic coordination between MINAGRI and MINAM, and other institutions, to ensure that: (i) mainstreaming objectives are realized into existing programmes and policy development, (ii) considerations regarding the commercialization and marketability of agro-biodiversity are conducted on the basis of existing and successful experiences about bio-trade, certification and geographical indication (GI); (iii) that agro-biodiversity management is effectively inserted into multifocal national strategies related to natural resource use, food security, agriculture and family farming, and (iv) that an effective and reliable information mechanism is devised to systematically inform policy-making, evaluate programmes, and the development of sector-based policies.

255.A key recommendation emanating from the independent final evaluation refers to the need to establish *Nationally Important Agricultural Heritage System* (NIAHS) to facilitate the mainstreaming of GIAHS principles into national policies, strategies and plans and to strengthen the ownership and alignment of GIAHS at the local, national and global levels. It is also recommended that lessons learnt from China, where this approach has already been adopted, be taken into account. In response to this and as evidence of the high level political commitment towards this initiative, MINAM and MINAGRI are supporting the consolidation of the GIAHS initiative in Cusco and Puno, by establishing a National Steering Committee for the incorporation of other GIAHS sites, and exploring the necessary requirements for the establishment of a NIAHS Coordinating Mechanism at national level. The MINAM is also working on a new Action Plan to support the implementation of the National Environment Strategy, in which the conservation and sustainable use of agricultural biodiversity will represent a prevalent feature. MINAGRI is working on a new Strategic Plan for national agriculture, in which GIAHS sites would be considered as an integral component in support of family farming. The INIA is also actively committed to the GIAHS initiative, as it represents a practical and sustainable way of conserving national genetic resources and reintroducing native Andean crops and livestock for rural development.

1.5 STRATEGIC ALIGNMENT

1.5.1 Consistency with national development goals and policies

256.At the national level, the project is consistent with the *General Environmental Law*,[95] which prioritizes the preservation of ecosystem diversity, species and genes, as well as the maintenance of essential ecological processes on which the survival of species depends[96]. Article 26 sets as national priority scientific research on plant and animal species, microorganisms and ecosystems through the elaboration of inventories, biological and environmental monitoring studies, as well as their management and conservation. Similarly, the project responds to Law 28477, which declares native crops, breeds and wild species as "National Heritage". It is also associated to the above-mentioned *Vision 2021* and will be related to the forthcoming *National Agro-biodiversity Program*, which aims at contributing to the conservation and participatory management of agricultural biodiversity, including its identification, assessment and characterization, on the ground of respect for local cultures, especially user and conservationist communities. Finally, it also consistent with the *Law on the Conservation and Sustainable Use of Biodiversity,*[97] which recognizes that native species are grown by indigenous peoples who apply knowledge, practices and techniques aimed at its conservation and sustainable use.

1.5.2 Consistency with national communications and reports to the United Nations Convention to Combat Desertification, Convention on Biological Diversity, United Nations Framework Convention on Climate Change

257.The 5th National Peru Report to the CBD reports that in 2011 the National Strategy on Biodiversity, originally prepared in 2001, was updated along with the formulation of a corresponding Action Plan. The new National Biodiversity Strategy for 2021[98] and Action Plan, (Vision 2021) delineates activities to be implemented during the 2014 to 2018 period and establishes targets for 2021. It comprises six strategic objectives which specifically mention the integration of sustainable use of biodiversity in natural resource management; strengthening biodiversity management capacity in local, regional and national governments; improving knowledge of biodiversity, specifically as it pertains to the revalorization (re-valuation) of the traditional knowledge linked to indigenous communities; and increase biodiversity's contribution to improve the country's competitiveness and equitable distribution of benefits. The objectives planned for the proposed project are fully aligned and consistent with *Vision 2021.* More specifically, the project proposal will contribute to information mechanisms essential for regularly assessing the status of agro-biodiversity, the economic, and social and environmental values offered by this genetic diversity. In the same

[95] http://www.minam.gob.pe/wp-content/uploads/2013/06/ley-general-del-ambiente.pdf Particularly in relation to articles 14, 15, 61 and 62 on environmental management systems, and Title III Chapter I, on the use of natural resources (articles 89, 91, 92, 93 and 94) and Chapter II, which regulates the conservation of biodiversity and establishes policy guidelines for sustainable use of biodiversity (articles 97 to 104, 106 and 112).

[96] http://www.congreso.gob.pe/dgp/ciae/carpeta-informativa/derecho_cons_puebl_indige/compi_norma_legal_nacio/Ley_N-26839.pdf

[97] https://www.cbd.int/doc/measures/abs/msr-abs-pe1-es.pdf

[98] http://www.minam.gob.pe/consultaspublicas/wp-content/uploads/sites/52/2014/02/RM-N%C2%B0-050-2014-MINAM.pdf Law 28611. More specifically it is directly link to Strategic Objectives (SO) and goal 3 on *in situ* conservation of biodiversity; SO2 and goal 4 identifying the need to increase benefits derived from biodiversity; SO3 and goals 6 and 7 aim to reduce the pressures on biodiversity; SO4 and goal 9 aim at strengthening the capacities; SO5 and goals 10, 11 and 12 are directed to promoting the improvement of traditional knowledge for sustainable use of biodiversity; SO6 and target 13 aim at strengthening governance on biodiversity.

vein, the project will highlight the relevance of associated traditional knowledge and practices for biodiversity conservation and sustainable management, and the importance of building the necessary management and planning capacities at the civil service level. In addition, the project will seek to improve the management, inclusiveness, and participation of local producers in value chains so as to increase competitiveness and links to niche or alternative markets whilst maintaining equitable benefit sharing mechanisms.

258.In addition, the project is consistent and supportive of the *National Strategy for Family Agriculture*, which promotes the recovery and valuation of ancestral traditional productive practices, the social and organizational structures associated with these production systems, and the development and encouragement of technical assistance programmes tailored to the specificities of these cultural heritage systems. Concomitantly, the *National Strategy for Food and Nutritional Security* with an implementation horizon until 20121, recognizes and supports the maintenance and dissemination of traditional production models, not only as a means to ensure food security but also the conservation and sustainable use of resources in productive landscapes, including the provision of the goods and services they deliver.

259.It is equally important to note that the 4th communication of Peru to the UNCCD highlighted that soil erosion due to insufficient water resources is a major cause of degradation in the Andean region. The report also includes a section emphasizing the relevance and contribution of indigenous practices to manage soil and water in a sustainable manner. It specifically makes reference to Andean terraces, corresponding to one of the baseline supporting the proposed project. Finally, the report also mentions the effects of climate change on land degradation, indicating the unique importance of agro-biodiversity resources for adaptation strategies. Peru's National Action Programme to combat desertification (NAP) has five action lines, including conservation of ecosystems, as well as economic and cultural considerations. Peru has equally submitted a *Performance Review and Assessment of Implementation System* (PRAIS), which indicates that the approval of an aligned national strategy and the preparation of the NAP will take place during the 2014-2015 period. Furthermore, the PRAIS also reports on ongoing activities related to biodiversity conservation in relation to agro-biodiversity as well as well as traditional knowledge and practices.

1.5.3 Consistency with GEF focal area

260.The project will contribute to the following GEF focal area, programmes and outcomes:

- **Biodiversity Objective 3 (Sustainably use biodiversity)**/Program 7: Securing Agriculture's Future: Sustainable Use of Plant and Animal Genetic Resources/*Outcome 7.1 Increased genetic diversity of globally significant cultivated plants and domesticated animals that are sustainably used within production systems.* The genetic diversity of 40 globally important agrobiodiversity species and varieties will be improved over 15,970ha of farming systems[99].
- **Biodiversity Objective 4: Mainstream biodiversity conservation and sustainable use into production landscapes and seascapes and production sectors**/Program 9: Managing the Human-Biodiversity Interface/*Outcome 9.1 Increased area of production landscapes and seascapes that integrate conservation and sustainable use of biodiversity into management.* 642,136ha of landscapes in the 5 target localities will be subject to planning, management and restoration that promotes the active *in situ*

[99] Outcome 1.1 target: 40 native crops are managed over 15,970ha

conservation of globally important agrobiodiversity in production systems and optimizes flows of ecosystem services on which the conservation status of the ABD depends[100].

- **LD-3: Integrated Landscapes: Reduce pressures on natural resources from competing land uses in the wider landscape/**Program 4: Scaling-up sustainable land management through the Landscape Approach/*Outcome 3.2: Integrated landscape management practices adopted by local communities based on gender sensitive needs.* 642,136ha of landscapes in the 5 target localities will be subject to planning and management that promotes ecological and productive sustainability and optimizes flows of ecosystem services[101]. This management will include for example improved management of rotational grazing and stocking levels on high altitude pastures, improved governance of grazing and water use, and the restoration of non-forest ecosystems (high altitude pastures and wetlands) which provide similar ecosystem services (maintenance of water cycles, reserves of crop wild relatives) to the forest ecosystems to be restored as described below under the SFM focal area. These practices will be defined in detail in a case-by-case basis through participatory processes during the early stages of the project implementation phase, with particular attention to ensuring that women are adequately represented in these processes and in the implementation of the practices, with a target that women will represent at least 30% of beneficiaries.
- **SFM-3: Restored Forest Ecosystems: Reverse the loss of ecosystem services within degraded forest landscapes/**Program 8: Integrating SFM in landscape restoration/*Outcome 5: Integrated landscape restoration plans to maintain forest ecosystem services are implemented at appropriate scales by government, private sector and local community actors, both women and men.* 83,000ha of forest ecosystems (including on-farm trees and off farm forests in upper watershed areas) will be subject to restoration[102] in order to maintain and recover their capacities to generate ecosystem services on which the conservation status of ABD crops depends, and which are also of importance for the livelihoods of local communities.

1.5.4 Consistency with FAO's Strategic Framework and Objectives

261.This project is aligned with the revised Strategic Framework of FAO for 2017[103], particularly Strategic Objective 1 (SO1) "Contribute to the eradication of hunger and food insecurity", which considers that in order to address the root causes of hunger, food insecurity and malnutrition a range of elements is necessary, namely political commitment, common understanding of problems and solutions based on reliable data, information and analyses, inclusive governance mechanisms and coordination between stakeholders, a coherent framework of policies, programmes and investments, and for use to be made of food and agricultural systems in order to improve nutrition and respond to gender gaps. These elements constitute the programmatic pillars of SO1.

262.The project is also aligned with SO2 "Sustainably increase the provision of goods and services from agriculture, livestock, forestry and fishing", which seeks a transition to

[100] Output 1.2.1 target: All 13 districts included in target localities (642,136ha) with Ecological-economic Zoning (Micro zoning) identifying ABD zones developed with farmers
[101] Output 1.2.1 target.
[102] Output 1.2.1 target: 83,000ha of forest covered by restoration and zoning plans
[103] http://www.fao.org/3/a-ms431reve.pdf

sustainable agriculture, forestry and fisheries, with the aim of sustainably increasing production and productivity, as well as combatting problems related to climate change and environmental degradation, and includes four areas: i) systems and practices for sustainable production and related innovations; ii) the formulation of policies, investment strategies and the strengthening of governance mechanisms; iii) the effective application of policies and international instruments; and iv) decision-making based on proven facts.

263. In the regional context of FAO, the project is coherent with the "Results and priorities of FAO in the Latin American and Caribbean region and regional strategy"[104], and aligned with Regional Initiative 2. Family farming and territorial development in rural zones. Family farming is a fundamental part of the solution to the problems of hunger and rural poverty. FAO will work to: i) position family farming in the centre of public policies for sustainable rural development and the reduction of poverty in rural áreas; ii) strengthen mechanisms of access to productive resources (land, water, seeds etc.), rural services (technical assistance, finance, insurance), markets and value chains; and iii) strengthen mechanisms for the sustainable management of territories and the promotion of linkages between agricultural policies and policies on employment, social protection and risk management at territorial level.

264. Finally, the project is aligned with the Country Programming Framework of FAO for Peru, and in particular with the priorities indicated in FAO Strategic Objective 2: "Making agriculture, forestry and fisheries more productive and sustainable", which aims that the growth of agricultural, forestry and fisheries activities should occur through management that guarantees the efficient and sustainable use of the available resources, avoiding the deterioration of soils with agricultural potential, deforestation and the overexploitation of fisheries for direct human consumption. To be able to halt and reverse these processes, it is necessary to have policies that apply in a cross-cutting manner an approach of sustainability, including the development of new technological packages and the recovery of ancestral practices, always with the participation on stakeholders with adequate training and awareness.

[104] See *Resultados y prioridades de la FAO en la región de América Latina y el Caribe y examen estratégico regional*, 34va Conferencia Regional de FAO para América Latina y el Caribe. Ciudad de Mexico, Mexico, 2016.
Source: http://www.fao.org/docrep/meeting/024/md240e.pdf

SECTION 2 – FEASIBILITY

2.1 ENVIRONMENTAL AND SOCIAL IMPACT EVALUATION

265. An Environmental and Social Analysis has been carried out during full project preparation, the results of which are presented in Appendix 5. According to FAO's Environmental and Social Guidelines, the project has been classified as Moderate risk. The two environmental and social risks identified are:

- The fact that part of the project implementation area will coincide with legally designated protected areas or buffer zones.
- The fact that Indigenous peoples living in the project area where activities will take place.

266. A corresponding summary environmental and social risk management plan is presented in Appendix 6. This will be developed in more detail during the project implementation phase, on the basis of more detailed consultations and analyses.

2.2 RISK MANAGEMENT

2.2.1 Risks and mitigation measures

267. A risk matrix, presenting risks that may affect the achievement of the project targets, is included in Appendix 4.

2.2.2 Analysis of fiduciary risks and mitigation measures (only for OPIM projects)

268. Please see Appendix 15.

SECTION 3 – IMPLEMENTATION AND MANAGEMENT ARRANGEMENTS

3.1 INSTITUTIONAL ARRANGEMENTS

269.The Food and Agriculture Organization (FAO) will be the GEF Implementing Agency for the Project. At the request of the Government of Peru the project will be executed by PROFONANPE which will be the project "Operational Partner" (OP) in line with FAO rules and regulations on indirect implementation of projects. PROFONANPE will be accountable to the Government of Peru and FAO for the quality and timely achievement of project results, the appropriate use of project resources entrusted to it by FAO, both when directly implementing project activities and when delegating others to do so. PROFONANPE will ensure that project planning, review, monitoring and reporting requirements are met; that coordination among participants is effective; and that decisions are implemented. PROFONANPE, in coordination with Project partners, is responsible for ensuring that outputs and outcomes are produced on time and are of good technical quality. PROFONANPE will manage the budget for the achievement of results and progress monitoring in full compliance with terms and conditions of the Operational Partners Agreement that will be signed between PROFONANPE and FAO and other FAO requirements. FAO will closely monitor the project implementation, monitor of the OP with provisions of the OPA and provide overall guidance and technical support to the OP.

270.PROFONANPE will also ensure the overall coordination of the project implementation, as well as support MINAM in the coordination and collaboration with partner institutions, local governments and community-based organizations, academia and private sector, and other entities participating in the project.

271.PROFONANPE will be responsible for the day-to-day management and implementation of the agreed project components in full compliance with the signed Operational Partners Agreement and the Project Document, in coordination with the Project Direction, as well as the follow-up on the co-financing commitments made by the project partners during project formulation.

272.MINAM is the Operational Focal Point of GEF in Peru and will act as the location of the project at Lima. MINAM will designate the Project Director as part of its co-financing contribution. The Project Director will be responsible for Project execution and coordination, with the following responsibilities:

1) To form part of the Project Direction team.
2) Organize and conduct meetings of the Steering Committee
3) To supervise the execution of the project in conformity with the results framework of the project and the budget, the annual operational plan, the agreed work plan, and the obligations for presentation of reports.
4) To coordinate so that the different directorates of MINAM provide specialized technical knowledge through the Technical Consultative Committee (TCC), where required.
5) To supervise the Territorial Management Unit of the Project in the coordination of project activities at national, regional and local level.
6) To facilitate access to the sites and installations of MINAM as required by the Project Coordinator to support the execution of project activities.

7) Supervise the National Project Coordinator and to approve regular project reports to be presented to the Project Steering Committee, including progress, financial and audit reports.
8) Ensure that results and outputs of the project are achieved with effectiveness and efficiency and that appropriate measures are taken to achieve impact and sustainability.

273. MINAGRI is part of the Project Direction. MINAGRI will designate a professional as part of its counterpart contribution, with the following responsibilities:

1) To supervise the execution of the project in conformity with the results framework of the project and the budget, the annual operational plan, the agreed work plan, and the obligations for presentation of reports.
2) To coordinate so that the different directorates of MINAGRI provide specialized technical knowledge through the Technical Consultative Committee (TCC).
3) To support the Territorial Management Unit of the Project in the coordination of project activities at national, regional and local scale.
4) To facilitate access to the sites and installations of MINAGRI as required by the Project Coordinator to support the execution of project actions
5) Supervise the National Project Coordinator and approve regular project reports to be presented to the Steering Committee, including progress, financial and audit reports
6) Support to ensure that results and outputs of the project are achieved with effectiveness and efficiency and that appropriate measures are taken to achieve impact and sustainability.

274. In addition, the main institutions involved in the project are Regional Government of Apurimac, Cusco, Huancavelica, Arequipa and Puno, the Local government of Atiquipa, Huayana, Acora, Lares and Laria. At the National level, Government institutions like Directorate of Indigenous Policies of the Ministry of Culture, Directorate of Inventions and New Technologies and Directorate of Distinctive Signs of INDECOPI, National System of Evaluation, Accreditation and Certification of Educational Quality - SINEACE, SENASA and SERFOR and Budget Program 089 of Agricultural Land Degradation INDECOPI and General Directorate of Tourism Strategy- MINCETUR.

275. FAO, PROFONANPE and the project partners will collaborate with the implementing agencies of other programs and projects to identify opportunities and facilitate synergies with other relevant GEF projects, as well as projects supported by other donors. This collaboration will include: (i) informal communications between GEF agencies and other partners in implementing programs and projects; and (ii) exchange of information and outreach materials between projects.

Coordination with other initiatives

276. The project implementation team will establish contact with representatives of a number of other relevant GEF-funded initiatives in order to ensure that opportunities for coordination of effort and exchange of lessons learned are fully realized throughout the project implementation period. This communication will initially be achieved by inviting the representatives of the other projects to the project inception workshop: they will also be included in the target audiences for communication materials generated by the project, and will be invited, when relevant, to participate in further dissemination and planning workshops

held by the project, and potentially also in the Technical Consultative Committee of the project to advise on specific issues.

277. Projects of particular relevance, which will be prioritized for communication and coordination, will include the following:

- UNDP/GEF Project 9387 on Sustainable Productive Landscapes in the Peruvian Amazon, which will focus on supporting natural resource management and production systems that incorporate considerations of environmental sustainability, through an integrated and comprehensive territorial approach. The investments by Project 9387 on countering drivers of deforestation in the lowland Amazon will include a strong focus on territorial land use planning with an integrated landscape approach, which will be highly relevant to this project and is likely to generate important lessons with potential for application also in the Andean region.
- UNEP/GEF Project 8025 on Effective Implementation of the Access and Benefit Sharing and Traditional Knowledge Regime in Peru in Accordance with the Nagoya Protocol will strengthen national capacities for effective implementation of the access to genetic resources (ABS) and traditional knowledge (TK) regimes in accordance with the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, contributing to the conservation of biodiversity and human wellbeing in the country. The capacities and lessons generated through Project 8025 will be of direct relevance to the management of genetic resources of traditional ABD and associated traditional knowledge, and will facilitate the application of the diligence measures proposed by this project.
- UNDP/GEF Project 5458 on Conservation, Management and Rehabilitation of Fragile Lomas Ecosystems will work in the Province of Lima, and will generate important lessons on the conservation of the Lomas ecosystem that will be directly applicable to the work of the project in Atiquipa intervention area.
- IFAD/GEF Project 4773 on Conservation and Sustainable Use of High-Andean Ecosystems through Compensation of Environmental Services for Rural Poverty Alleviation and Social Inclusion aims to protect and sustainably use High Andes ecosystems that provide environmental services, especially biodiversity and water, by transferring economic resources from downstream beneficiaries to upstream rural communities. Lessons learned through Project 4773 will be of direct relevance to the investments of this project in schemes for compensating (retribución) the provision of environmental services.

278. In addition, FAO will facilitate collaboration, exchange of information, experiences and lessons learned with other initiatives related with the conservation and sustainable use of agrobiodiversity, namely: : i) FAO/GEF Project 9068 on Establish a Network of National Important Agricultural Heritage Sites in Chile; ii) FAO/GEF Project 9380 on Securing the Future of Global Agriculture in the Face of Climate Change by Conserving the Genetic Diversity of the Traditional Agro-ecosystems of Mexico; iii) FAO/GEF Project 9435 on Introduction of New Farming Methods for the Conservation and Sustainable Use of Biodiversity, including Plant and Animal Genetic Resources, in Production Landscapes in Selected Areas of Cuba.

3.2 IMPLEMENTATION ARRANGEMENTS

3.2.1 Project organization and responsibilities

279. The Food and Agriculture Organization (FAO) is the GEF Implementing Agency responsible for providing technical backstopping and participate in the supervision of project

implementation. Technical backstopping will be provided in coordination with MINAM and MINAGRI. FAO's role and responsibilities are described in sub-section 3.2.1 below.

280.For strategic project decisions, a **Project Steering Committee (PSC)** will be established and integrated by MINAM through Vice minister of Strategic Development of Natural Resources or his/her delegate, MINAGRI through the Vice minister of Agrarian Policies or his/her delegate, the Representative of FAO in Peru (or his/her delegate), and two representatives and two alternative delegates elected by the 5 Regional Governments each Project implementation year, on a rotating basis and PROFONANPE through Chief Executive or his/her delegate. The Technical Secretary of the Steering Committee will be the Project Coordinator. Also, the Project Director or the professional designated by MINAGRI in the Project Direction participate without the right to vote in the PCS.

281.**PSC Functions**: The PSC will meet at least every six months. The PSC will take strategic decisions; oversee the project execution; review, discuss and approve the Annual Work Plan and Budget (AWP/B) prepared by the Project Coordinator (PC). Specifically, the PSC functions will include: i) ensure the quality of results, and the sustainability and impacts of the project; ii) approve annual work plan and budget (AWP/B); iii) approve six monthly project progress reports to be sent to FAO; iv) approve any significant (more than 20% of the approved budget) adjustments to the distribution of budget between items on the basis of information provided by the Project Direction; v) approve proposals of adjustments to indicators and the targets of results and outputs, based on information provided by the Project Direction; vi) approve possible modifications to the project implementation agreements; vii) invite competent professionals to participate in steering committee meetings, in accordance with the issues under consideration; viii) approve the selection of the Project Coordinator, based on a competitive selection process. The PSC will agree on the co-financing and its distribution as per the AWP/B, in order to achieve project outcomes in each project area.

282.**A Technical Consultative Committee (TCC)** will be established. The TCC will be a consultative entity that provides technical inputs on specific issues. It will be consulted, by the Project Direction, on specific issues and as considered necessary by the Project Director, rather than meeting on a periodic basis. It will consist of FAO through the project Lead Technical Officer (LTO); specialists from MINAM, MINAGRI, INDECOPI, MINCETUR and the Ministry of Culture; Regional Governments; Non-Governmental Organizations that work on ABD in the areas of influence of the project; Universities, Institutes or Research Centers and in particular RIMISP; business groups. Its functions will include: i) providing advice on issues or problems that may arise during the implementation of the project, as requested by the Project Director or the National Project Coordinator. ii) Support the provision of timely advice to the Territorial Management Unit, in coordination with or under the supervision of the Project Direction; and iii) participate in meetings called by the Project Direction, as needed.

283.The **Project Direction (PD)** will be responsible for the effectiveness and efficiency of the achievement of Project results, as well as the impact and sustainability of the Project, and will supervise the quality of expenditures. It will have a document of internal working guidelines, and will be made up of:

1) A representative of MINAM, who will act as Project Director, responsible for the execution and general interinstitutional coordination of the project.
2) A representative of MINAGRI who will act as deputy to the Project Director.
3) A representative of FAO.

4) A representative of PROFONANPE.

284.The functions of the Project Direction will be to:

1) Ensure the execution of the project, in accordance with the provisions of the ProDoc and the management instruments.
2) Evaluate and present to the Steering Committee proposals for adjustments to the project.
3) Ensure the governance of the project.
4) Supervise the programming and technical and financial execution of the project.
5) Provide reports on the project to the Steering Committee, in accordance with the monitoring plan.
6) Implement and monitor the Plan for the use of the products and results of the project.
7) Supervise the performance of the Project Coordinator.
8) Supervise, through the Project Coordinator, the compliance of project consultants and staff with their responsibilities as stated in their terms of reference, within the agreed timeframes.
9) Organize and call for meetings of the Steering Committee with support from the Project Coordinator.
10) Lead the management and implementation of the monitoring and evaluation of the project with support from the Operational Partner.
11) Facilitate and coordinate with the Operational Partner the flow of information from the field to MINAM, FAO, MINAGRI and GEF.
12) Participate in monitoring and mid-term and final evaluations.

285.The Project Director, in coordination with FAO and MINAGRI, will arrange periodic coordination meetings with the different Regional Coordination Units (represented by the Directors of Natural Resources of the Regional Governments) where considered necessary. As a minimum, one meeting will be held at the start of the project, when adjustments will be made to the Annual Operational Plan and project work plans, together with annual monitoring meetings. The Project Director will be based in Lima, in the MINAM.

286.A **Territorial Management Unit (TMU)** will be created, and comprised of a **Project Team (PT)** funded by the GEF. The main function of the TMU, following the guidelines of the Project Steering Committee and the Project Direction, is to ensure the coordination and execution of the project through the effective implementation of the annual work plans and budgets (AWP/Bs). The TMU will be composed of: i) National Project Coordinator (**PC**), ii) Deputy Project Coordinator (DPC), iii) Responsible for Component 1 (Expert in Agrobiodiversity, conservation of native species), iv) Responsible for Component 2 (Expert in markets, brands, qualifications), v) Environmental and social risk management specialist; vi) Communication Specialist; and vi) Monitoring and Evaluation Specialist. Regarding to the administrative issues, the TMU will be supported by an Assistant Analyst.

287.**The National Project Coordinator (PC)** will be hired by PROFONANPE, in consultation with FAO and the Project Direction, for carrying out the tasks mentioned belw. See Appendix 7 for the detailed PC Terms of Reference (TORs). The PC will inform the Project Steering Committee periodically, but not less than twice a year, on Project achievements and obstacles related to project implementation and financing.

288.The PC will be responsible for planning, executing and coordinating the project, and will ensure its effectiveness, efficiency and impact. The Coordinator will be supported by the

Operational Partner, which will be responsible for day to day financial and operational management, in accordance with the provision of the annual work plans and budgets approved by the Project Steering Committee, and in coordination with the Project Direction. The PC will be operationally responsible for the timely delivery of resources to the project and in particular to the Territorial Management Unit.

289.The PC will be supported by the Administrative Analyst and PROFONANPE administrative Staff, in particular the Administration and Finance Division and the Development and Supervision Division.

290.The PC will spend 40% of his/her time in Lima (in the offices of MINAM), and will have the following functions:

1) Prepare and present annual work plans and specific operational plans, under the supervision of the Project Director and in accordance with the ProDoc, with monitoring on a six-monthly basis or as required by the Project Direction.
2) Participate in the processes of selection of specialists to be hired by the project in accordance with the annual work plan and the ProDoc.
3) Maintain close communication and coordination with FAO, MINAM and MINAGRI and with the Deputy Coordinator.
4) Establish, coordinate and maintain effective communication with different sectors, and functionaries of the Directorates that form part of the Technical Consultative Committee, to facilitate the achievement of the objectives and results of the project and create synergy between sectors and coordination between national and regional levels.
5) Explore and promote synergies with other important existing initiatives at national, regional and local levels.
6) Draft preliminary versions of the ToRs of the project team, subject to review by the Project Direction, for approval by the Steering Committee, if needed, and interview local and regional consultants in accordance with the procurement plan of the project.
7) Present six monthly technical and financial progress reports, using PROFONANPE, FAO and GEF formats, as appropriate, in accordance with the outputs specified and in a timely manner. All reports will be subject to review and will only be considered as final once comments and observations have been duly incorporated and they have been approved by MINAM, MINAGRI and FAO. All processes, plans and financial and administrative reports will be coordinated with MINAM and MINAGRI in accordance with the ProDoc and the agreements undertaken with FAO.
8) Conduct the quality assurance of consultancies, services and others in coordination with the Territorial Management Unit.
9) Clear outputs and reports delivered by consultants and/or service suppliers contracted through the Project.
10) Request the Operational Partner to process disbursement to suppliers, consultants or other contracted entities.
11) Monitor and supervise the TMU team and project activities.
12) Follow-up on consultants and service providers contracts and approve outputs.
13) Establish communication and coordination between PROFONANPE and other stakeholders
14) Coordinate FAO supervision missions.
15) Organize PSC and TCC sessions.

16) Draft terms of reference and technical specifications for the execution of project components.
17) Provide required information to fill GEF tracking tools.

291.The Project Coordinator will spend around 60% of their time in the regions and will have the following functions:

1) Direction and supervision of the implementation of activities in the regions. The PC will review all the technical products developed by those responsible for the components, the deputy coordinator and regional facilitators, to guarantee their alignment with the objectives of the project and quality standards.
2) To coordinate the implementation of outputs and activities following the Annual Operational Plan and other work plans to ensure the effective and timely implementation.
3) Monitoring and evaluation in the field of project progress and ensuring the timely delivery of results, outputs and activities in accordance with the monitoring and evaluation guidelines of the project.
4) To ensure the integrated and complementarity nature of the three technical components of the project during its implementation, and compliance with the approaches considered in each component at the time of approval by GEF.

292.The **Deputy Project Coordinator** will be a full-time position, with 100% of time spent in the region selected as the locality for the Territorial Management Unit of the project. The functions of this post will be:

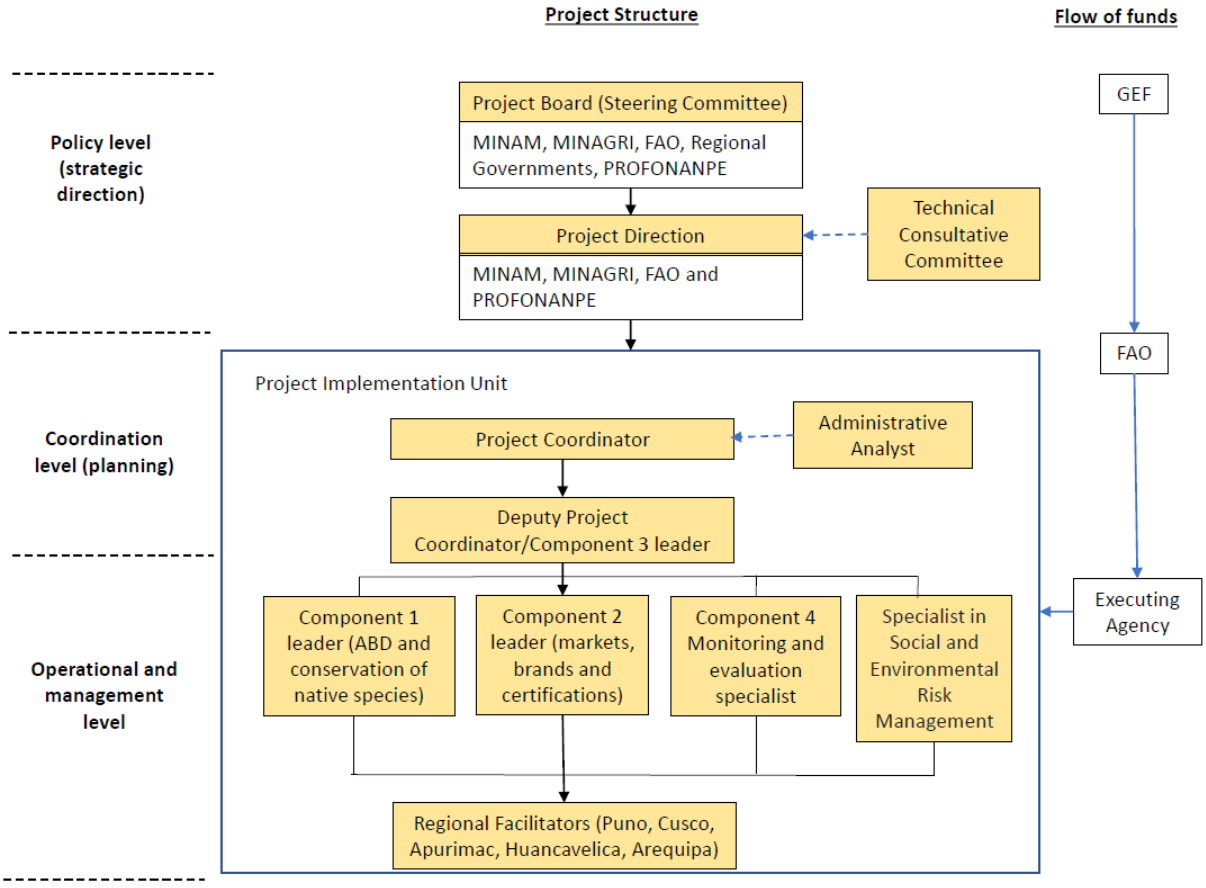
1) Carry out monitoring in the field of project advances and ensure the timely delivery of inputs and outputs.
2) Assist the PC in the preparation of the AWP/B and specific operational plans, including proposals of methodologies to achieve the results and outputs foreseen in the project and the AWP.
3) Collaborate with the PC in the establishment, coordination and maintenance of effective communication with different sectors, stakeholders and national, regional and local authorities, to facilitate the achievement of outputs and activities of the project and create synergies between stakeholders.
4) Lead Component 3 of the project
5) Drafting of preliminary version of ToRs for consultants in accordance with the procurement plan of the project.
6) Assist the PC in the coordination of the execution of all the activities foreseen in the AWP/B and operational plans, to ensure the timely and efficient implementation of outputs and activities of the project.
7) Assist the PC in the coordination and calling of meetings with decision-makers, to obtain their support for the project and promote project outputs.
8) Support the PC in the organization of meetings of the Territorial Management Unit and prepare agendas and minutes.
9) Assist the PC in the preparation of the different reports related to the project.
10) Support the PC in the supervision of consultants and project activities.
11) Interact and coordinate with consultants and stakeholders during the preparation of documents and materials aimed at achieving the different outputs and activities of the AWP/B and operational plans of the project.

293.The project will hire five Regional Facilitators, one per region. They are professionals contracted with GEF funds to carry out technical assistance and coordination activities at regional and local level on the execution of the Project activities. They are directly supervised by the Deputy Project Coordinator and coordinate with the Project Team Leaders.

294.The draft Terms of Reference (TOR) for the Project Coordinator (PC) and Project Team (PT) are listed in Appendix 7.

295.Implementation arrangements are presented in Figure 3.1.

Figure 3.1 Implementation arrangements



3.2.1 OP roles and responsibilities

296.PROFONANPE will be the project "Operational Partner" (OP), ensuring efficient use of resources and delivering project results. The OP is responsible for the day-to-day management of project components entrusted to it in full compliance with all terms and conditions of the signed OPA. PROFONANPE will be responsible for the following:

a) Commencing work on the responsibilities allocated to it in the Project Document, results matrix and work plan promptly (but in no case prior to signing the Operational Partners Agreement - OPA) and, as applicable, receipt of the first installment of the funds to be transferred to it by FAO;
b) Making its designated contributions of technical assistance, services, supplies and equipment towards the implementation of the Project as provided for under this Agreement, including the Project Document, results matrix, work plan and budget;

c) Completing its responsibilities with diligence and efficiency, and in conformity with the requirements set out in the Project Document results matrix, work plan and budget;
d) Providing the reports required under this project document and the OPA in a timely manner and satisfactory to the Project Direction and FAO, and furnishing all other information covering the Project Document, results matrix, work plan and budget and the use of funds, supplies and equipment transferred to it by FAO that FAO may reasonably ask for;
e) Exercising the highest standard of care when handling and administering the funds, supplies and equipment provided to it by FAO, and ensuring that its personnel will conduct itself with the highest standards of integrity and care in the administration of public assets including money.
f) The Operational Partner will make full use of any tax exemptions of any kind, including custom duties, indirect taxes or import duties in the country or elsewhere on the acquisition, import, registration or use of the supplies and equipment procured through the funds provided by FAO under this Agreement, and will consult with the Organization in that regard.
g) The Operational Partner will create and maintain a system to monitor project implementation progress using outcomes defined in this project document.
h) The Operational Partner will accommodate monitoring visits of representatives of any Resource Partners that are funding the project, supervision missions organized by FAO and cooperate with auditors during performance of Spot-checks and Audits. FAO will notify the Operational Partner of forthcoming missions with reasonable notice.
i) The Operational Partner will assume all fiduciary and programmatic risks and will be administratively and technically responsible for the execution of the agreed project activities, their monitoring and financial management in accordance with the rules and procedures established in the aforementioned Operational Partner Agreement and PRODOC. This responsibility extends to all funds disbursed by the operational Partner to entities subcontracted by the same. The Operational Partner will cooperate to ensure that FAO is able to fully comply with the Organization's fiduciary obligations and reporting requirements to the resource partner.
j) The Operational Partner certifies that neither during the selection process nor during the negotiation and execution of the Operational Partners Agreement will incur punishable acts, as defined in Article 11 of the general terms and conditions of said agreement.
k) The Operational Partner will perform procurement and contracting for the execution of Project activities according to its own regulations and procedures and in accordance with the AWP/B.
l) The Operational Partner will hire a team of professional to perform the activities of the project with project resources and under its own processes.
m) The OP will submit to FAO six-monthly project progress reports and other reports as established in the Operational Partners Agreement.
n) The OP will request FAO approval, when needed, for the execution of project activities.
o) In coordination with the Project Director and the National Project Coordinator, the OP submit to FAO and the PSC the Annual Work Plan and Budget, six-monthly progress reports and any other documentation requested by FAO, the PSC and the GEF.
p) The OP will coordinate with the project Direction and other entities, as appropriate, to undertake project implementation and monitoring.

q) The OP will prepare and submit to FAO request for funds and financial reports.
r) The OP will maintain accurate, complete and up-to-date books and records and keep original supporting documentation as per OPA provisions and project documentation to be reviewed under project evaluations and audit.

PROFONANPE internal structure

297.The roles and responsibilities of PROFONANPE's staff are governed by the Operations Manual. The main roles and responsibilities of PROFONANPE's staff in Project implementation are described as follows:

Executive Director:

- Direct and supervise the internal processes of PROFONANPE for the execution of the Project.
- Participate in the Project Steering Committee.
- Sign the contracts and agreements required for the execution of the Project.

Director of Development and Supervision (with the support Monitoring and Evaluation Specialists):

- Coordinate the formulation, programming, execution, monitoring and evaluation of the Project Implementation Plan.
- Supervise the Annual Work Plans of the project, in coordination with the different areas of the institution and project stakeholders.
- Participate in the Project Steering Committee, when required.
- Supervise the development or revision of the technical aspects of the contracts and agreements to be signed and / or related to the implementation of the project.
- Support in coordinating actions for the development of the Project.
- Participate in the supervision of compliance with the procedures of the institution in the development of its operations or procedures to improve efficiency and efficiency in the execution of the Project.
- Coordinate the monitoring and evaluation of the project.
- Verify compliance with the technical aspects of contracts, agreements and activities signed with third parties, in coordination with the Administration and Finance Department (DAF), when required.
- Coordinate the execution of Supervision missions and evaluation of the project (In coordination with the DAF)
- Conduct supervision of technical aspect in the field, when required.
- Support in verifying compliance with procedures.
- Coordinate the preparation of technical progress reports of the project.
- Jointly with the technical team of the Directorate in charge, review the Terms of Reference and complementary documents generated by the project.
- Ensure the proper use of resources and compliance with ethics, transparency, anti-corruption and special obligations of PROFONANPE.

Director of Administration and Finance (with the support of his/her staff, especially the Chief of Operations, Chief Procurement Officer, Accountant General, Treasurer):

- Perform functions and develop the processes of the Budget, Procurement and Contracting, Treasury and Accounting systems for the Project, as well as perform functions of prior control in accordance with the policy guidelines established by the

Executive Direction and the Operations Manual of PROFONANPE and within the terms stipulated in the Agreements with FAO and MINAM.

- Supervise the administration of funds entrusted to PROFONANPE under the respective Agreement.
- Participate in the Project Steering Committee, when required.
- Supervise the processes and developments of the SIGA (Administrative and Financial Management System).
- Supervise the execution of project expenses by categories, components, etc. according to the agreements.
- Elaborate non-objection requests to FAO when required.
- Prepare and endorse the contractual documents to be signed by the Executive Directorate.
- Elaboration of the project plan of accounts.
- Coordinate the execution of Supervision missions and evaluation of the project (Working together with the DDS).
- Prepare and supervise the timely and consistent preparation of the relevant periodic administrative and financial reports.
- Coordinate the timely and permanent flow of the accounting and financial information of the Project.
- Elaborate periodic reports to be submitted to FAO.
- Supervise the processes of acquisitions and contracting: Review and clear the administrative terms of reference and Technical Specifications.
- Participate in the Procurement and Contracting Committee.
- Maintain an updated record of contracts and consultants related to the Project.
- Supervise the contracts signed.
- Coordinate with MINAM the formal acceptance of goods and / or services received.
- Manage the resources and ensure of the proper use of them, according to the AWP/B.
- Supervise the reporting of funds.
- Coordinate with the Director of Supervision and Development the preparation of reports for the Project.
- Coordinate the preparation of the Project's AWP/B and Procurement Plan.
- Ensure the proper use of resources and compliance with ethics, transparency, anti-corruption and special obligations of PROFONANPE.

3.2.2 FAO's roles and responsibilities

FAO's role in the project governance structure

298.FAO will be the GEF Implementing Agency of the Project and, as such, FAO will supervise and provide technical guidance for the overall implementation of the project, in accordance with this Project Document, including:

- Administer the portion of project GEF funds that has been agreed with the OP to remain for FAO direct implementation. These funds will be managed in accordance with the rules and procedures of FAO and are specified in this project Document;
- Monitor and oversee OP's compliance with the OPA and project implementation in accordance with the project document, work plans, budgets, agreements with co-

financiers and the rules and procedures of FAO and PROFONANPE's rules in terms of efficiency and transparency;

- Commence and completing the responsibilities allocated to it in the Project Document in a timely manner, provided that all necessary reports and other documents are available;
- Making transfers of funds, supplies and equipment, as applicable, in accordance with the provisions of the OPA;
- Review, discuss with the OP, and approve the project progress and financial reports, as detailed in the OPA and its annexes. undertaking and completing monitoring, assessment, assurance activities, evaluation and oversight of the Project;
- Liaising on an ongoing basis, as needed, with the Government (as applicable), other members of the United Nations Country Team, Resource Partner, and other stakeholders;
- Providing overall guidance, oversight, technical assistance and leadership, as appropriate, for the Project;
- Initiating joint review meetings with the OP to agree on the resolution of findings and to document the lessons learned.
- Report to the GEF Secretariat and Evaluation Office, through the annual Project Implementation Review, on project progress and provide consolidated financial reports to the GEF Trustee.
- Conduct at least one supervision mission per year;
- Lead the Independent Mid-Term and Final Evaluation, through the FAO Evaluation Office and in coordination with the Project Director;
- Monitor implementation of the Social and Environmental Risk Mitigation Plan, in accordance with the FAO Environmental and Social Safeguards

299.In collaboration with the PD and the PSC, FAO will participate in the planning of contracting and technical selection processes. FAO will process fund transfers to the OP as per provisions, terms and conditions of the signed OPA.

FAO's roles in internal organization

300.The roles and responsibilities of FAO staff are regulated by the *FAO Guide to the Project Cycle, Quality for Results, 2015*, Annex 4: Roles and Responsibilities of the Project Task Force (PTF) Members, and its updates.

301.The FAO Representative in Peru will be the **Budget Holder** (BH) and will be responsible for timely operational, administrative and financial management of GEF resources implemented by FAO directly (see Appendix 3). The budget holder will be also responsible for i) managing OPIM for results, including monitoring of risks and overall compliance with the OPA provisions; ii)review and clear financial and progress reports received from the OP and certify request for funds iii) review and clear budget revisions and annual work plan and budgets; iv) ensure implementation of the Risk Mitigation and Assurance Plan v) follow up and ensure that the OP implements all actions and recommendations agreed upon during Assurance Activities.

302.The PTF is a management and consultative body that integrate the necessary technical qualifications from the FAO relevant units to support the project. The PTFis composed of a

Budget Holder, a Lead Technical Officer (LTO), the Funding Liaison Officer (FLO) and one or more technical officers based on FAO Headquaters (HQ Technical Officer).

303.The FAO Representative in Peru, in accordance with the PTF, will give its non-objection to the AWP/Bs submitted by the PD as well as the Project Progress Reports (PPRs). PPRs may be commented by the PTF and should be approved by the LTO before being uploaded by the BH in FPMIS.

304.The **Lead Technical Officer (LTO**) for the project will be (officer title and division). The role of the LTO is central to FAO's comparative advantage for projects. The LTO will oversee and carry out technical backstopping to the project implementation. The LTO will support the BH in the implementation and monitoring of the AWP/Bs, including work plan and budget revisions. The LTO is responsible and accountable for providing or obtaining technical clearance of technical inputs and services procured by the Organization.

305.In addition, the LTO will provide technical backstopping to the PT to ensure the delivery of quality technical outputs. The LTO will coordinate the provision of appropriate technical support from PTF to respond to requests from the PD and PSC. The LTO will be responsible for:

- Assess the technical expertise required for project implementation and identify the need for technical support and capacity development of the OP
- Provide technical guidance to the OP on technical aspects and implementation
- Review and give no-objection to TORs for consultancies and contracts to be performed under the project, and to CVs and technical proposals short-listed by the PC for key project positions, goods, minor works, and services to be financed by GEF resources;
- Supported by the FAO Representation in Peru, review and clear the major final technical products delivered by consultants and contract holders financed by GEF resources before the final payment can be processed;
- Assist with review and provision of technical comments to draft technical products/reports during project implementation;
- Review and approve project progress reports submitted by the PC, in cooperation with the BH;
- Support the FAO Representative in examining, reviewing and giving no-objection to AWP/B submitted by the PC, for their approval by the Project Steering Committee;
- Ensure the technical quality of the six-monthly Project Progress Reports (PPRs). The PPRs will be prepared by the PC, with inputs from the project team. The BH will submit the PPR to the FAO/GEF Coordination Unit for comments, and the LTO for technical clearance. The PPRs will be submitted to the PSC for approval twice a year. The BH will upload the approved PPR to FPMIS.
- Supervise the preparation and ensure the technical quality of the annual PIR. The PIR will be drafted by the PC, with inputs from the PT. The PIR will be submitted to the BH and the FAO-GEF Coordination Unit for approval and finalization. The FAO/GEF Coordination Unit will submit the PIRs to the GEF Secretariat and the GEF Evaluation Office, as part of the Annual Monitoring Review report of the FAO-GEF portfolio. The LTO must ensure that the PC and the PT have provided information on the co-financing provided during the year for inclusion in the PIR;
- Conduct annual (or as needed) supervision missions;

- Review the TORs for the mid-term review, participate in the the mid-term workshop with all key project stakeholders, development of an eventual agreed adjustment plan in project execution approach, and supervise its implementation; and
- Review the TORs for the final evaluation; participate in the mission including the final workshop with all key project stakeholders, development and follow-up to recommendations on how to insure sustainability of project outputs and results after the end of the project.
- Monitor implementation of the Risk Mitigation Plan, in accordance with the FAO Environmental and Social Safeguards

306.The **HQ Officer** is a member of the PTF, as a mandatory requirement of the FAO Guide to the Project Cycle. The HQ Officer has most relevant technical expertise - within FAO technical departments - related to the thematic of the project. The HQ Technical Officer will provide effective functional advice to the LTO to ensure adherence to FAO corporate technical standards during project implementation, in particular:

- Supports the LTO in monitoring and reporting on implementation of environmental and social commitment plans for moderate projects. In this project, the HQ officer will support the LTO in monitoring and reporting the identified risks and mitigation measures (Appendix 4) in close coordination with the project partners.
- Provides technical backstopping for the project work plan.
- Clears technical reports, contributes to and oversees the quality of Project Progress Report(s) (PPRs – see Section 3.5).
- May be requested to support the LTO and PTF for implementation and monitoring.
- Supports the LTO and BH in producing the first darft TOR of the Evaluation team in for the Final Evaluation, review the composition of the evaluation team and support the evaluation function.

307.The FAO-GEF Coordination Unit will act as **Funding Liaison Officer (FLO).** The FAO/GEF Coordination Unit will review the PPRs and financial reports, and will review and approve budget revisions based on the approved Project Budget and AWP/Bs. This FAO/GEF Coordination Unit will review and provide a rating in the annual PIR(s) and will undertake supervision missions as necessary. The PIRs will be included in the FAO GEF Annual Monitoring Review submitted to GEF by the FAO GEF Coordination Unit. The FAO GEF Coordination Unit may also participate in the mid-term review and final evaluation, and in the development of corrective actions in the project implementation strategy if needed to mitigate eventual risks affecting the timely and effective implementation of the project. The FAO GEF Coordination Unit will in collaboration with the FAO Finance Division request transfer of project funds from the GEF Trustee based on six-monthly projections of funds needed.

308.The FAO Financial Division will provide annual Financial Reports to the GEF Trustee and, in collaboration with the FAO-GEF Coordination Unit, request project funds on a six-monthly basis to the GEF Trustee.

3.3 PLANNING AND FINANCIAL MANAGEMENT

3.3.1 Financial plan (by components and funding source)

Compo-nent	MINAGRI	MINAM	GORE Huanca-velica	GORE Apurímac	GORE Puno	GORE Cusco	GORE Arequipa	GOLO Atiquipa	ANPE	CAP	PROFO-NANPE	FAO	CF total	GEF	TOTAL
1	47,779		9,154,633	7,126,081	1,557,291	13,966,949	95,562		15,000				**31,963,295**	4,528,673	**36,491,969**
2	111,326			7,293,998	11,871,964				55,000	276,400			**19,608,688**	2,827,994	**22,436,682**
3	5,580,666	6,304,964		3,599,674	7,207,298							370,170	**23,062,772**	1,294,952	**24,357,725**
4	723,915	294,084											**1,017,999**	272,061	**1,290,060**
PM	441,424	124,632	114,840		600,714	1,571,289	5,046	23,335	120,000	277,840	500,000		**3,779,120**	446,184	**4,225,303**
Total	**6,905,110**	**6,723,680**	**9,269,473**	**18,019,753**	**21,237,267**	**15,538,239**	**100,608**	**23,335**	**190,000**	**554,240**	**500,000**	**370,170**	**79,431,874**	**9,369,864**	**88,801,739**

Table 3.3 Confirmed sources of co-financing

Sources of co-financing	Type of co-financing	Amount of co-financing ($)
MINAGRI	Cash	5,739,771
	In kind	1,165,339
MINAM	In kind	6,723,680
Regional Government of Huancavelica	Cash	9,154,633
	In kind	114,840
Regional Government of Apurimac	Cash	18,019,753
Regional Government of Puno	Cash	20,636,554
	In kind	600,714
Regional Government of Cusco	Cash	11,508,266
	In kind	4,029,972
Municipality of Arequipa	In kind	100,608
Municipality of Atiquipa	In kind	23,335
ANPE	Cash	70,000
	In kind	120,000
Consorcio Agroecológico Peruano	Cash	276,400
	In kind	277,840
PROFONANPE	In kind	500,000
FAO	Cash	370,170
Total Co-financing		**79,431,874**

3.3.2 GEF Contribution

309.The requested GEF grant resources totalling USD 9,369,864 will be allocated in an incremental manner in complement to other financing sources, in support of capacity development to farmers for the management of ABD crops and farming systems, in such a way as to enable them to respond to emerging socioeconomic and biophysical conditions and to market them effectively; on developing capacities in local authorities and Government institutions to provide supportive planning, regulatory and financing conditions for the sustainable management of landscapes containing ABD production systems; on managing and disseminating information on ABD and management systems; and on raising public awareness on the importance and value of ABD. All these issues are identified as gaps in the baseline scenario and currently constitute barriers to the effective and sustainable conservation of ABD and the corresponding delivery of multi-focal global environmental benefits.

310.GEF funds will also be used to support direct investments at local level in the establishment of pilots of ABD management and marketing, which will provide catalysts leading to effective scaling up beyond the immediate target areas. GEF resources will also be used for direct investment in the restoration of forests and other upland ecosystems that provide crucial ecosystem services on which the ABD production systems depend: these investments in the short term will ensure accelerated impact in the maintenance of these services (and also in increases in carbon storage), while also serving as catalysts for the restoration of further areas using cofinancing and financial incentive mechanisms.

3.3.3 Government Contribution

311.The central Government co-financing contributions to the project will come from MINAM and MINAGRI.

Table 6. MINAM financial contribution to the project (in USD)

In kind contributions (2018-2021)	General Directorates			
	Biological Diversity (DGDB)	Environmental Territorial Planning (DGOTA)	Environmental Economy and Finance (DGEFA)	Totals
Implementation of land use planning processes		1,370,187.64		1,370,187.64
Studies to determine risks at territorial levels		631,284.32		631,284.32
Specialized studies for ecosystem conservation	940,532.80	91,624.00	192,088.28	1,224,245.08
Preparation and dissemination of mechanisms for restoration, and training in their use			404,631.60	404,631.60
Preparation and dissemination of technical and financial mechanisms and instruments, and training in their use	1,006,281.24		599,803.28	1,606,084.52
implementation and operation of a system for identification, categorization and priorization of degraded area for ecosystem restoration		139,865.36	137,792.40	277,657.76
Follow-up to ecosystem restoration			160,483.20	160,483.20
Oversight and supervision of ecosystem conservation with the objective of sustainable use	266,964.48	175,669.60		442,634.08
Total programmed activities	**127,171.60**	**60,584.40**		**187,756.00**
Technical and administrative staff	**165,586.56**	**116,813.28**	**11,684.16**	**294,084.00**
Administrative costs				**124,632.08**
Total	**2,506,536.68**	**2,586,028.60**	**1,506,482.92**	**6,723,680.28**

Table 7. MINAGRI financial contribution to the project (in USD)

Activity/project/programme	Cash	In kind	Total
Improvement of the agrarian statistics information system and of the agrarian information service for rural development in Peru (SNIP 257932)	5,580,665.89		5,580,665.89
Budget programme 0042: use of water resources for agriculture	4,702.92		4,702.92
Budget programme 0068: reduction of vulnerability and attention to disaster emergencies	43,076.52		43,076.52
	4,429.04		4,429.04

Activity/project/programme	Cash	In kind	Total
Budget programme 0121: improvement of linkages of small farmers to markets	62,312.11		62,312.11
	5,544.37		5,544.37
Budget programme 0130: competitiveness and sustainable use of forest resources and wildlife	21,324.50		21,324.50
New Zealand cooperation	17,716.01		17,716.01
Staff		723,915.36	723,915.36
Office costs (transport, services, communications, furniture etc.)		441,423.44	441,423.44
	5,739,771.36	1,165,338.80	6,905,110.16

312. Local Governments will also make significant cofinancing contributions to the project. These will include practical, logistical and technical collaboration including for example time of technical staff and office space, and also contributions to specific thematic areas of the project through the implementation of social and productive development and natural resource management projects. Baseline initiatives funded by local Governments, a proportion of which, under this logic, will be considered as cofinancing, are listed in Appendix 12. These include, for example:

- Forest restoration and watershed protection projects, to generate environmental services
- Capacity building for the management of environmental conservation areas
- Capacity building for sustainable management of livestock and crops, including agroforestry systems
- Strengthening of value chains for sustainable production and agrobiodiversity
- Adaptation to climate change, conservation, and management of usable biodiversity
- Capacity building for productive support services.

3.3.4 FAO Contribution

313.FAO will provide technical assistance, support, training and supervision for the execution of the activities financed with GEF resources. The FAO-funded baseline projects described in Section 1.2 will directly complement and support the implementation of this project and facilitate the attainment of its objectives, and are therefore considered as co-financing. These are:

- The regional project "Development of capacities for information on soils for the sustainable management of natural resources in countries of South America", which will develop national capacities for the recovery, compilation, storage and harmonization of data/information on soils, and methods of laboratory analysis, as well as digital soil mapping.
- "Support to the design and implementation of public policies for rural development in Peru", the objective of which is that public institutions with actions related to rural development carry out harmonized management with a territorial approach, and are able to evaluate their results. That project will complement the GEF project through its Product 1 (local governments and family farmers of high Andean zones participating in Sierra Azul adopt good practices for water resource management) and Product 2 (strengthened capacity of SERVIAGRO to provide services).

- "Recovery of degraded areas", the objective of which is to support the planning and implementation of measures for the recovery of degraded lands in the country and the diffusion of related best practices, in order for the country to meet its goals for the recovery of such areas.

3.3.5 Inputs from other co-financiers

314. Cofinancing will also be provided by the following non-Governmental organizations:

- The Peruvian Agroecological Consortium will provide cofinancing support through the execution of its budgeted projects, which are directly related to the issues addressed by the project, as well as logistical support including transport and meeting rooms.
- The National Association of Ecological Producers (ANPE), for training courses on local markets, the implementation of participatory guarantee systems, the strengthening of local organizations, the organization of biodiversity fairs, support to in-situ conservation of germplasm banks, exchanges of experiences and support to field school programmes.
- The Protected Areas Trust Fund (PROFONANPE) will provide in-kind support in the form of staff time, functional costs, meeting rooms etc.

3.3.6 Financial management and reporting on GEF resources

315. Financial management and reporting in relation to the GEF resources will be carried out in accordance with FAO's rules for its share of the budget Financial management and reporting for the funds transferred to PROFONANPE will be done in accordance with terms, conditions, formats and requirements of the signed OPA.

316. **Financial records**. FAO shall maintain a separate account in United States dollars for the Project's GEF resources showing all income and expenditures. FAO shall administer the Project in accordance with its regulations, rules and directives and in accordance with this Project Document.

317. The OP shall maintain books and records that are accurate, complete and up-to-date. The OP's books and records will clearly identify all Fund Transfers received by the OP as well as disbursements made by the OP under the OPA, including the amount of any unspent funds and interest accrued.

318. The BH will submit OP's financial reports for review and monitoring by the LTO and the FAO GEF Coordination Unit. Financial reports for submission to the donor (GEF) will be prepared in accordance with the provisions in the GEF Financial Procedures Agreement and submitted by the FAO Finance Division.

3.4 MONITORING AND REPORTING

319. The monitoring and evaluation of progress in achieving the results and objectives of the project will be based on targets and indicators in the Project Results Framework (Appendix 1 and descriptions in sub-section 1.3.2). Project monitoring and the evaluation activities are budgeted at USD **167,654** (see Table 3.4). Monitoring and evaluation activities will follow FAO and GEF policies and guidelines for monitoring and evaluation. The monitoring and evaluation system will also facilitate learning and replication of the project's results and lessons in relation to the integrated management of natural resources.

3.4.1 Oversight and monitoring responsibilities

320.The monitoring and evaluation roles and responsibilities specifically described in the Monitoring and Evaluation table (see Table 3.4 below) will be undertaken through: (i) day-to-day monitoring and project progress supervision missions (TMU); (ii) technical monitoring of indicators (TMU in coordination with partners); (iii) mid-term review and final evaluation (independent consultants and FAO Evaluation Office); and (v) monitoring and supervision missions (FAO).

321.At the beginning of the implementation of the GEF project, the TMU in coordination with the Project Director, will establish a system to monitor the project's progress. Participatory mechanisms and methodologies to support the monitoring and evaluation of performance indicators and outputs will be developed. During the project inception workshop (see section 3.5.3 below), the tasks of monitoring and evaluation will include: (i) presentation and explanation (if needed) of the project's Results Framework with all project stakeholders; (ii) review of monitoring and evaluation indicators and their baselines; (iii) preparation of draft clauses that will be required for inclusion in consultant contracts, to ensure compliance with the monitoring and evaluation reporting functions (if applicable); and (iv) clarification of the division of monitoring and evaluation tasks among the different stakeholders in the project. The M&E Expert (see TORs in Appendix 6) will prepare a draft monitoring and evaluation matrix that will be discussed and agreed upon by all stakeholders during the inception workshop. The **M&E matrix** will be a management tool for the PC, the Regional Facilitators , and the Project Partners to: i) six-monthly monitor the achievement of output indicators; ii) annually monitor the achievement of outcome indicators; iii) clearly define responsibilities and verification means; iv) select a method to process the indicators and data.

322.The **M&E Plan** will be prepared by the M&E Expert in the three first months of the PY1 and validated with the PD. The M&E Plan will be based on the M&E Table 3.4 and the M&E Matrix and will include: i) the updated results framework, with clear indicators per year; ii) updated baseline, if needed, and selected tools for data collection (including sample definition); iii) narrative of the monitoring strategy, including roles and responsibilities for data collection and processing, reporting flows, monitoring matrix, and brief analysis of who, when and how will each indicator be measured. Responsibility of project activities may or may not coincide with data collection responsibility; iv) updated implementation arrangements, if needed; v) inclusion of the tracking tool indicators, data collection and monitoring strategy to be included in the mid-term review and final evaluation; vi) calendar of evaluation workshops, including self-evaluation techniques.

323.In addition, a **Social and Environmental Risk Monitoring Specialist** will be hired with GEF resources, to ensure and oversee the compliance with the Risk Mitigation Action Plan prepared and agreed for this specific project (see Appendix 5). The Social and Environmental Risk Monitoring Specialist will follow-up on the environmental and social safeguards triggered during project preparation, will lead the implementation of mitigation actions, identify potential new risks and conduct an adaptive risk management in close coordination with the OP and the project partner. FAO will participate in the selection of the Social and Environmental Risk Monitoring Specialist, provide constant backstopping and supervise the implementation of the Environmental and Social Risk Management Plan. His/her TORs will be further developed and agreed in PY1.

324.The day-to-day monitoring of the project's implementation will be the responsibility of the PC and will be driven by the preparation and implementation of an AWP/B followed up through six-monthly PPRs. The preparation of the AWP/B and six-monthly PPRs will represent the product of a unified planning process between main project stakeholders. As tools for results-based-management (RBM), the AWP/B will identify the actions proposed for the coming project year and provide the necessary details on output and outcome targets to be achieved, and the PPRs will report on the monitoring of the implementation of actions and the achievement of output and outcome targets. Specific inputs to the AWP/B and the PPRs will be prepared based on participatory planning and progress review with all stakeholders and coordinated and facilitated through project planning and progress review workshops. These contributions will be consolidated by the PC in the draft AWP/B and the PPRs.

325.An annual project progress review and planning meeting should be held with the participation of the project partners to finalize the AWP/B and the PPRs. Once finalized, the AWP/B and the PPRs will be submitted to the FAO LTO for technical clearance, and to the Project Steering Committee for revision and approval. The AWP/B will be developed in a manner consistent with the Project Results Framework to ensure adequate fulfillment and monitoring of project outputs and outcomes.

326.Following the approval of the Project, the PY1 AWP/B will be adjusted (either reduced or expanded in time) to synchronize it with the annual reporting calendar. In subsequent years, the AWP/Bs will follow an annual preparation and reporting cycle as specified in section 3.5.3 below.

3.4.2 Indicators and sources of information

327.To monitor project outputs and outcomes including contributions to global environmental benefits, specific indicators have been established in the Project Results Framework (see Appendix 1). The Project Results Framework indicators and means of verification will be applied to monitor both project performance and impact. Following FAO monitoring procedures and progress reporting formats, data collected will be sufficiently detailed that can track specific outputs and outcomes, and flag project risks early on. Output target indicators will in most cases be monitored on a six-monthly basis, and outcome target indicators will be monitored on an annual basis, if possible, or as part of the mid-term and final evaluations.

328.The project output and outcome indicators have been designed to monitor progress in building and consolidating capacities for the conservation and sustainable management of ABD and associated landscapes, at different levels ranging from the beneficiary population of small farmers through local and regional governments to institutions of central Government. The effectiveness of capacity development for the maintenance and improvement of farming systems is measured not only by the area coverage of integrated management practices and the numbers of traditional crop varities managed, but also by the social and economic benefits that these management practices and associated marketing mechanisms generate. Indicators are designed to detect the distribution of benefits and impacts between gender and age groups, as well as implications for overall livelihoods and food security. Impacts on the enabling environment are largely measured by the existence and effectiveness of key capacities and instruments in target local and central institutions.

329.The main information sources to support the M&E plan include: i) Government and other project partners' monitoring systems; ii) participatory workshops with stakeholders and

beneficiaries to review project progress; iii) on-the-ground monitoring of good practices, sustainable forest management, and agro-ecosystem management; iv) progress reports prepared by the PC with inputs from the partners, project specialists and other stakeholders; v) consultants´ reports; vi) training reports; viii) mid-term review and final evaluation; viii) financial reports and budget revisions; ix) Project Implementation Reviews prepared by the FAO LTO supported by the FAO Representation in SAP; and x) FAO supervision mission reports.

3.5.3 Reporting schedule

330.Specific reports that will be prepared under the monitoring and evaluation program are: (i) Project inception report; (ii) Annual Work Plan and Budget (AWP/B); (iii) Project Progress Reports (PPRs); (iv) Annual Project Implementation Review (PIR); (v) Technical reports; (vi) Co-financing reports; and (vii) Terminal Report. In addition, the GEF tracking tools for each of the focal areas covered by the project will be completed and will be used to compare progress with the baseline established during the preparation of the project. In addition, the OP will prepare and submit the reports described in the OPA and its annexes, and will submit them to the FAO Representation in Peru periodically - as agreed in the OPA.

331.**Project Inception Report.** After GEF CEO Endorsement and FAO and MINAM internal approval of the project an inception workshop will be held. Immediately after the workshop, the PC will prepare a project inception report in consultation with the FAO Representation in Peru, the Project Direction, the Technical Consultative Committee and other project partners. The report will include a narrative on the institutional roles and responsibilities and coordinating action of project partners, progress to date on project establishment and start-up activities and an update of any changed external conditions that may affect project implementation. It will also include a detailed first year AWP/B and the M&E Matrix (see above). The draft inception report will be circulated to FAO, the PD, PSC and the Technical Consultative Committee for review and comments before its finalization, no later than three months after project start-up. The report will be cleared by the FAO BH, LTO and the FAO/GEF Coordination Unit. The BH will upload it in FPMIS.

332.**Annual Work Plan and Budget(s) (AWP/Bs)**. The PC will present a draft AWP/B to the PSC, previously approved by the Project Direction, no later than 10 December of each year. The AWP/B should include detailed activities to be implemented by project outcomes and outputs and divided into monthly timeframes and targets and milestone dates for output and outcome indicators to be achieved during the year. A detailed project budget for the activities to be implemented during the year should also be included together with all monitoring and supervision activities required during the year. The FAO Representation in Peru will circulate the draft AWP/B to the FAO Project Task Force and will consolidate and submit FAO comments. The AWP/B will be reviewed by the PSC and PROFONANPE will incorporate any comments. The final AWP/B will be sent to the PSC for approval and to FAO for final no-objection. The BH will upload the AWP/Bs in FPMIS.

333.**Project Progress Reports (PPR).** The PPRs are used to identify constraints, problems or bottlenecks that impede timely implementation and take appropriate remedial action. PPRs will be prepared based on the systematic monitoring of output and outcome indicators identified in the Project Results Framework (Appendix 1), AWP/B and M&E Plan. Each semester the Project Coordinator (PC) will prepare a draft PPR, and will collect and consolidate any comments from the PD and FAO[105]. The NPC will submit the final PPRs to the FAO

[105] Comments from the FAO PTF will be collected and consolidated by the BH.

Representative in Peru every six months, prior to 10 June (covering the period between January and June) and before 10 December (covering the period between July and December). The July-December report should be accompanied by the updated AWP/B for the following Project Year (PY) for review and no-objection by the FAO PTF. The Budget Holder has the responsibility to coordinate the preparation and finalization of the PPR, in consultation with the PD, LTO and the FLO. After LTO, BH and FLO clearance, the FLO will ensure that project progress reports are uploaded in FPMIS in a timely manner.

334.**Annual Project Implementation Review (PIR)**. The NPC, under the supervision of the LTO and BH and in coordination with the national project partners, will prepare a draft annual PIR report[106] covering the period July (the previous year) through June (current year) no later than July 1st every year. The LTO will finalize the PIR and will submit it to the FAO-GEF Coordination Unit for review by July 10th. The FAO-GEF Coordination Unit, the LTO, and the BH will discuss the PIR and the ratings[107]. The LTO is responsible for conducting the final review and providing the technical clearance to the PIR(s). The LTO will submit the final version of the PIR to the FAO-GEF Coordination Unit for final approval. The FAO-GEF Coordination Unit will then submit the PIR(s) to the GEF Secretariat and the GEF Independent Evaluation Office as part of the Annual Monitoring Review of the FAO-GEF portfolio. The PIR will be uploaded to FPMIS by the FAO-GEF Coordination Unit.

335.**Technical reports**. The technical reports will be prepared as part of the project outputs and will document and disseminate lessons learned. Drafts of all technical reports must be submitted by the Project Coordinator to the PD for clearance and to the PSC and FAO Representation in Peru, which in turn will be shared with the LTO for review and approval and to the FAO-GEF Coordination Unit for information and comments before finalization and publication. Copies of the technical reports will be distributed to the Liaison Committee and the PSC and other project stakeholders, as appropriate. These reports will be uploaded in FAO FPMIS by the BH.

336.**Co-financing reports**. PROFONANPE and the PC will be responsible for collecting the required information and reporting on in-kind and cash co-financing provided by all the project cofinanciers and eventual other new partners not foreseen in the Project Document. Every year, the PC will submit the report to the PD and the FAO Representation in Peru before July 10th covering the period July (the previous year) through June (current year). This information will be used in the PIRs.

337.**GEF Tracking Tools**. In compliance with GEF policies and procedures, tracking tools for the Biodiversity (Objetive 3, Programme 7 and Objective 4, Proramme 9), Land Degradation (Objective 3, Programme 4) and Sustainable Forest Management (Objective 3, Programme 8) focal areas should be sent to the GEF Secretariat in three stages: (i) with the project approval document by the GEF Executive Director; (ii) with the mid-term review of the project; and (iii) with the final evaluation of the project.

338.**Final Report**. Within two months prior to the project's completion date, the Project Coordinator will submit to the PD, the PSC and FAO Representation in Peru a draft final report. The main purpose of the final report is to give guidance to authorities (ministerial or senior

[106] Prior to the preparation of the PIR report, the FAO-GEF Coordination Unit will provide the updated format as every year some new requirements may come from the GEF.

[107] The NPC, the BH, the LTO and the FAO/GEF Coordination Unit should assign ratings to the PIR every year. The ratings can or cannot coincide among the project managers.

government level) on the policy decisions required for the follow-up of the Project, and to provide the donor with information on how the funds were utilized. Therefore, the terminal report is a concise account of the main **products, results, conclusions and recommendations** of the Project, without unnecessary background, narrative or technical details. The target readership consists of persons who are not necessarily technical specialists but who need to understand the policy implications of technical findings and needs for ensuring sustainability of project results. Work is assessed, lessons learned are summarized, and recommendations are expressed in terms of their application to the integrated landscape management in the five regions in the context of the development priorities at national and departmental levels, as well as in practical execution terms. This report will specifically include the findings of the final evaluation as described in section 3.6 below. A project evaluation meeting will be held to discuss the draft final report with the PSC and the Project Liaison Committee before completion by the Coordinator and approval by the BH, LTO, and FAO-GEF Coordination Unit.

3.4.4 Monitoring and Evaluation summary

339.Table 3.4 summarizes the main monitoring and evaluation reports, parties responsible for their publication and time frames.

table 3.4 Summary of main monitoring and evaluation activities

M&E Activity	Responsible parties	Time frame/ Periodicity	Budget
Inception workshop	PC; FAOPE (with support from the LTO, and FAO-GEF Coordination Unit) and PROFONANPE	Within two months of project start up	USD 3,000
Project Inception report	PC, Expert M&E and FAOPE with clearance by the LTO, BH and FAO-GEF Coordination Unit and PROFONANPE	Immediately after the workshop	-
Field-based impact monitoring	PC; project partners, local organizations and PROFONANPE	Continuous	USD 20,736 (9% of the Project Coordinator's time, technical workshops to identify indicators, monitoring and evaluation workshops) USD 27,000 (20% budget of Monitoring and Evaluation Responsible)
Supervision visits and rating of progress in PPRs and PIRs	PC; FAO (FAOPE, LTO). FAO-GEF Coordination Unit may participate in the visits if needed.	Annual, or as needed	FAO visits will be borne by GEF agency fees Project Coordination visits shall be borne by the project's travel budget

M&E Activity	Responsible parties	Time frame/ Periodicity	Budget
Project Progress Reports (PPRs)	PC, PROFONANPE, with stakeholder contributions and other participating institutions	Six-monthly	USD 8,064 (3.5% of the Project Coordinator's time)
Project Implementation Review (PIR)	Drafted by the NPC, with the supervision of the LTO and BH. Approved and submitted to GEF by the FAO-GEF Coordination Unit	Annual	FAO staff time financed though GEF agency fees. PCU time covered by the project budget.
Co-financing reports	PC with input from other co-financiers and PROFONANPE	Annual	USD 2,304 (1% of the Coordinator's total budget)
Technical reports	PC, FAO (LTO, FAOPE) and PROFONANPE	As needed	
Mid-term review	FAOPE, External consultant, in consultation with the project team, including the FAO-GEF Coordination Unit and others	Midway through the project implementation period	USD 40,000 by an external consultancy
Final evaluation	External consultant, FAO Independent Evaluation Unit in consultation with the project team, including the FAO-GEF Coordination Unit and others (Project Direction)	At the end of the project	USD 60,000[108] by an external consultancy. FAO staff time and travel costs will be financed by GEF agency fees.
Terminal Report	PC; FAO (FAOPE, LTO, FAO-GEF Coordination Unit, TCS Reporting Unit) and PROFONANPE	Two months prior to the end of the project.	USD 6550
Total budget			**USD 167,654**

3.5 EVALUATION PROVISIONS

340. At the end of the first 18 months of the project, the BH will arrange a **Mid-Term Review** (MTR) / **Mid-Term Evaluation (MTE**) in consultation with the PSC, the PD, the LTO and the FAO-GEF Coordination Unit. The MTR will be conducted to review progress and effectiveness of implementation in terms of achieving project objective, outcomes and outputs. The MTR will allow mid-course corrective actions, if needed. The MTR will provide a systematic analysis of the information provided under the M&E Plan (see above) with emphasis on the progress in the achievement of expected outcome and output targets against budget expenditures. The MTR will refer to the Project Budget (see Appendix 3) and the approved AWP/Bs for PY1 and PY2. The MTR will contribute to highlight replicable good practices and main problems faced during project implementation and will suggest mitigation actions to be discussed by the PSC, the LTO and FAO-GEF Coordination Unit.

[108] To the estimated cost of USD 50,000, a contingency amount of USD 10,000 has been added to cover unexpected price variations. Unspent funds will be returned by FAO and invested in project activities.

341. An independent Final Evaluation (FE) will be carried out three months prior to the terminal report meeting. The FE will aim to identify the project impacts, sustainability of project outcomes and the degree of achievement of long-term results. The Project Direction will be informed about the development of the Final Evaluation and will receive all the outputs generated. The FE will also have the purpose of indicating future actions needed to expand on the existing Project in subsequent phases, mainstream and up-scale its products and practices, and disseminate information to management authorities and institutions with responsibilities in food security, conservation and sustainable use of natural resources, small-scale farmer agricultural production and ecosystem conservation to assure continuity of the processes initiated by the Project. Both the MTR and FE will pay special attention to outcome indicators and will be aligned with the GEF Tracking tools for the BD, LD and SFM focal areas.

3.7 COMMUNICATION AND VISIBILITY

342. The project will require participation and buy-in from multiple stakeholders at national and local levels, and its success will therefore depend on effective communication and a high level of visibility.

343. A significant base has been established in this regard during the PPG phase, in the form of numerous consultation meetings with Government agencies and other key stakeholders at central and district levels. This approach will be continued into the implementation phase. A national inception workshop will be held in Year 1, in order to maintain and broaden the profile raised during the PPG phase and ensure concrete participation and buy-in by partners in the definition of detailed operational aspects of the project's implementation.

344. The Project Coordinator and the Project Director will play key roles in maintaining fluid and regular communication about the project with national stakeholders at all levels, but most importantly among high level actors in agencies of central Government, aimed at maintaining their interest in and commitment to the project throughout its entire lifetime. This will be achieved through personal bilateral communication with these actors, taking advantage of the strategic position of the PC to channel messages regarding the project to other Government stakeholders. The Project Steering Committee will also serve as a vehicle for communication and raising visibility regarding the project and its aims and approaches.

345. Communication and knowledge sharing are key aspects of the project; they cut across all four project components and are linked to overall capacity development as well as on-going project learning. It is important to ensure internal and external project communication with differing strategies. There is a wide range of primary and secondary stakeholders, and the communication and knowledge sharing strategy focuses on the various target groups in segmented manners. Every key target group has other communication and knowledge needs and therefore need to be analysed and serviced differently. For the overall project success, from the onset, the different backgrounds and needs must be studied and specific motivations and ways of communicating identified.

346. Output 3.1.6 (see Section 1.3 above) is specifically focused on strategies for communication and knowledge sharing on ABD services and benefits, traditional production practices, and the NIAHS concept, in order to ensure that these are available to a wide variety of audiences for awareness, dissemination and replication.

SECTION 4 – SUSTAINABILITY OF RESULTS

4.1 SOCIAL SUSTAINABILITY

347.In order to maximize the social sustainability of its results, the project will use participatory approaches for the definition of needs and for the identification, generation and transfer of knowledge and technologies for the conservation of ABD and the management and restoration of ecosystems (see Output 1.1.1). The Farmer Field School approach will be used wherever possible, combined with participatory farmer-led experimentation and farmer-to-farmer interchanges of knowledge and experiences, and culturally-appropriate models such as *yachachiq* (leader farmers, nominated by community assemblies) and *kamayoq* (community-based extensionists).

348.Emphasis will be placed on the recovery, promotion and use, wherever possible, of traditional management practices with which local stakeholders are familiar, and which have historically been developed by them in response to their needs and conditions. These traditional endogenous practices may require modification and/or combination with exogenous practices in order to enable them to continue to function under changing biophysical (including climatic), cultural and socioeconomic conditions, but any such modifications will be defined with the full participation of the proposed local users of the technologies in order to ensure their relevance and social sustainability.

349.Social sustainability will also be ensured by working with and promoting traditional systems for the governance of grazing and water use.

350.The approach of the project, of promoting the active *in situ* conservation of agrobiodiversity in ways that actively contribute to the livelihoods of local farmers and the social coherence of their communities, will contribute to social sustainability by helping to make it attractive for farmers and their families (including young people) to continue to farm in the area, rather than migrating to urban centres or to the lowland agricultural frontier, which has been the dominant trend and which has significantly undermined the social and cultural coherence of the ABD production areas.

4.2 ENVIRONMENTAL SUSTAINABILITY

351.Environmental sustainability will be ensured through the emphasis of the project on promoting traditional production systems, which have been developed over centuries by local communities within the constraints of the environmental carrying capacity of the ecosystems within which they are applied; the decline of some of these systems over time is not due to their having caused environmental degradation, but instead largely to changes in the social and economic contexts within which they operate. The food production systems will be based on agroecological principles to ensure sustainablility, resilience and to mitigate climate change factors, to ensure they promote overall environmental sustainability.

352.The project will promote an adaptive approach to the application of these practices, in order to enable them to continue to evolve, in the hands of local people, in response to changing social, economic and also environmental conditions.

353.The landscape approach of the project, under Outcome 1.2, will contribute to environmental sustainability, as it will involve investment in the conservation, management and/or restoration of ecosystems throughout the landscape as a whole (including for example forests and *bofedales*) which are of importance for the generation of ecosystem services.

354.The strengthening by the project of landscape planning processes and community-based governance will also be important in ensuring that the promotion of the commercialization of ABD crops does not have unintended environmental consequences, for example in the form of over-exploitation of water resources for irrigation, or expansion of crop cultivation areas into vulnerable ecosystems.

355.The role of the project to stemming emigration trends from Andean areas will also contribute to environmental sustainability at national level, given that such highland-lowland migration has constituted one of the major sources of pressure on forests of the Amazon Basin over recent years.

4.3 FINANCIAL AND ECONOMIC SUSTAINABILITY

356.Project Component 2 focuses specifically on the promotion of markets for ABD products, while under Outputs 1.1.3 and 1.2.2 the project will support the application of economic and financial instruments to reward the conservation of ABD and the generation of ecosystem services, on farm and in the broader landscape. These elements of the project will serve to ensure that ABD conservation and the sustainable management of the associated ecosystems will, when combined with their non-monetary societal and cultural values, constitute attractive options for farmers and local communities, contributing to their overall livelihood support systems in the face of competing alternatives such as the application of exogenous agricultural practices with low levels of biodiversity. Project actions in relation to markets and incentives will focus on the development of capacities and mechanisms. to ensure their long-term sustainability, without reliance on short term external sources of funding.

4.4 SUSTAINABILITY OF CAPACITY DEVELOPMENT

357.The sustainability of capacity development will be ensured as follows:

- Wherever possible, universities or other academic/research institutions operating at national or preferably local levels will be used to deliver training; in addition to being more attractive to participants, this will provide an opportunity for the training models to be adopted by the institutions in question on a permanent basis, thereby helping to place capacity development on a sustainable basis, benefiting future generations of participants, instead of being targeted on a one-off basis solely at those in place during the time of project implementation.
- The conversion of the results of the capacity development processes into durable impacts on the operation of the institutions to which the participants belong will depend in large part on the concepts transmitted being incorporated effectively into policies, and being backed up by financial resources that will enable them to be put into practice. The development of capacities under this Output (which will include capacities for the development of PIPs), the revised policy, planning and regulatory instruments under Outputs 3.1.2 and 3.1.3, and the financial instruments foreseen under Outcomes 1.1.3 and 1.2.2, will all therefore play complementary roles in this regard.
- At local level, capacity development on the application of practices for agrobioversity conservation and management will be delivered using highly participatory approaches including Farmer Field Schools, and traditional, culturally appropriate models such as *yachachiq* (leader farmers, nominated by community assemblies) and *kamayoq* (community-based extensionists). These approaches will serve to maximize relevance, ownership and uptake of the management practices, and consequently the probability

that the knowledge acquired will be retained by the participants and applied (with adaptations over time) in a sustainable manner.

4.5 APPROPRIATENESS OF TECHNOLOGIES INTRODUCED and COST/EFFECTIVENESS

358.The appropriateness of the technologies to be supported and promoted through the project will be ensured by the fact that they will largely consist of, or be based on, traditional practices identified by the participating farmers themselves, which have been developed over centuries in the target communities as responses to the biophysical and socioeconomic conditions there, within the context of their livelihood support strategies. Examples include the terraces, *camellones* and *qochas* described in Section I, which have been developed as adaptations to the challenges of soil erosion, rainfall variability and low temperatures that would otherwise limit agricultural production in the area; and the use of diverse crop varieties that are adapted to different rainfall, altitude and temperature conditions, as shown in the case of potatoes in 8.

359.The project will promote a dynamic approach to the generation and transfer of technologies, given the variability in conditions affecting the target localities and the trends over time in the factors that determine the viability of the technologies: some labour-intensive traditional practices, for example, have become progressively less viable over time under conditions of emigration of the economically active labour force, while increases in temperature and rainfall vulnerability related to global climate change may exceed the current coping ranges of some technologies and crop varieties. The project will therefore place a strong emphasis on participatory context analyses in order to enable farmers to identify these emerging stressors, farmer-based experimentation in order to validate potential solutions in the form of modifications to existing production systems and varieties, and the culturally-appropriate integration of traditional practices with exogenous approaches.

4.6 INNOVATIVENESS, REPLICATION and SCALE-UP

Innovativeness

360.The project will be innovative in the Peruvian context by virtue of its integrated approach, which will combine the following elements:

- Actions not only to manage and conserve the target ABD and production systems, but also to conserve and restore other ecosystem units within the landscape that provide ecosystem services on which the ABD production systems depend;
- Inclusion of a suite of complementary strategies covering not only technical aspects of production systems but also planning, governance, incentives and markets, in order to ensure that the conservation of agro-biodiversity is socially sustainable and economically attractive for local people, as well as being technically well-founded.

Replication and up-scaling

361.The approaches to agro-biodiversity conservation and landscape management applied in the target localities have potential for replication throughout the Andean region of Peru, as well as neighbouring countries such as Ecuador, Bolivia and Colombia. Throughout this region as a whole, there are globally important genetic resources of agro-biodiversity that face similar threats to those in the target localities; the overall approach of the project, based on the active *in situ* management and conservation within the context of well-managed landscapes, is therefore widely replicable, even if it may require validation and adjustment at local level to reflect variations in cultural, biophysical and agronomic conditions.

APPENDICES

APPENDIX 1. RESULTS FRAMEWORK

Sustainable management of agro-biodiversity and vulnerable ecosystems recuperation in Peruvian Andean regions through Globally Important Agricultural Heritage Systems (GIAHS) approach.							
Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Project Objective: To conserve *in-situ* and to sustainably use globally-important agro-biodiversity through the preservation of traditional agricultural systems, the integrated management of forests, water, and land resources, and the maintenance of the ecosystem services in selected Andean regions.							
Component 1: Integrated landscape management and agrobiodiversity conservation in Andean regions of Peru							
Outcome 1.1 Agro-biodiversity is conserved in-situ and managed in a sustainable and adaptive manner.	Area of target production landscapes, within which Globally and Nationally Significant Landraces (Traditional Varieties) of ABD occur, that is under sustainable land management[1]	Plans and regulatory instruments do not as yet provide for sustainable management to favour ABD	150,000ha	312,046ha (estimated total area of the target localities classified in the agricultural census as "under use")	Ecosystem monitoring reports Satellite imagery Mid-term and final evaluation reports	Political will is maintained to support management and sustainable use of ABD through strategy and policy instruments. Institutions channel financial resources to public investment projects for the maintenance of Ecosystem Services in	National PMU and Project Regional Management Units with support from: MINAM MINAGRI INIA SERFOR AGRORURAL REGIONAL GOVERNMENTS LOCAL GOVERNMENTS
	Improved conservation status of targeted ABD species in target localities, measured by increases in evenness[2]	32 native crops are managed over 10,647ha : baseline evenness status to be determined at project start	37 native crops are managed over 13,308ha[3]	40 native crops are managed over 15,970ha[4]			

[1] Area of Andean landscape in the target districts covered by territorial land use plans and regulatory instruments, that provide for integrated management with potential to maintain the flows of ecosystem functions on which the conservation of the ABD and the sustainability of livelihoods depend.

[2] BD Tracking Tool Indicator 7.1: Diversity status of targeted ABD species

[3] 15% increase in the number of crops and 25% increase in the area by mid term

[4] 25% increase in the number of crops and 50% increase in the area by project end

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
	Number of families, by gender, applying integrated management practices that favour the conservation of ABD[5]	Target families manage ABD but without adequate provision or capacities to ensure its long term conservation		7,760 families in 58 communities[6], including at least 35% of households led by women and 12% led by farmers less than 30 years old.		selected Andean Regions	
Output 1.1.1 Participatory systems established in pilot localities for the recovery, generation, transfer and interchange of knowledge on the management and in situ conservation of ABD, combining traditional productive practices with conservation-minded technological advances.	Number of Farmer Field Schools established in target localities	0	Farmer Field Schools established in 13 zones of the target localities[7], with active direct participation of 390 farmers per year	Farmer Field Schools established in 13 zones of the target localities, with active direct participation of 1,560 farmers and total beneficiary population of 7,800 farmers[8] over the project period	Pilot Validation Report. Evaluation monitoring sheets and sustainable practices inventory report		Regional Coordination Units and Regional facilitators, with support from Officials of Local and Regional Governments, INIA, MINAGRI and MINAM, supported by rural talents of the districts and farmers
	Number of sets of ancestral practices and traditional knowledge of small farmers evaluated and characterized	0	ABD use characterized and evaluated in the five districts of the project.	100 sets of practices for conservation and sustainable production practices recovered and valued with rural communities (20 in each target locality)	Document of evaluation and characterization of ancestral practices and traditional knowledge.		
Output 1.1.2 Seed production, management and supply systems ensuring farmers'	Numbers of traditional ABD varieties held in communal seed	32 native crops are grown but no communal seed banks exist	Communal seed banks have been established in each target locality (5 in total), holding an	Communal seed banks in each target locality (5 in total) hold an average of 9	Evaluation reports on community seed banks		

[5] LD Indicator 3.2

[6] Approximately 50% of the total number of farmers in the target districts

[7] Three in each of the target localities covering the lower, middle and higher altitude parts respectively, except for Arequipa where there will be only one

[8] 30 farmers per field school/year x 13 FFS = 390 direct participants/year x 4 years = 1,560 direct participants x replication factor of x5 = 7,780 farmers.

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
access to high quality and diverse ABD genetic material in accordance with their needs and conditions	banks, per target locality		average of 4 traditional ABD varieties each	traditional ABD varieties each			
	Number of varieties or genotypes in the target communities characterized in collaboration with INIA	0	At least 20 varieties or genotypes.	30 varieties or genotypes.	Databases on passports and characterizations		
Output 1.1.3 Schemes to reward the maintenance of traditional ABD production systems, agreed in pilot localities	Area of crops under payment agreements that reward the maintenance of traditional ABD management systems	0	Areas of crops identified covering 5,323ha[9] and negotiations of PES agreements under way	PES agreements reached over areas with traditional crop varieties coveting 5,323ha	Conservation and/or compensation agreements Maps and studies of the areas incorporated		Project component 1 Advisor, with support from the M & E Assistant and technical specialists (Outcomes 1.1 & 1.2)
Output 1.1.4 ABD zones in the target localities evaluated for recognition in accordance with Peruvian legislation, with associated monitoring and management tools	Number of ABD zones established by law	One proposal developed in Huancavelica region (Laria and Conayca, Pachachaca and Alauna micro-catchment), covering 10,302ha, not yet presented to INIA	3 case files completed and submitted to the competent authority for recognition as ABD Zones	3 ABD zones established by law	Completed case files for recognition as Agrobiodiversity Zones		Regional Coordination Unit and Regional facilitators, with support from: Communal authorities Local and Regional Governors. Regional Councilors of the Provinces.
	Status of provisions and tools for monitoring conditions in candidate sites and	There is no monitoring tool available to guide		Monitoring tool designed and put to use in providing information for ABD	INIA monitoring and evaluation report Monitoring Data Sheets/database		

[9] 50% of the total area under ABD crops in the target localities

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
	ABD zones, to guide ABD conservation and management	ABD management and conservation		management and conservation. 72 Communities are strengthened in participatory monitoring	for ABD zone Monitoring and Evaluation (M&E)		
Output 1.1.5 Capacities and strategies strengthened for dissemination and communication of knowledge and lessons generated in the pilot sites	Number of farmers and community leaders with technical/ productive capacities strengthened through experience exchange	0.	70 leader farmers trained, in 7 field schools[10]	260 leader farmers trained, in 13 field schools[11]	CAP scorecards	Interest among farmers in participating in capacity strengthening	Regional Coordination Unit and Regional facilitators with support from: Local Government Officials Communal and indigenous authorities of each district MINAM, INIA and MINAGRI
Outcome 1.2: Andean landscapes are sustainably managed and restored, to ensure flows of the ecosystem services necessary for the maintenance of ABD and the sustainability	*Indicator SFM 5*: Area of forest restored and/or sustainably managed to enhance their capacity to provide ecosystem services required for ABD conservation and production[12]	N/A	30,000ha	83,000ha	Forest Restoration Reports, Technical Reports, Maps, and District Zoning GIS Database	Political will at different levels of Government to enforce regulatory frameworks, monitor compliance, allocate resources and incentives	National and Regional Project Management Units

[10] 5 leader farmers per year x 2 years x 7 field schools
[11] 5 leader farmers per year x 4 years x 13 field schools
[12] SFM Indicator 5

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
of ABD production systems						Buy-in by regional and municipal managers and the private sector	
Output 1.2.1: Planning and management instruments established and strengthened at different scales in the landscape, to promote the flows of ecosystem services needed for the maintenance of ABD and the sustainability of ABD production systems	Number of District Development Plans that incorporate district ABD zoning frameworks.	No spatial land use planning (*ordenamiento territorial*) at Micro level in the intervention districts	6 District Development Plans incorporate district ABD zoning frameworks	13 District Development Plans incorporate district ABD zoning frameworks	District Development Plans.		Regional Coordination Units Facilitators hired for each district Presidents of farmer and Indigenous Communities. Expert in Community Planning and Development
	Number of districts with Ecological-economic Zoning (Micro zoning) identifying ABD zones developed with farmers	None	5 districts (Acora, Huayana, Lares, Laria, Atiquipa (324,562ha)	All 13 districts included in target localities (642,1363ha)	Review of EEZ microzoning outputs		
	Number of communities with authorities and GOLO representatives trained in incorporating ABD zoning into CDPs	None	Authorities of 30 communities, and 39 GOLO representatives[13]	Authorities of 59 communities[14], and 39 GOLO representatives	Training Plans. List of participants to the training workshops		
	Number of forest management plans providing for sustainable management under landscape, gender	0	13 plans elaborated and disseminated (one in each target district)	13 plans implemented (one per target district) covering all the non-farm forest in the	Maps of areas under management plans		Component 1 Advisor, with support from the M&E Assistant, technical specialists

[13] 30 community authorities = all of the communities that will have incorporated ABD zoning frameworks into development plans by mid-term; 39 GOLO representatives = 3 representatives from each of the 13 target districts.

[14] 59 community authorities = all of the communities that will have incorporated ABD zoning frameworks into development plans by project end

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
	and intercultural approaches			target districts (18,128ha)			(Outcomes 1.1 & 1.2)
	Area covered by restoration and zoning plans	Apurímac has a restoration strategy to implement. Arequipa will soon start the process.	40,000ha covering at least 3 of the target localities	83,000ha, covering at least 3 of the target localities	Technical reports, maps and GIS database of zoning and reforestation of districts	Regional and municipal Natural Resources administrations recognize the need to support forest restoration and sustainable use	Component 1 Advisor, with support from the M&E Assistant, technical specialists (Outcomes 1.1 & 1.2)
Output 1.2.2 Financial and economic instruments supporting ecosystem restoration and the maintenance of ecosystem services of importance for ABD	Area under payment agreements that maintain the supply of ecosystem services from forests, wetlands (*bofedales*) and grasslands	0	Areas identified, Ecosystem Services prioritized, characterized and assessed	- Forests: 4,500ha[15] - Wetlands: 10,000ha (bofedales) - Grasslands: 30,000ha[16]	Conservation and/or compensation agreements Maps and studies of areas incorporated for characterization of Ecosystem Services		Project component 1 Advisor, with support from the M & E Assistant and technical specialists (Outcomes 1.1 & 1.2)
Output 1.2.3: Support programmes implemented for ecosystem restoration, for the maintenance of ecosystem services of importance for ABD.	Number packages of plans and tools for training and TA formulated and implemented	0	2 plans and 2 tools	5 plans and 5 tools (one in each target locality)	Registers of trainings given by promoters Training tools: Research, methodologies used, training modules developed		Component 1 Advisor, with support from the M & E Assistant, technical specialists (Outcomes

[15] 25% of the total area of forest
[16] 10% of the total area of grasslands

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
	Number of target men and women participating in TA programs with increased awareness of the importance of forests for ABD conservation	N/A	350 people (of which at least 30% are women and 10% young)	480 people (of which at least 30% are women and 10% young)	Knowledge, Attitudes and Practices (KAP) scorecard (disaggregated by gender and age)		
Component 2: Development of markets for agro-biodiversity products to support conservation and sustainable use and local rural livelihoods.							
Outcome 2.1: The marketing of agro-BD products has been enhanced to support the sustainable use of agroBD and rural livelihoods.	Contribution of ABD and products to family economies	Average baseline household income = USD597/year (source: INEI 2007)		At least 25% increase in total incomes among the 7,800 farm families participating in the FFS, attributable to ABD marketing, without detriment to gender distribution of economic benefits or to nutritional status of family members	Focus groups and surveys	No significant disturbance to economic and social conditions in general	Component coordinator Local governments INDECOPI
Output 2.1.1 Strengthened market linkages between small-scale farmers (family farmers and indigenous communities) and local and regional markets, to support conservation through sustainable production of food	Number of producers of goods and services associations based on ABD linked to local, regional and national markets.	Small producers have a weak presence in the market. Marketing is done through intermediaries and receive a payment below the market price.	At least 15 smallholder organizations (including producers) linked to local, regional and national markets.	At least 30 smallholder organizations (including producers) linked to local, regional and national markets: - 30% participation in business - 70% participation in fairs (income and network)	Training plans formulated Reports of training sessions Attendance sheets Organizations formalized, including management documents up to date. Sales Records		Field Coordinator Territorial commercial articulators take on operations Representatives of the communities actively participate

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
and goods based on ABD.				- 100% Participation in "paths of knowledge"			
Output 2.1.2. Value chain strategy supported and strengthened to improve inclusion of small-scale producers, young and women, and creation of employment while enhancing the marketing of agroBD products in the Andes	Number of value chain pilots operating	Existing value chains do not incorporate producers from the intervention areas and do not emphasize the value of ABD	At least 1 value chain pilot established and starting operation process.	At least 3 value chain pilots established and starting operation process.	Documents setting out preparatory processes for the development of value chains Acts of commitment of the actors Work plans to start operations Registers of businesses		Component coordinator Specialized consultants Actors conforming the chain Local Governments
	Number of small and medium-sized businesses that have developed and implemented a business plan for ABD crops and products		5 small and medium-sized business	10 small and medium-sized business (2 in each target locality)			
Output 2.1.3: Geographical indication (GI), ABD zone or similar labelling or certification standards developed for ABD-based products in the Andes.	Number of labels related to ABD zones developed	There are no labels related to ABD zones	1 label related to ABD zones and corresponding standard developed	At least 4 standards per category of product/service developed to obtain the right to use label related to ABD zones	Labels based on ABD zones registered in Indecopi Labels used on products and services, materials for commercial promotion and management documents of organizations. Local association for management of the label registered	Various ABD products and valuation services exist in each zone that canuse the label and create synergies with the "basket of local products and services)"	Component coordinator Territorial commercial articulator Communicator Producer associations
	Number of GI developed or strengthened contributing to the conservation or promotion of ABD	There are 8 established GIs in Peru, but only 2 have regulatory councils allowing them to operate.	1 existing GI operational with regulatory council strengthened	At least 3 new GI developed with regulatory councils established			
	Number of organic certifications obtained (third party or PGS)	0	3 organic certifications obtained	10 organic certifications obtained			

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
	Number of producer associations incorporated in existing initiatives with standards and collective trademarks that value ABD	0	Identification of initiatives with standards and collective trademarks to value ABD with which to collaborate for the incorporation of producer associations	At least 4 producer associations incorporated in existing initiatives	(e.g. GI regulatory council, ABD zone association). Certification systems (control plan) defined and established in each site		
Output 2.1.4: Multi-stakeholder networks and alliances established to promote the commercialization of ABD-based products, increase market access and improve livelihoods.	Number of multi-actor network associations established and operating	There are no established and/or operating multi-stakeholder networks for ABD products and/or services	At least 1 multi-stakeholder network is established	At least 1 Multi-stakeholder network is established and operating.	Design document of the Network. Commitment of the actors to form the network Network operation plan	Interest and commitment of actors in forming a multi-stakeholder network. Promperu support.	National coordinator Consultant Promperu Network stakeholders.
	Number of alliances between stakeholders on the valuation of ABD products and services	0	At 1 alliance established and operating	At least 2 alliances established and operating	Formal commitment documents Work plans Information in media	Interest and commitment among stakeholders to set up alliances (RIMISP, Slow Food, IICA, AGAPE, ANPE)	National Coordinator Consultant Alliance members
	Number of interchanges and guided visits to experiences with alliances	N/A		200 interchanges and guided visits	Reports of interchanges and guided visits		
Output 2.1.5: Toolkit for improved access to guidance for promoting agroBD	Access of practitioners to guidance on market	No manual is available in the intervention areas	At least 5 focus groups carry out qualitative evaluation of the	1 manual (translated into local languages) on marketing links and value chain	Manual publication documents in local languages		

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
products through market linkages and labelling strategies.	linkages and value chain strategies		format and content of the manual	strategies published, disseminated and used by different actors in the value chains in the 5 target localities	Focus group minutes		
Component 3: Institutional and policy strengthening to mainstream agro-biodiversity conservation and sustainable use into operational frameworks							
Outcome 3.1 Enabling environment for the sustainable use of Agrobiodiversity strengthened	Number and area of regions with a strengthened enabling environment for the sustainable use of AgroBD			5 Regions, covering 184,853km^2, have an enabling environment strengthened for the sustainable use of ABD (4 national institutions, 5 GOREs and 5 GOLOs)		Political will to give priority to biodiversity PIPs	General Project Coordinator Regional Coordination Unit GORE General Administration EE INIA in the districts. MINAM, MINAGRI, INIA, SERFOR, AGRORURAL
Output 3.1.1: ABD information collected, systematized and disseminated among the institutions involved to improve decision-making, monitoring and evaluation of ABD conservation programs.	Status of systems and capacities for information management incorporating the GENESPERU platform and the INIA information platform	REIS created in regions with TA from MINAM; software installed but limited capacities for information generation: no specific module for collecting and systematizing ABD information: no communication with GENESPERU platform	50 regional officials trained in using REIS (6 in each region). Plan for prioritization of information to be included in the REIS according to the needs of each region	5 Regional Environmental Information Systems (REIS) are strengthened and incorporate the GENESPERU platform and the INIA information platform.	Project reports		National project coordinator Regional government – Administration of Planning and Informatics / Administration of Natural Resources

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 3.1.2: Revised policies and planning instruments to incorporate the principles of ABD conservation and integrated landscape management into 5 project regions.	Number of policy and planning tools reviewed to incorporate the principles of ABD conservation and integrated landscape management	District Concerted Development Plans (CDP) are in an incipient state and do not incorporate ABD conservation guidelines.	5 District Concerted Development Plans (CDPs) and 5 Regional Strategies for Biological Diversity (RSBDs) incorporate principles of ABD conservation and integrated landscape management.	13 District Concerted Development Plans (CDPs) and 5 Regional Strategies for Biological Diversity (RSBDs) incorporate principles of ABD conservation and integrated landscape management.	RSBD and CDP documents PIP Approval Ordinance Project Reports		General project coordinator GORE General administration General administration of the District Governments
	Number of Public Investment Projects (PIPs) designed to facilitate the implementation of the instruments	Limited capacities to access public resources for implementation of instruments		10 PIPs designed and submitted to facilitate the implementation of the instruments			
Output 3.1.3: Revised specific regulations and legal aspects are ready to allow the development and marketing of ABD products	Participatory Guarantee Systems (PGS) and PGS Regional Councils.	Cusco was in process of adopting PGS in August 2016. The other regions already have it.	PGS dissemination and awareness-raising workshops	GSP and GSP Regional Council approved by Regional Ordinance in Cusco.	Regional Ordinance Project Reports List of participants in dissemination workshops		General project coordinator General Administration of the Governments Agrarian Experimental Station (INIA) in the regional districts
	Traditional knowledge protection mechanisms for seed conservation		Regulation on seeds of native potatoes developed	Regulation on seeds of native potatoes disseminated in all 13 target districts. 500 families of producers are recognized as suppliers of traditional seeds.			
Output 3.1.4: An inter-institutional coordination	Provisions for inter-institutional coordination to	There is an ABD Technical Group (TG) led by INIA	ABD TG strengthened		Project reports		General project coordinator

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
mechanism to ensure alignment and consistency in management of agroecosystems based on ABD principles	ensure the consistency of approaches to agro-ecosystem management.	and is part of CONADIB.					
	Number of pilot communities with strengthened provisions and capacities in their organizational structures to provide for the conservation of ABD with a landscape approach	To be determined at project start	5 pilot communities	13 pilot communities	Project reports		Regional facilitators
Output 3.1.5: Capacity building program for institutional actors in territorial planning and sustainable use of ABD	Number of officials trained in territorial planning and sustainable use of ABD	Regional and local technical teams have limited capabilities in ABD management, Land Use Planning, data analysis and application, SFM and reforestation.	30 regional officials and 20 local staff trained.	100 regional officials and 50 local officials trained.	Training program Attendance sheets to the training workshops Project reports		General project coordinator General Administration of Regional Governments and District Governments.
Output 3.1.6: Communication and knowledge sharing strategies in ABD Services and benefits, traditional production practices, and the NIAHS concept are available	Access to knowledge on ABD services and benefits	Coverage of existing mechanisms for communication and dissemination of ABD services and benefits is limited.	1 Communication strategy for the positioning and dissemination of ABD services and benefits, traditional production practices, among different actors is designed	1 Communication strategy for the positioning and dissemination of ABD services and benefits, traditional production practices, among different actors	Strategy document Institutional reports (MIMAN, MINAGRI, SERFOR, INICA, others) Project reports Information and communication		Regional Coordination Unit Regional Legal Coordinator and Political Incidence Communication and Socio-cultural Expert Regional facilitators

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
to a wide variety of audiences for awareness, dissemination and replication		Dissemination and awareness of the NIAHS concept for is limited in the population, and among local, regional and national officials and authorities.		designed and implemented	materials and contents		MINAM, MINAGRI, INIA, SERFOR, AGRORURAL
Component 4: Monitoring, evaluation and dissemination of project information							
Outcome 4.1: Project implementation based on RBM and lessons learned/good practices documented and disseminated	Project implementation based on RBM and demonstrating sustainability			Satisfactory ratings of PIRs, PPRs and evaluations regarding project progress, effectiveness and sustainability	PIR PPRs Mid-term and final evaluations		Project Coordinator M&E specialist
Output 4.1.1 Project monitoring system operating and providing systematic information on progress in reaching expected outcomes and targets	Monitoring system designed and providing systematic information on progress in reaching expected outcomes and targets	N/A	4 six-monthly reports (2 PPR y 2 PIR)	4 six-monthly reports (2 PPR y 2 PIR)	PPR PIR		Project Coordinator M&E specialist FAO PROFONANPE
Output 4.1.2 Instruments for stakeholder participation in project management.	Degree of satisfaction among stakeholders regarding levels and effectiveness of participation in project management	N/A	All stakeholders express satisfaction with levels and effectiveness of participation in project management	All stakeholders express satisfaction with levels and effectiveness of participation in project management	Focus groups and consulations		Project Coordinator M&E specialist FAO PROFONANPE

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 4.1.3 Project-related best practices and lessons learned systematized and published for a variety of audiences and stakeholder groups	Publication containing best practices and lessons learned, together with plan for application of lessons learned	N/A		One publication containing best practices and lessons learned, together with plan for application of lessons learned			Project Coordinator M&E specialist FAO MINAM, MINAGRI PROFONANPE

APPENDIX 2. WORK PLAN

Example of acronyms: FAO Rep: FAO Representative in Peru; PCU: Project Coordination Unit; NPC: National Project Coordinator; LTO: Lead Technical Officer

Output	Activities	Responsible	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 1.1.1: Participatory systems established in pilot localities for the recovery, generation, transfer and interchange of knowledge on management and in situ ABD conservation	Overall review of current practices	PCU																
	Participatory assessments of ABD use and management in target sites	PCU																
	Systematization of the ABD use and management practices	PCU																
	Establishment of Farmer Field Schools (FFS)	PCU																
	Exchanges of experiences within and between the target localities	PCU																
Output 1.1.2: Seed production, management and supply systems ensuring farmers' access to high quality and diverse ABD genetic material in accordance with their needs and conditions	Inventories of genetic resources	PCU																
	Selection and capacity development of producers to collect and manage genetic material	PCU																
	Seed fairs and competitions	PCU																
	Establishment of community-managed seed banks for agroBD crops in each of the selected regions	PCU																
	Articulation of community seed banks with the National Germplasm Bank and the National Centre of Genetic Resources	PCU																
Output 1.1.3: Schemes to reward the maintenance of traditional ABD production systems, agreed in pilot localities	Establishment of capacity development programme	PCU																
	Studies of ecosystem services in the project intervention areas	PCU																
	Facilitation of negotiation and design of site-specific reward schemes	PCU																
Output 1.1.4: ABD zones in the target localities evaluated for recognition in accordance with Peruvian legislation, with associated	Initial screening of target localities as potential ABD zones	PCU																
	Development of integrated tool to monitor the status of agrobiodiversity	PCU																
	Validation and application of monitoring tool	PCU																

Output	Activities	Responsible	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
monitoring and management tools																		
Output 1.1.5 Capacities and strategies strengthened for dissemination and communication of knowledge and lessons generated in the pilot sites	Systematization of lessons generated in target localities in the form of guidelines for best practices of ABD management and conservation	PCU																
	Distribution of materials	PCU																
	Monitoring and follow-up	PCU																
Output 1.2.1: Planning and management instruments established and strengthened at different scales in the landscape, to promote the flows of ecosystem services needed for the maintenance of ABD and the sustainability of ABD production systems	Support to selected districts in the implementation of Ecologic and Economic Zoning	PCU																
	Support to development and implementation of Community Development Plans	PCU																
	Training workshops to strengthen mechanisms of interinstitutional coordination.	PCU																
	Support to establishment of Technical Commissions	PCU																
	Establishment of a technical group for forest management planning	PCU																
	Definition of strategies for the adoption of SFM	PCU																
	Generation of a portfolio of adequate SFM practices to be used in the pilot areas	PCU																
	Formulation of public investment projects to implement the management plans	PCU																
Output 1.2.2 Financial and economic instruments supporting ecosystem restoration and the maintenance of ecosystem services of importance for ABD	Establishment of capacity development programme	PCU																
	Studies of ecosystem services in the project intervention areas	PCU																
	Facilitation of negotiation and design of site-specific reward schemes	PCU																
Output 1.2.3: Support programmes implemented for ecosystem restoration,	Implementation of awareness raising strategies	PCU																
	Confirmation of pilot sites for restoration	PCU																
	Ecological and socioeconomic characterization	PCU																

Output	Activities	Responsible	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
for the maintenance of ecosystem services of importance for ABD.	of target sites and threats																	
	Development of toolbox of training materials and technical assistance, adapting FAO training modules and materials to the district context	PCU																
	Training leaders in the use of training modules and materials	PCU																
	Development of restoration proposals for each site	PCU																
	Implementation of restoration programmes in each site	PCU																
	Monitoring, systematization and dissemination	PCU																
Output 2.1.1 Strengthened market linkages between small-scale farmers (family farmers and indigenous communities) and local and regional markets, to support conservation through sustainable production of food and goods based on ABD.	Mapping of producers, products and markets in each territory	PCU																
	Participatory selection of pilots	PCU																
	Formulation of strategies and work plans, and confirmation of identities of partners	PCU																
	Capacity development in marketing and in enhancing sustainable and healthy food systems	PCU																
	Strengthening of producer associations and cooperatives	PCU																
	Support to the organization/development of territorial markets	PCU																
	Support to study tours and “knowledge route”.	PCU																
	Support to the definition and implementation of the marketing strategy in each pilot.	PCU																
	Sharing experience between the pilots, through local workshops and field visits to share difficulties, solutions, perspectives.	PCU																
Output 2.1.2. Value chain strategy supported and strengthened	Selection of target producers and formulation of training modules	PCU																
	Provision of training to producers	PCU																

Output	Activities	Responsible	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
to improve inclusion of small-scale producers, young and women, and creation of employment while enhancing the marketing of agroBD products in the Andes	Support to development of marketing strategies and establishment of business partnerships	PCU																
	Support to the improvement of processing activities through SMEs (market studies identification of potential buyers, organization of business roundtables, support to negotiation of contracts)	PCU																
	Provision of technical assistance to existing SMEs (support in marketing, organization of supply from small farmers, quality control and food safety)	PCU																
	Promotion of agroBD all along the value chains, with buyers, traders, food processors, exporters, retailers, etc,	PCU																
	Implementation of user-friendly information system on prices and markets.	PCU																
Output 2.1.3: Geographical indication (GI), area labelling or certification standards developed for ABD-based products	*Development of area labelling in Peru and establishment of certification system*	PCU																
	Identification of the requirements that the area labelling standards must fulfill through a participatory process with participation of producers and local governments	PCU																
	Establishment of the network of actors for the management of area labelling	PCU																
	Definition of standards for 6 product categories and 2 services promoting ABD products in the labelling area	PCU																
	Implementation of PGS certification system, field testing and validation of the certification scheme	PCU																
	Capacity development for the proper management of the area labelling	PCU																
	Promotional activities linking with tourism	PCU																

Output	Activities	Responsible	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Development of Geographic Indications and establishment of certification system																	
	Support to the preparation (for new DOs) and revision (if needed for existing DOs), of the specification	PCU																
	Strengthening of associativity, at horizontal and vertical levels	PCU																
	Capacity development, including exchanges of experiences with other successful DOs in Peru and other countries	PCU																
	Identification and testing of the most suitable certification system	PCU																
	Support to management of the Regulatory Council	PCU																
	Knowledge sharing with other producers and producer associations to disseminate lessons learned	PCU																
	Support to the implementation of Organic Certification (third party or PGS)																	
	Facilitation of contacts between producers' or their associations and certifying agency	PCU																
	Support to the preparation of the required forms	PCU																
	Support and technical assistance for any changes in practices required to comply with the standard of organic certification	PCU																
Output 2.1.4: Multi-stakeholder networks and alliances established to promote the commercialization of ABD-based products, increase	Identification of the stakeholders to be part of the network(s)	PCU																
	Knowledge sharing among partners to identify alliances, objectives and activities	PCU																
	Definition of awareness strategy and activities	PCU																
	Regular information sharing about project activities, results	PCU																

Output	Activities	Responsible	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
market access and improve livelihoods.	Organization of producers' tours to interesting initiatives to learn from experiences and replicate elements in their territories.	PCU																
Output 2.1.5: Toolkit for improved access to guidance for promoting agroBD products through market linkages and labelling strategies.	Identification of materials, tools and publications that can guide stakeholders in the promotion of agroBD through market linkages and labeling	PCU																
	Translation in local languages and adaptation to the level of farmers	PCU																
	Definition and establishment of the toolkit to improve access to all these materials (e.g. on-line portal)	PCU																
	Dissemination of tools as hard copies distributed in local communities	PCU																
Output 3.1.1: ABD information collected, systematized and disseminated among the institutions involved to improve decision-making, monitoring and evaluation of ABD conservation programs.	Analyses of information requirements	PCU																
	Strengthening of Regional Environmental Information Systems, including training of functionaries of regional governments	PCU																
	Preparation of plan of prioritization of information to be included in the SIAR, according to the needs of each region.	PCU																
	Design of information exchange protocols, together with development of the logical model of information storage.	PCU																
	Assistance with the incorporation into the SIAR of the genetic information managed through the GENESPERU platform	PCU																
Output 3.1.2: Revised policies and planning instruments to incorporate the principles of ABD conservation and integrated landscape management into 5 project regions.	Updating of Regional Biodiversity Strategies 2019-2021 and design of implementation plans	PCU																
	Review and updating of District Development Plans	PCU																
	Provision of consultancy support for the formulation of Public Investment Projects and the inclusion of the PIPs in the multi-year investment programme.	PCU																

Output	Activities	Responsible	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 3.1.3: Revised specific regulations and legal aspects are ready to allow the development and marketing of ABD products	Support to SENASA through the organization of workshops for promotion and dissemination of the Participatory Guarantee System	PCU																
	Support to Regional Government of Cusco in the creation of the Regional Council of Participatory Guarantees	PCU																
	Support to INIA in preparation of printed and audiovisual material on the Regulation for production of traditional seed, and organization of workshops to disseminate the Regulation.	PCU																
Output 3.1.4: An inter-institutional coordination mechanism to ensure alignment and consistency in management of agroecosystems based on ABD principles	Negotiations to confirm identity, membership and roles of mechanisms to promote coordination of efforts between institutional actors involved in agroecosystem management and agrobiodiversity conservation	PCU																
	Facilitation of the establishment or strengthening of mechanisms	PCU																
Output 3.1.5: Capacity building program for institutional actors in territorial planning and sustainable use of ABD	Capacity Building Needs Analyses to confirm content and methodology of training modules to be delivered to different actors	PCU																
	Delivery of training modules	PCU																
	Monitoring of effectiveness of capacity development, and follow-up	PCU																
Output 3.1.6: Communication and knowledge sharing strategies on in ABD services and benefits, traditional production practices, and the NIAHS concept	Design of communication strategy will be aiming to position and disseminate project activities developed to date	PCU																
	Implementation of communication and knowledge sharing strategies	PCU																
	Monitoring of effectiveness of communication and knowledge sharing	PCU																
Output 4.1.1 Monitoring system project operating and providing systematic information on progress in	Review of M&E system and indicators	PCU/LTO																
	Collection of pending baseline data	PCU																
	Preparation of six-monthly Project Progress Reports	PCU, LTO, FAO BH																

Output	Activities	Responsible	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
reaching expected outcomes and targets	Preparation of PIRs	PCU, FAO LTO, FAO BH, FAO FLO																
	Mid-Term Review (MTR)	PCU, FAO LTO, FAO BH, FAO FLO, FAO OED																
	Adjustment of implementation and sustainability strategies to recommendations of Midterm Review	PCU, FAO LTO, FAO BH, PSC																
	Final Evaluation	FAO OED, PCU, FAO LTO, FAO BH, FAO FLO																
Output 4.1.2 Instruments for stakeholder participation in project management	Inception workshop	PCU, LTO, FAO BH																
	Updating, validation and finalization of stakeholder and gender strategies	PCU																
	Consultations with indigenous stakeholders and representatives to obtain FPIC	PCU, FAO LTO																
	Participation of stakeholder representatives in mid-term and final evaluations	PCU																
Output 4.1.3 Project-related best practices and lessons learned systematized and published for a variety of audiences and stakeholder groups	Planning of communication strategy	PCU																
	Formulation of communication strategy	PCU																
	Formulation and dissemination of communication materials	PCU																

APPENDIX 3. PROJECT BUDGET

18.09.2017_Total
Budget GEF 9092.final

APPENDIX 4. RISK MATRIX

Risk statement	Impact	Likelihood	Mitigation measures	Responsible
• Changes in national or local authorities. • Local authorities show little interest in the project and refuse or delay the adoption of the provisions of the environmental authority in the updating of local and land use plans.	Regional policies and strategies will continue without incorporating the agrobiodiversity consideration and landscape approach. Interventions that will continue degrading the environment. Reduced involvement of authorities in the project and ownership of results.	M	Institutional strengthening and the definition of clear roles for each institution participating in the project, along with technical support and coordination arrangements will constitute support tools for project management at the regional and local levels. Government agencies have formally committed to participate in the project through co-financing letters. Additionally specific agreements for the implementation of activities will be signed. Participatory spaces for discussion with the involved local authorities will be agreed. (Project Steering Committee?)	PSC and Project Direction
Loss of interest of the government officials in the training. High turnover of officials in Regional and local government.	Regional policies and strategies will continue without incorporating the agrobiodiversity consideration and landscape approach. Limited ownership of results.	MH	Involvement of more than one Government official per region, especially in middle level technical positions: not only Heads of Natural Resources and Environment, Planning and Budgets, Agriculture and Economic Development, but the technical staff that work with them.	Project Coordinator and Project Director
Lack of interest of local communities and community leaders to participate in the project.	Persistent pressures on natural resources, loss of agrobiodversity. Local communities do not improve their livelihoods through sustainable production	M	Design a participatory communication plan Awareness-raising and wide dissemination of the project among communities and stakeholders involved. Maintain an ongoing consultation with community leaders and organize discussion groups with men, women, youth and the elderly. Include community leaders in discussions on project planning and implementation. Establish clear agreements and commitments prior to the start of project implementation (Commitment in plans).	Project coordinator Local authorities Community leader
Socio-environmental conflict:		M	Permanent monitoring with periodic reports from the	Project coordinator

Risk statement	Impact	Likelihood	Mitigation measures	Responsible
mining, delimitation of boundaries, lands.			state of potential socio-environmental conflicts identified in each district / region. Maintain close coordination with MINAM, MINAGRI, Ombudsman, local and regional governments. Formulate and implement a Participatory Risk Management Plan with a gender focus in each district / region.	Local authorities Community leader MINAM, MINAGRI, Ombudsman
Participating entities fail to meet co-financing commitments	The project does not achieve the expected impact due to lack of availability of co-financing to complement GEF intervention.	L	Participating institutions have signed co-financing letters for the project. These institutions are also members of the Project Steering Committee; this will help to ensure to a greater extent their commitment to the project. Under the PSC issues related to co-financing contributions will be coordinated to ensure these commitments in the annual budgetary allocations of institutions and contributions, either in cash or in-kind, will be monitored.	PSC and Project Direction
Sequence of climate change related events affect the target population	Loss of goods and agricultural production due to extreme events.	H	Project activities related to biodiversity conservation, including the productive transformation, improve coverage and restoration of native vegetation, and are expected to increase resilience to potential impacts of climate change and variability. Strengthen/improve the adaptive capacity and social resilience of rural communities to adapt to climate change through: revaluation of traditional knowledge, strengthening of the traditional seeds system (conservation and exchange).	Project coordinator Local authorities Community leader MINAM, MINAGRI
Increase in the migration phenomena. Lack of participartion of youth and women.	Delay or impediment in the implementation of activities. Local communities do not improve their livelihoods through sustainable production	M	The project will encourage the empowerment and involvement of women and youth and pomote equal access of men and women to opportunities	Project coordinator Local authorities Community leader MINAM, MINAGRI

APPENDIX 5. ENVIRONMENTAL AND SOCIAL ASSESSMENT

Environmental and Social Risk Identification: Applicable Environmental and Social Safeguards

Question	YES
SAFEGUARD 1 NATURAL RESOURCES MANAGEMENT Could this project: • result in the degradation (biological or physical) of soils or undermine sustainable land management practices; or • include the development of a large irrigation scheme, dam construction, use of waste water or affect the quality of water; or • reduce the adaptive capacity to climate change or increase GHG emissions significantly; or • result in any changes to existing tenure rights[125] (formal and informal[126]) of individuals, communities or others to land, fishery and forest resources?	
SAFEGUARD 2 BIODIVERSITY, ECOSYSTEMS AND NATURAL HABITATS Would this project be executed in or around protected areas or natural habitats, decrease the biodiversity or alter the ecosystem functionality, use alien species, or use genetic resources?	x
SAFEGUARD 3 PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE Would this project: • introduce crops and varieties previously not grown, and/or; • provide seeds/planting material for cultivation, and/or; • involve the importing or transfer of seeds and or planting material for cultivation or research and development; • supply or use modern biotechnologies or their products in crop production, and/or • establish or manage planted forests?	
SAFEGUARD 4 ANIMAL (LIVESTOCK AND AQUATIC) GENETIC RESOURCES FOR FOOD AND AGRICULTURE Would this project introduce non-native or non-locally adapted species, breeds, genotypes or other genetic material to an area or production system, or modify in any way the surrounding habitat or production system used by existing genetic resources?	

SAFEGUARD 5 PEST AND PESTICIDES MANAGEMENT
Could this project:
• result in the direct or indirect procurement, supply or use of pesticides127:
  ○ on crops, livestock, aquaculture, forestry, household; or
  ○ as seed/crop treatment in field or storage; or
  ○ through input supply programmes including voucher schemes; or	

[125] Tenure rights are rights to own, use or benefit from natural resources such as land, water bodies or forests

[126] Socially or traditionally recognized tenure rights that are not defined in law may still be considered to be 'legitimate tenure rights'.

[127] Pesticide means any substance, or mixture of substances of chemical or biological ingredients intended for repelling, destroying or controlling any pest, or regulating plant growth.

○ for small demonstration and research purposes; or ○ for strategic stocks (locust) and emergencies; or ○ causing adverse effects to health and/or environment; or • result in an increased use of pesticides in the project area as a result of production intensification; or • result in the management or disposal of pesticide waste and pesticide contaminated materials; or • result in violations of the Code of Conduct?	
SAFEGUARD 6 INVOLUNTARY RESETTLEMENT AND DISPLACEMENT Could this project permanently or temporarily remove people from their homes or means of production/livelihood or restrict their access to their means of livelihood?	
SAFEGUARD 7 DECENT WORK Could this project affect the current or future employment situation of the rural poor, and in particular the labour productivity, employability, labour conditions and rights at work of self-employed rural producers and other rural workers?	
SAFEGUARD 8 GENDER EQUALITY Could this project risk overlooking existing gender inequalities in terms of men's and women's participation in decision making and/or their differential access to productive resources, services and markets?	
SAFEGUARD 9 INDIGENOUS PEOPLES AND CULTURAL HERITAGE Would this project: • have indigenous peoples[128] living outside the project area [129] where activities will take place; or • have indigenous peoples living in the project area where activities will take place; or • adversely or seriously affect on indigenous peoples' rights, lands, natural resources, territories, livelihoods, knowledge, social fabric, traditions, governance systems, and culture or heritage (physical[130] and non-physical or intangible[131]) inside and/or outside the project area; or • be located in an area where cultural resources exist?	x

[128] FAO considers the following criteria to identify indigenous peoples: priority in time with respect to occupation and use of a specific territory; the voluntary perpetuation of cultural distinctiveness (e.g. languages, laws and institutions); self-identification; an experience of subjugation, marginalization, dispossession, exclusion or discrimination (whether or not these conditions persist).

[129] The phrase "Outside the project area" should be read taking into consideration the likelihood of project activities to influence the livelihoods, land access and/or rights of Indigenous Peoples' irrespective of *physical* distance. In example: If an indigenous community is living 100 km away from a project area where fishing activities will affect the river yield which is also accessed by this community, then the user should answer "YES" to the question.

[130] Physical defined as movable or immovable objects, sites, structures, group of structures, natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic or other cultural significance located in urban or rural settings, ground, underground or underwater.

[131] Non-physical or intangible defined as "the practices, representations, expressions, knowledge and skills as well as the instruments, objects, artifacts and cultural spaces associated therewith that communities, groups, and in some cases individuals, recognize as part of their spiritual and/or cultural heritage"

APPENDIX 6. ENVIRONMENTAL AND SOCIAL IMPACT MITIGATION PLAN

FAO Risk Management Plan

According to FAO's Environmental and Social Guidelines, the project has been classified as *Moderate Risk*. An Environmental and Social Analysis has been carried out during full project preparation. Potential risks and mitigation measures identified are summarized in the following table.

FAO Risk List #	Risk identified	Risk Classification	Risk Description in the project	Mitigation Action (s)	Progress on mitigation action	Indicators
2.1	Project may be implemented within a legally designated protected area or its buffer zone, in this case Private Conservation Areas (ACP, from their name in Spanish)	Moderate	While there are no government protected areas in the project area, there are five ACPs in the districts selected for project implementation: Lomas de Atiquipa, Hatun Queuña – Quishuarani, Pampacorral, Sele Tecse - Lares Ayllu and Síete Cataratas - Qanchis Paccha. The ACP are private properties whose owners voluntarily accept specific government prescribed terms and conditions of use, in order to ensure the conservation of biological diversity, landscapes and environmental services. ACP are recognized by the government through a ministerial recognition. Activities permitted in each ACP are defined by the owner in accordance with the zoning. Each ACP includes a Limited Use Zone, and a Multiple Use Zone. Specific location of pilot sites will be defined at project	Ensure project activities do not undermine the ACPs and compliment the work already been undertaken in these areas wherever possible. Ensure the ACPs are included at project inception and during implementation as one of the major stakeholders. Mitigation actions specific to each selected ACP will be defined at project inception. This risk will be monitored on an ongoing basis during the implementation of the projects and the necessary adjustments made should any issue arise.		- Attendance of ACP managers, or their representatives at the project inception meeting as a stakeholder. - Inclusion of the ACP managers, or their representatives, in the project´s implementation of the project. - participation of the ACP managers, or their representatives in the project´s conservation activities.

FAO Risk List #	Risk identified	Risk Classification	Risk Description in the project	Mitigation Action (s)	Progress on mitigation action	Indicators
			inception in a participatory manner. In case an ACP or part of it is selected as pilots site, activities will be carefully designed taking into account ACP zoning and conservation objective, in order to avoid any negative impact on the protected landscape.			
2.5	Access to and use of genetic resources (ABD - agricultural biodiversity) or traditional knowledge (TK) TK that is held by farmers, indigenous, local communities and/or farmers by third parties for the utilization and/or access of this ABD and TK for research, utilization or gain.	Moderate	Farmers will be accessing their own unique genetic materials for planting and utilization. However, a risk arises during the conservation, marketing and consumption of these products as there is a small risk of consumers, other farmers or institutions (public and / or private) retaining or accessing some of this germplasm or knowledge for their own future production or gains. While this is unlikely, the project recognizes this risk and therefore has built the provisions of benefits sharing into the proposal.	For plant genetic resources for food and agriculture (PGRFA) falling under the **Multilateral System of Access and Benefit-sharing (MLS)** of the International Treaty on Plant Genetic Resources for Food and Agriculture (Treaty), provides the Standard Material Transfer Agreement (SMTA) which is to be signed by users (including private or public institutions) of the material and the providers of the material, and comply with SMTA provisions. This provides farmers and ABD and TK owners with direct oversight the institutional use of this knowledge and germplasm. For genetic resources or knowledge (including private or public institutions), other than PGRFA falling under the MLS of the Treaty: 1. Ensure that, subject to domestic access and benefit-sharing		- Documentation on MLS and-or other agreements between the owners of the genetic material or traditional knowledge holders and users of the genetic material or traditional knowledge. - The monitoring of agreed indicators for the monitoring of the agreements included in the project M&E system and evaluated

FAO Risk List #	Risk identified	Risk Classification	Risk Description in the project	Mitigation Action (s)	Progress on mitigation action	Indicators
				legislation or other regulatory requirements, prior informed consent has been granted by the country providing the genetic resources that is the country of origin of the resources or that has acquired the resources in accordance with the Convention on Biological Diversity, unless otherwise determined by that country; and 2. Ensure that benefits arising from the utilization of the genetic resources or traditional knowledge as well as subsequent applications and commercialization are shared in a fair and equitable way with the country providing the genetic resources that is the country of origin of the resources or that has acquired the resources in accordance with the Convention on Biological Diversity; and 3. Ensure that, in accordance with domestic law, prior informed consent or approval and involvements of indigenous and local communities is obtained for access to genetic resources or traditional knowledge where the indigenous and local communities have the established right to grant such resources; and		during each PPR and PIR.

FAO Risk List #	Risk identified	Risk Classification	Risk Description in the project	Mitigation Action (s)	Progress on mitigation action	Indicators
				4. Ensure that, in accordance with domestic legislation regarding the established rights of these indigenous and local communities over the genetic resources or traditional knowledge are shared in a fair and equitable way with the communities concerned, based on mutually agreed terms. This risk will be monitored on an ongoing basis during the implementation of the project and the necessary adjustments made should any issue arise.		
5.1 5.4	Use of pesticides	Moderate	The project will not procure, supply or encourage the use of pesticides. However, the existing production practices in the project areas do include the limited use of pesticides. A key component of this project is sustainable production and this is based on agro-ecological principles and the use of biological control whenever these options exist. Therefore, it is the intent of the project to reduce, or eliminate, pesticide usage. A successful project will also result in increased intensification and the expansion of production, but given 5.1, it is not intended that there will	Clearly identify all uses (and frequency of usage) of pesticides, both for normal production and emergency measures. Actively seek ways of eliminating or reducing usage through the adherence to agro-ecological practices, integrated pest management, improved training and the development of systems that ensure pesticides are used only if there are no other alternative practices available. Ensure all pesticide usage and application is within the framework of the national legislation and regulations, and consistent with *FAO*		Procedures to M&E the use of pesticides during the duration of the project will be discussed and established during the project inception meeting. The intention is to ensure these are included in M&E of other agronomic activities of the project.

FAO Risk List #	Risk identified	Risk Classification	Risk Description in the project	Mitigation Action (s)	Progress on mitigation action	Indicators
			be a corresponding increase in pesticide usage.	*The International Code of Conduct on Pesticide Management*		
7.2	Vulnerability of subsistence producers and other vulnerable informal agricultural workers in the value chain	Moderate	The focus of this project is subsistence and family farmers (including indigenous people) and if the project is not successfully implemented, then their economic or food security status may not improve or in fact may get worse. Given the current commitment to this project from the government and other stakeholders, it is thought this risk very small although possible.	The increased and/or diversification of livelihood options to mitigate any risk of failure of value chain options.		Documentation on: i. the conservation and utilization of ABD and TK in the project, ii. increased livelihood options, and iii. increased value chain opportunities.
9.2	Indigenous peoples living in the project area where activities will take place	Moderate	The primary stakeholders in this project are the family farmers i.e. indigenous peoples and *comunidades nativas*. The indigenous people in particular, with their organizations, have specific national legal existence and juridical personality. These indigenous families inhabit and control certain territories, and are linked by ancestral, social, economic and cultural ties, expressed in communal land	**Free, Prior and Informed Consent** (FPIC) will be implemented throughout the project life cycle and will include all concerned communities in accordance with FAO Policy on Indigenous and Tribal People and following the guidelines of the Free, Prior and Informed Consent Manual. Implementation of FPIC started during full project preparation. In line with the FAO manual which identifies 6		- Reports documenting the agreements reached with indigenous people, including a complaint mechanism (one per community). - Indicators for the monitoring of the

FAO Risk List #	Risk identified	Risk Classification	Risk Description in the project	Mitigation Action (s)	Progress on mitigation action	Indicators
			ownership, communal work, mutual assistance, democratic governance and the development of multi-sectoral activities. Their organization´s purpose is to ensure the full realization of its members objectives and integration into mainstream society.	steps to implement the FPIC process, the first two steps were undertaken: (1) *Identify the Indigenous Peoples' concerns and their representatives* and (2) *Document geographic; and demographic information through participatory mapping*, have been completed with some of the communities. Project activities to be developed during the implementation of the project were agreed upon taking into consideration communities' concerns and needs and as a result of a series of participatory workshops held during project preparation. Steps (3) *Design a participatory communication plan and carry out iterative discussions through which project information will be disclosed in a transparent way;* and (4) *Reach consent, document Indigenous Peoples' needs that are to be included into the project, and agree on a feedback and complaints mechanism* will be finalized at project inception with all the communities involved. Step (5) *Conduct participatory monitoring and evaluation of the agreement* will be implemented throughout the life of		agreements included in the project M&E system and evaluated each PPR and PIR. - Document any Benefit Sharing Agreements that arise during the project and the monitoring their implementation. - Documentation on the culture and traditional knowledge of the indigenous people within the project area.

FAO Risk List #	Risk identified	Risk Classification	Risk Description in the project	Mitigation Action (s)	Progress on mitigation action	Indicators
				the project, while Step (6) *Document lessons learned and disclose information about project achievements* will be undertaken in PY 4. Sufficient resources for the implementation and monitoring of the process have been foreseen in the project budget. In addition, one of the key objectives of this project is the maintenance and support for indigenous people's culture and traditional knowledge.		

APPENDIX 7. DRAFT TERMS OF REFERENCE[132]

1.-Project Coordinator

I. Profile:

Economist, administrator or related professional, preferibly with qualification in project administration, or development of agricultural/environmental projects or others. With Masters degree in management/conservation of natural resources, natural resource and environmental economics, management of environmental projects, etc.

II. Experience

- At least 10 years of experience in the management and coordination of rural development projects and/or support to producer organizations and/or *campesino* communities at national/regional/local levels. The responsibilities of the PC will be of a technical and management nature.
- Experience in the management of projecys in the public/private sector with external funding. Desirable: experience in the management of other GEF projects.
- Experience in policies and management of agrobiodiversity and ecosystems
- Extensive knowledge of the national context
- Good knowledge of and relations with national institutions (MINAGRI, MINAM etc.)
- Experience with working in regions and communities of the country, preferably including those covered by the project.

III. Abilities

- Knowledge of the problems in the target regions of the project, with emphasis on rural areas
- Adequate knowledge of written and spoken English
- Knowledge of local languages (Quechua and Aymara)
- Knowledge of techniques and instruments for economic and financial evaluation
- Knowledge of methods of participatory planning
- Knowledge of gender and environmental approaches
- Capacity to relate with others and carry out adequate interinstitutional coordination
- Capacity to prepare conceptual and technical reports

IV. Attitudes

- Positive valuation of *campesino* culture
- Respect of local institutionality
- Leadership capacity
- Respect of colleagues and collaborators
- Willingness to work in a team
- Capacity to work in environments of high pressure
- Democratic and tolerant behaviour

V. Working conditions

Willingness to reside in the project target areas for at least 60% of the implementation period, with 40% of time in Lima for coordinations at national and regional levels.

[132] Consultants' Terms of Reference will be revised and validated during the project's inception.

VI. Functions/activities

This is a full-time post. The PC will work in the offices of MINAM and under the supervision of MINAM for 40% of their time and 60% of time will be spent in the target areas. The PC will report to the Project Direction, which for daily coordination will be represented by the Project Director.

During the 40% of time that is spent in Lima (in the offices of MINAM), the functions of the PC will be as follows:

1) Preparation and proposal of annual operational plans and specific work plans, acting under the supervision of the Project Director. These plans will be based on the ProDoc and will monitoring will be carried out on a six-monthly basis or as required by the Project Direction.
2) Participation in processes of selection of candidates for specialists required by the project in accordance with the annual operational plan and the ProDoc.
3) Maintenance of close communication and coordination with FAO, MINAM and MINAGRI and with the Deputy Coordinator.
4) Establishment, coordination and maintenance of effective communication with the different sectors and functionaries of the Directorates that form part of the Technical Consultative Committee, to facilitate the attainment of project objectives and results and create synergy between sectors and coordination at national and regional levels.
5) Exploration and promotion of synergies with other important existing initiatives and national, regional and local levels.
6) Drafting of the preliminary versions of the ToRs of the project team, subject to review by the Project Direction, to be approved by the Steering Committee, and carrying out of interviews with local and regional consultants in accordance with the procurement plan of the project.
18) Presentation of technical and financial progress reports on a six-monthly basis at different stages of the project, using FAO and GEF formats, in accordance with the specified products and on the dates foreseen. All of the reports will be subject to review and will only be considered as final once comments and observations have been incorporated and they have been approved by MINAM, MINAGRI and FAO. All of the processes, plans and financial and administrative reports will be coordinated with MINAM and MINAGRI in accordance with the ProDoc and the agreements undertaken with FAO.

The Project Coordinator will spend around 60% of their time in the regions and will have the following functions:

1) Direction and supervision of the implementation of activities in the regions. The PC will review all the technical products developed by those responsible for the components, the deputy coordinator and regional facilitators, to guarantee their alignment with the objectives of the project and quality standards.
2) Coordination of the execution of all of the products and activities of the annual operational plans and work plans to guarantee their timely and efficient implementation
3) Monitoring and evaluation in the field of project progress and ensuring the timely delivery of results, outputs and activities in accordance with the monitoring and evaluation guidelines of the project.

4) To ensure the integrated and complementarity nature of the three technical components of the project during its implementation, and compliance with the approaches considered in each component at the time of approval by GEF.

Information, monitoring and evaluation activities:

- Participation in ongoing and ex post evaluations of market promotion plans
- Periodic evaluation of the performance of the market promotion teams in each target area
- Production of systematic and regular information for the indicators selected by the Project Monitoring System
- Preparation of periodic reports for the leadership and the monitoring unit of the project, indicating any difficulties and adjustments carried out during execution, and formulation of recommendations to improve the management of the project.

Programmatic activities:

- Implementation, subject to the conditions in each project area, of the activities of promotion and dissemination of the Market Promotion component, in accordance with the design of the project and the policies of MINAM
- Formulation and execution of the plan of activities and respective investment plan for each component within the framework of the Annual Operational Plan.
- Participation in meetings and regular and extraordinary technical events of the project.
- Incorporation into the execution of all activities of the provision of the gender strategy of the project.
- Assess and control the possible environmental impacts of requests made by project beneficiaries.

362. This will be a full time post, with 100% of time spent in the region selected as the locality for the Terrtorial Management Unit of the project. The functions of this post will be:

12) Carry out monitoring in the field of project advances and ensure the timely delivery of inputs and outputs.

13) Assist the PC in the preparation of the annual operational plan and specific work plans, including proposals of methodologies to achieve the results and outputs foreseen in the project and the work plan

14) Collaborate with the PC in the establishment, coordination and maintenance of effective communication with different sectors, stakeholders and national, regional and local authorities, to facilitate the achievement of outputs and activities of the project and create synergies between the participating actors.

15) Lead responsibility for Component 3 of the project

16) Drafting of preliminary version of ToRs for consultants in accordance with the procurement plan of the project.

17) Assist the PC in the coordination of the execution of all the activities foreseen in the annual operational plan and workplans, to guarantee the timely and efficient implementation of outputs and activities of the project.

18) Assist the PC in the coordination and calling of meetings with persons responsible for decision-making, to obtain their support for the project and promote project products.

19) Support the PC in the organization of meetings of the Territorial Management Unit and prepare agendas and minutes.

20) Assist the PC in the formulation of the different reports related to the project.

21) Support the PC in the supervision of consultants and project activities.

22) Interact and coordinate with consultants and stakeholders during the preparation of documents and materials aimed at achieving the different outputs and activities of the annual operational plan and the workplans of the project.

2.- Deputy Project Coordinator and Responsible for Component 3

I. Profile:

Graduate in social or natural sciences, with advance knowledge of ABD and other related issues, reforestation and ecosystem management. With Masters in natural resource and environmental economics, management of environmental projects, public/private investment projects, results-based management etc.

II. Experience

- At least 7 years of experience in the management and coordination of rural development projects and/or support to producer organizations and/or campesino communities at national/regional/local levels. The responsibilities of the DPC will be of a technical and management nature.
- Experience in the formulation and implementation of regional Biodiversity Strategies in the regions of Peru, agreed Development Plans at regional/provincial or local levels.
- Experience in working at the level of Direction in regional Governments.
- Experience in the management of projects in the public/private sector with external funding. Desirable: experience in the management of other GEF projects.
- Extensive knowledge of the national context
- Good knowledge of and relations with regional institutions (Regional and Local Governments, etc.)
- Experience with working in regions and communities of the country, preferably including those covered by the project.

III. Abilities

- Knowledge of the problems in the target regions of the project, with emphasis on rural areas
- Desirable: adequate knowledge of written and spoken English
- Knowledge of local languages (Quechua and Aymara)
- Knowledge of techniques and instruments for economic and financial evaluation and public/private projects
- Knowledge of methods of participatory planning
- Knowledge of gender and environmental approaches
- Capacity to relate with others and carry out adequate interinstitutional coordination
- Capacity to prepare conceptual and technical reports

IV. Attitudes

- Positive valuation of *campesino* culture
- Respect of local institutionality

- Leadership capacity
- Respect of colleagues and collaborators
- Willingness to work in a team
- Capacity to work in environments of high pressure
- Democratic and tolerant behaviour

V. Working conditions

Willingness to reside in the project target areas for 100% of the implementation period. 60% of their time will be spent on functions as Deputy Project Coordinator and 40% as leader of Component 3.

VI. Functions/tasks

This will be a full time post, with 100% of time spent in the region selected as the locality for the Territorial Management Unit of the project. The functions of this post will be:

1) Carry out monitoring in the field of project advances and ensure the timely delivery of inputs and outputs.
2) Assist the PC in the preparation of the annual operational plan and specific work plans, including proposals of methodologies to achieve the results and outputs foreseen in the project and the work plan
3) Collaborate with the PC in the establishment, coordination and maintenance of effective communication with different sectors, stakeholders and national, regional and local authorities, to facilitate the achievement of outputs and activities of the project and create synergies between the participating actors.
4) Lead responsibility for Component 3 of the project
5) Drafting of preliminary version of ToRs for consultants in accordance with the procurement plan of the project.
6) Assist the PC in the coordination of the execution of all the activities foreseen in the annual operational plan and workplans, to guarantee the timely and efficient implementation of outputs and activities of the project.
7) Assist the PC in the coordination and calling of meetings with persons responsible for decision-making, to obtain their support for the project and promote project products.
8) Support the PC in the organization of meetings of the Territorial Management Unit and prepare agendas and minutes.
9) Assist the PC in the formulation of the different reports related to the project.
10) Support the PC in the supervision of consultants and project activities.
11) Interact and coordinate with consultants and stakeholders during the preparation of documents and materials aimed at achieving the different outputs and activities of the annual operational plan and the workplans of the project.

Specific responsibilities under Component 3:

1) Ensuring compliance with the indicator targets of Component 3
2) Strengthening of the Regional Environmental Information Systems (SIAR), including the training of functionaries of regional governmenta and the incorporation into the SIAR of the genetic information managed through the GENESPERU platform.
3) Updating of Regional Biodiversity Strategies for 2019-2021 and design of implementation plans
4) Review and updating of District Development Plans

5) Directing and supporting consultancies for the formulation of Public Investment Projects (PIPs) and their inclusing in the multiannual investment programme.
6) Coordination with the National Agricultural Health Service (SENASA) through the organization of workshops for the promotion and dissemination of the Participatory Guarantee System
7) Coordination with the Regional Government of Cusco in the creation of the Regional Council of Participatory Guarantees
8) Coordination with INIA in the preparation of printed and audiovisual material on the regulation for the production of traditional seeds, and the organization of workshops to disseminate the regulation.
9) Negotiation with different stakeholders to confirm the identify, incorporation and functions of mechanisms for promoting the management of agroecosystems and the conservation of ABD, and facilitation of the establishment or strengthening of the mechanisms.
10) Design and implementation of the programme for the development of capacities for institutional actors in issues of territorial land use planning and the sustainable use of ABD.

3.- Responsible for Component 1: Expert in Agrobiodiversity and conservation of native species

I. Profile

Graduate in agronomy of related speciality; with advanced knowledge of ABD and other issues related to the management and conservation of native crops. With Masters in natural resource management and conservation natural resource and environmental economics, management of environmental projects, etc.

II. Experience

- At least 8 years of professional experience in rural development and the implementation of technological packages of best agricultural practices and in the conservation of Andean ABD crops.
- Proven capacity to carry out work in the field, to work in a team and to establish working relations with institutions of central and local governments and civil society organizations.
- Preferibly with working experience in the high Andes.
- Excellent oral and written abilities.
- Experience in the management of projects in the public/private sector with external funding. Desirable: experience in the management of other GEF projects.
- Extensive knowledge of the national context and the local context of the intervention areas.
- Good knowledge of and relations with national and regional institutions (Regional and Local Governments, MINAM, MINAGRI etc.)
- Experience with working in regions and communities of the country, preferably including those covered by the project.

III. Abilities

- Knowledge of the problems in the target regions of the project, with emphasis on rural areas

- Knowledge of local languages (Quechua and Aymara)
- Knowledge of techniques and instruments for economic and financial evaluation
- Knowledge of methods of participatory planning
- Knowledge of gender and environmental approaches
- Capacity to relate with others and carry out adequate interinstitutional coordination
- Capacity to prepare conceptual and technical reports

IV. Attitudes

- Positive valuation of *campesino* culture
- Respect of local institutionality
- Leadership capacity
- Respect of colleagues and collaborators
- Willingness to work in a team
- Capacity to work in environments of high pressure
- Democratic and tolerant behaviour

V. Working conditions

Willingness to reside in the project target areas for 100% of the implementation period.

VI. Functions/tasks

This will be a full time post, reporting to the Project Coordinator. The management functions of this post will be:

1) To support the Project Coordinator in addressing the advances, difficulties and lessons learned in the implementation of Component 1.
2) Assist the Deputy Coordinator in the drafting of the ToRs for contracting consultancy services required for the development of the activities of Component 1, and participate in the process of selection of consultancy services.
3) Contribute to the preparation of the annual operational plan and budget of the projecy and organize the execution of project activities in accordance with the annual work plans and corresponding budgets.
4) Draft periodic resports on the activities carried out and contribute to the drafting of the Project Progress Reports.
5) Support the periodic Monitoring and Evaluation of the project, collecting information related to compliance with the indicator targets in the Results Framework and their means of verification, and identification of lessons learned.

Technical functions:

1) With overall responsibility for Component 1, and therefore will work in close collaboration with the expert on the genetic management of species, the expert on forestry, management plans and restoration strategies, the expert on rewards for ecosystem services and the GIS specialist (ROAM, PM, SE)
2) Implementation of the activities and products under the component, ensuring quantitative progress and technical quality, thereby guaranteeing the achievement of the intermediate and final results targets for the component.
3) Accompanying and facilitation of the participation and involvement of actors of local and regional government, as well as organizations of farmers and communities for the implementation of the component in the different regions.

4) Carry out participatory analyses in the different areas of the project, to ensure coherence between communal, district, provincial and regional levels.
5) Coordination with the M&E specialist for the implementation of the monitoring plan.
6) In coordination with the leaders of the other components, carry out capacity development needs analyses of farmers, and formulate capacity development plans.
7) Support the design and implementation of communal development plans, farmer field schools, and the evaluation, inventory and localization of sustainable ABD management practices.
8) Provide technical support for the development of sustainable production plans.
9) Provide technical support for the identification and the provision to farmers of materials and inputs for the implementation of sustainable ABD management practices.
10) Provision of technical support for the preparation of training materials and content on the planning of agricultural units selected for each production system.
11) Provision of technical support to the analysis of the feasibility of implementation of schemes for the certification of environmentally friendly production systems in the project intervention areas.
12) Coordination of the implementation of communal ABD banks.
13) Lead the design of tools for monitoring ABD.
14) Organize experience interchange tours, work exchanges and workshops with farmers in the project intervention areas.
15) Accompany processes of negotiation and signing of conservation agreements with farmers and communities within the context of the activities of the component.
16) Support the other coordinators (of components 1 and 2, and the project as a whole) with advice on cross-cutting aspects related to their specialities and functions.

4.-Responsible for Component 2 (Expert in markets, brands and certifications)

I. Profile

University degree and postgraduate studies, especially in economics, business administration, engineering (industrial, agronomy or others), or other professions related to the component, with accreditation and experience in the coordination and execution of rural development programmes and projects and/or support to public or private rural microenterprises, with emphasis on management systems, the provision of services through the market, technical assistance, agribusiness and other rural or regional businesses.

II. Experience

- At least 8 years in rural development programmes or projects and/or support to public or private microenterprises, and/or the management of businesses of small farmers and/or the management of business with relevant links to small farmers.
- Experience in the management of projects in the public/private sector with external funding.
- Experience with working in regions and communities of the country, preferably including those covered by the project.
- Knowledge of local languages (Quechua and Aymara)

III. Abilities

- Knowledge of the problems in the target regions of the project, with emphasis on rural areas
- Capacity to identify marketing opportunities and promising businesses in the project area
- Direct experience in business management (recommended)
- Knowledge of the development of production and business plans
- Knowledge of techniques and instruments for economic and financial evaluation
- Working experience with organizations of small farmers and peasant communities
- Knowledge of the norms and instruments commonly uses in mercantile activiries (value titles, societal norms, contracts, etc.)
- Knowledge of methods of participatory planning
- Knowledge of the management of private systems for technical and financial assistance
- Knowledge of gender and environmental approaches
- Capacity to relate with others and carry out adequate interinstitutional coordination
- Capacity to prepare conceptual and technical reports
- Knowledge of GEF projects

IV. Attitudes

- Positive valuation of *campesino* culture
- Respect of local institutionality
- Leadership capacity
- Respect of colleagues and collaborators
- Willingness to work in a team
- Capacity to work in environments of high pressure
- Democratic and tolerant behaviour

V. Working conditions

Willingness to reside in the project base.

VI. Functions/tasks

A full time post, reporting to the Project Coordinator.

- Overall direction of component 2.
- Coordination of the activities of the component related to marker promotion with public and private institutions in the central base of the Project and its áreas of influence.
- Participation in ex ante evaluation of business plans and other requirements of beneficiaries.
- Monitoring of the execution of business plans and contracts between beneficiary groups supported by the project and the territorial teams.
- Regular dissemination of information contributing to linkages between suppliers and demanders of technical assistance services
- Coordination and supervision of training activities related to the component
- Linkage of professionals, technicians and services companies with the project for the execution of specific activities of the component related to the promotion of markets
- Orientation of territorial teams and interested organized beneficiaries in the presentation of needs related to market promotion

- Mapping of producers, products and markets in each territory
- Strengthening marketing capacities of small farmers and organizations, as well as sustainable food systems in the regions.
- Strengthening producer associations and cooperatives and supporting the organization/development of territorial markets
- Selecting pilots and establishing marketing strategies, sharing experiences between pilots.
- Establishing marketing strategies and alliances for the development of markets
- Supporting the improvement of processing activities through small businesses and the provision of technical assistance
- Managing the implementation of user-friendly price information systems building on advances by the Government.
- Designing a strategy for the development of branding that promotes ABD zones and PGS or third party certification systems.
- Support to the preparation of denominations of origin and seals
- Implementation of Exchange activities between producer organizations, and support to the replication of successful experiences in their territories
- Production of materials, tools and publications to orient key stakeholders in the promotion of ABD through labelling and market linkages, including adaptation to producers in their local languages
- Supervision of dissemination activities of the market promotion component in the area of influence of the project
- Maintenance of close coordination with the project leadership
- Promotion of cofinancing with other sources and specialized institutions.

Specialist in Management of Social and Environmental Risks

1. Profile

Professional in the areas of earth sciences (for example biology, agronomy, geography, civil engineeringm chemical engineering, forestry, environmental engineering) or related career. Masters or post-graduate degree in environmental management, natural resource management or similar..

2. Experience

- At least five years of experience in the área of environmental management, ideally five years of experience in processes of environmental impact assessment and the implementation of biodiversity projects.
- Knowledge of projects of agrobiodiversity, conservation and use, protected zones, etc.
- Working experience in environmental management, procedures, and application of norms in the public and private sectors.
- Knowledge of environmental and social laws, regulations, national and international policies.
- Knowledge of international norms on environmental and social sustainability.
- Knowledge and experience in participation of peasant and indigenous communities for the formulation of plans for the management of environmental and social risks.
- Experience in working with peasant and indigenous communities.
- Competence in information and communication technologies, needed for the processing, storage, transmission and updating of information.
- Can work as part of multidisciplinary teams.

3. Working conditions

- Willingness to reside in the base of the Project.

4. Functions and tasks

1. Preparation of baseline, identification of beneficiaries and their organizations at Project start in order to be able to measure the social, environmental, economic and technical impact of the Project in its different stages and at the end.
2. Design of a strategy for oversight and participatory monitoring, as well as implementation of free, prior and informed consent (FPIC) following guidelines established by FAO.
3. Constantly review during the execution of the Project the socioenvironmental monitoring and evaluation system, and propose improvements and updates
4. Design of a specific methodology for the oversight and evaluation of the intervention strategies as an integral part of the social and environmental monitoring system of the project.
5. Validate, adjust and implement instruments for collection, storage, updating and communication of the impacts of the Project and compliance with its targets.
6. Participatory preparation of the Social and Environmental Management Plan, agreed and approved with the involvement of all of the stakeholders in the regions, and implementation of the timetable for the execution of the actions.
7. Oversee the system for communication and the interchange of information on the Plan for the Management of Social and Environmental Risks in the target area of the Project, as well as FPIC.
8. Oversee activities of social and environmental monitoring and evaluation.
9. Design and carry out training workshops on participatory methodologies, exchange of experiences and coordination between beneficiaries for the monitoring of impacts and FPIC.
10. Training of beneficiaries in carrying out activities of continuous monitoring of the Project and evaluation of impacts.
11. Carry out workshops for the presentation of advances and evaluation of the results of the implementation of the FPIC.
12. Participarte in workshops for planning and the evaluation of annual work plans of Project implementation.
13. Other roles that may specifically be required by the Coordinator.

Monitoring and Evaluation Specialist

1. Profile

University graduate in social sciences, economics, and/or agriculture or forestry.

2. Experience

- Specialization in Monitoring and Evaluation of sector programmes.
- At least 7 years of experience in the management, evaluation and monitoring of projects of ecosystem or forest restauration, strategic planning, planning for conservation and/or territorial planning.
- Experience in the implementation and preparation of management documents related to project monitoring and evaluation.
- Professional specialized in planning, who can apply methods and approaches for the monitoring and evaluation of environmental programmes and projects with an approach of adaptive management.

- Essential to be able to use methods and approaches of monitoring and evaluation (quantitative, qualitative and participatory); design and implementation of M&E systems; training in the development and implementation of M&E.
- Broad knowledge of issues of protected areas, biodiversity conservation and environmental protection
- Experience of working in interdisciplinary teams and with actors at different levels (national, regional and local).
- Experience with Geographical Information Systems will be valued.
- Knowledge and familiarity with procedures related to the management and evaluation of UNDP-GEF projects will be especially valued.

3. Working conditions

- Willingness to reside in the base of the Project.

4. Functions and tasks

1. Formulation, implementation and management of the monitoring, oversight and evaluation plan of the project in the regions, and the communication programme
2. Participation in the development of strategies/interventions of the Project and involve/ensure support to staff so that the measurement system is aligned with its objectives and results.
3. Provide methodologies and tools that permit the establishment of measures and strategies to harmonize territorial management plans with conservation of agrobiodiversity and the landscape approach, including participatory planning approaches.
4. Adjust and implement the monitoring and evaluation system of the project, in accordance with the provisions of the project document (project monitoring and evaluation framework).
5. Contribute to the processing and analysis of information resulting from monitoring and evaluation so that it is disseminated and capitalized by those involved in planning processes as well as decision-making.
6. Develop the oversight of the activities established in the Annual Work Plans.
7. Contribute to the design and implementation of the system for periodic monitoring and evaluation of ABD zones, to identify their conservation status and the factors that affect it, in coordination with the responsible authorities.
8. Design and formulation of M&E plans and reports; identification of areas for organizational improvement based on the recommendations of these systems; written analysis of the findings of evaluations.
9. Participation in monitoring and evaluation teams (especially for oversight and external evaluations).
10. Preparation of informative notes, periodic reports and data on the situation of monitoring and evaluation activities.
11. Assist in the development and maintenance of computerized information systems for use in oversight and the preparation of reports on activities and the performance of M&E systems
12. Participate in the organization of conferences, seminars, workshops, training sessions and meetings on monitoring and evaluation.

13. Development of other functions related to their speciality as requested.

Regional Facilitator

1. **Profile**
   Qualifications in environmental engineering, geography, forestry, agricultura, agronomy or related areas.

2. **Experience**

- Not less tan 5 years of experience in the development of programmes or projects related to territorial land use planning and natural resource management.
- 5 years of experience in rural communities.
- Knowledge of methodologies of participatory assessment.
- Experience in the formulation and management of projects
- Management of information tools (Word, Excel, Powerpoint, GIS and others).
- Ideally with intermediate level knowledge of Quechua.
- Ideally will have carried out specialized courses in planning, management and land use planning.

3. **Working conditions**

Willingness to reside in the Project base. Motorcycle licence.

4. **Functions and tasks**

The regional facilitators will link Project actions with regional and local governments. Their responsibilities will be:

1. Coordination of technical, operational and logistical implementation of the Project in the regions and localities specified in Project plans
2. Support and facilitation of the work of the specialized consultants in accordance with the Project components and the assigned regions and localities.
3. Execution of assigned activities and tasks in coordination with local communities and in accordance with annual operational plans and work plans, ensuring the effectiveness and efficiency of results.
4. Participation in the planning of Project activities and tasks in the assigned regions and localities
5. Preparation of reports of achievements with the activities and products of the project.
6. Coordination of the planning and execution of Project activities, maintaining coherence and synergies between the different local actors, grassroots social organizations and local authorities, as well as counterpart institutions;
7. Coordination of systematization and diffusion activities of the project;
8. Coordination of the execution of activities in the regional and districts of direct intervention.
9. Promotion of the Project and its links with key institutions in the regions

10. Promotion of relations between public and private institutions to achieve improved institutional synergies in the intervention areas of the project
11. Carry out awareness-raising meetings aimed at peasant families and organizations, local and/or regional authorities on the importance of sustainable use of natural resources and the importance of territorial land use planning tools.
12. Promotion of the effective planning of Community organizations in processes of territorial planning and natural resource management.
13. Provide technical accompaniment to the established organizational structures, with the aim of strengthening their capacities and autonomy in relation to land use planning and natural resource management.
14. Train leaders in processes of land use planning and EEZ.
15. Provide training and orientation so that EEZ processes at local level are implemented in a way that is linked to district level development plans.
16. Socialize information to community organizations on processes of land use planning and EEZ.
17. Prepare appropriate materials for transmitting concepts of land use planning and EEZ.
18. Carry out participatory assessments and/or community mapping.
19. Organization of events and meetings for the presentation of the results and advances of the project.
20. Facilitate relations between the different actors involve in carrying our EEZ.
21. Carry out actions needed for the organization of a local technical and oversight committee for implementing the actions of the land use plans.
22. Systematize on a continuous basis the lessons learnt through the project.

Administrative Analyst

1. **Profile**
   Professional with academic training in economics, accountancy and/or administration

2. **Experience**

   - Minimum of 3 years experience in the management of projects in the public or private sector.
   - Knowledge of the management of financial resources provided by international agencies (USAID, IBD and others).
   - Ability for communication and teamwork.
   - Ability to work under pressure and to meet targets.
   - Intermediate knowledge of English.
   - Knowledge of information packages and principal technological tools.
   - Ideally with experience of working in Amazonia and with highland peasant communities and native communities.

3. **Working conditions**
   In Lima, in the head offices of MINAM.

4. Functions and tasks

- Provision of administrative–financial support to the Project coordinator in a timely manner, with the aim of supporting the implementation of activities
- Responsible for the administration of Project documents and finances
- Register and document all of the management of the projecy and maintain information updated.
- Support with the timely implementation and application of all of the processes established and required by FAO and GEF
- Control the Budget lines established in accordance with the Budget, and provide monthly reports on financial execution of each component, including counterpart funds.
- Support the Coordinator in the timely preparation of reports of budgetary execution and monthly financial statements.
- Participation in processes of Procurement of logistics in accordance with the operational requirements of the team.
- Support the coordinator in responding to audits
- Participation in preparing annual plans of operations
- Organization and registering of the distribution of materials and inputs provided to Project beneficiaries, in accordance with that foreseen in project activities.

APPENDIX 8. ALTITUDE RANGES, CROPS, FAUNA AND FLORA IN THE TARGET LOCALITIES

Altitude (m)	Altitude zone	Acora (Puno)	Laria (Huancavelica)	Huayana (Apurímac)	Lares (Cusco)	Atiquipa (Arequipa)
6,768 4,801	Janca	**Crops:** cañihua, bitter potatoes, oats: **Livestock:** alpaca, llamas, sheep, cattle, horses				
4,800 4,001	Puna	**Crops:** Potatoes, cañihua, quinoa, oats, broad beans, peas, oca, olluco, wheat: **Livestock:** alpaca, llama, sheep, cattle, horses, donkeys, pigs, guinea pigs, chickens, turkeys, ducks, vicuña.	**Crops:** potatoes (80 varieties), oca, mashua, olluco. **Livestock:** alpacas, sheep	**Crops:** native potatoes, olluco, mashua, oca, broad beans, quinoa, barley, oats. **Livestock:** cattles, horses, sheep, llamas, guinea pigs, mules, alpacas		
4,000 3,501	Suni	**Crops:** potatoes, cañihua, oats, wheat, broad beans, barley, peas, olluco, izaño, oca, tarwi, alfalfa, sown pasture, añu, maize, apples, peaches: **Livestock:** dairy/meat cattle, alpaca, sheep, pigs, guinea pigs, chickens, rabbits, sheep, trout, pejerrey	**Crops:** potatoes, oca, mashua, olluco, broad beans, oats, barley, wheat, maca, quinoa. **Livestock:** sheep, cattle, pigs	**Crops:** Maize, tarwi, wheat, barley, oats, quinoa, lentils, broad beans, nispero, peaches, applies, cherries, guinda, aguaymanto, kiwicha, cabuya, medicinal plants. **Livestock:** horses, cattle, sheep	**Crops: potatoes,** mashua, oca, olluco, colis (native vegetables): **Livestock:** llamas, alpacas, sheep, pigs, horses, mules, guinea pigs, local cattle breeds, ducks, turkeys, chickens.	
3,500 2,301	Quechua			**Crops:** kiwicha, beans, courgettes, pumpkin, jabinca, palto, maize, figs, pacae, chirimoya, lemons, oranges, cherries: **Livestock:** chickens, ducks, guinea pigs, turkeys, rabbits, pigs, sheep	**Crops:** potatoes, local maizes, caigua, quinoa, beans, squash, tarwi, kiwicha, colis, linseed. **Livestock:** local cattles, horses, mules, sheep, poultry, pigs	
2,300	Yunga				**Crops:** potatoes, maize, squash, broad beans, quinoa, tarwi, wheat, linseed, fruit trees. **Livestock:** cattle,	

Altitude (m)	Altitude zone	Acora (Puno)	Laria (Huancavelica)	Huayana (Apurímac)	Lares (Cusco)	Atiquipa (Arequipa)
501					horses, mules, sheep, poultry, pigs	
500 0	Coast					**Crops:** perilla, pecans, maize, peaches, pears, apples, membrillo, pacay, nispero, cactus, avocado, oranges, olives, cotton, lucuma, figs, apricots, arrayan, cherries. **Livestock:** meat cattle, goats, horses, donkeys, mules, chickens, pigs, guinea pigs, ducks, turkeys, rabbits, bees.

APPENDIX 9. LIST OF THREATENED SPECIES AND/OR ECOSYSTEMS

These data are the result of ongoing consultations with local indigenous people in the various projects areas.

This table lists indigenous species that are threatened as domesticated variants, which is very important in terms of agroecology and for future adaptation to climate change. While, the species itself may not / is not be threatened, the local variety, cultivar or landrace are under threat. This table is divided into two components: A - threatened *indigenous species* with possible threatened local variety, cultivar, race or landrace, and B - Ecosystems under threat.

This table will be updated as the project develops and an increasing amount of specific local information on biodiversity becomes available.

Category	Common Name	Scientific Family	Scientific Name	Status	Justification
A. Indigenous species.					
Plants/crops					
Fruit trees	Lucuma	Sapotaceae	*Pouteria lucuma*		Indigenous, food security crop species not under threat as a species, but local varieties, cultivars, races or landraces under threat due to their limited range and/or status of decline and/or genetic erosion.
	Aguaymanto/ Cape Gooseberry	Solanaceae	*Physalis peruviana*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Arrayán	Myrtaceae	*Myrcianthes ferreyrae*	Critically endangered according to Peruvian law.	Indigenous, food security crop species and important in the restoration of threatened landscapes.
	Cherimoya	Annonaceae	*Annona cherimola*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Membrillo/quince	Rosaceae	*Cydonia oblonga*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.

Category	Common Name	Scientific Family	Scientific Name	Status	Justification
	Guinda	Rosaceae	*Prunus cerasus*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Palto	Rosaceae	*Persea americana*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
Tubers	Papa amarilla (yellow potato)	Solanaceae	*Solanum goniocalyx*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Papa phureja	Solanaceae	*Solanum phureja*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Pitiquiña (aymara) Chiquiliña (quechua)	Solanaceae	*Solanum stenotomum*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Papa andina (Andean potato), Imillas	Solanaceae	*Solanum tuberosum*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Ajanhuiri	Solanaceae	*Solanum ajanhuiri*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Papa temprana (early potato)	Solanaceae	*Solanum chaucha*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Papa amarga (bitter potato), Rucki	Solanaceae	*Solanum juzepczukii*		Genus and species not under threat, but local varieties, cultivars, races or landraces under threat.

Category	Common Name	Scientific Family	Scientific Name	Status	Justification
	Papa amarga (bitter potato) Occucuri	Solanaceae	*Solanum curtilobum*		Genus and species not under threat, but local varieties, cultivars, races or landraces under threat.
	Papas nativas dulces (sweet native potato)	Solanaceae	*Solanum tuberosum ssp. andigenum*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Papa del trópico (tropical potato)	Solanaceae	*Solanum hygrothermicum*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Batata/sweet potato	Convolvulaceae	*Ipomoea batatas*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Oca/ uqa	Oxalidaceae	*Oxalis tuberosa*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Olluco	Basellaceae	*Ullucus tuberosus*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Mashua/añu/isaño	Tropaeolaceae	*Tropaeolum tuberosum*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Maca	Brassicaceae	*Lepidium meyenii*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
Grain	Quinoa/quinoa/kinwa/kinuwa	Amaranthaceae	*Chenopodium quinoa*		Indigenous, food security crop species that is also being commercially produced, but local varieties, cultivars, races or landraces under threat.

Category	Common Name	Scientific Family	Scientific Name	Status	Justification
	Qañiwa / Cañihua / Kaniwa	Amaranthaceae	*Chenopodium pallidicaule*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
	Kiwicha/achita/achis	Amaranthaceae	*Amaranthus caudatus*		Indigenous, food security crop species not under threat as a whole, but local varieties, cultivars, races or landraces under threat.
Legumes	Beans	Fabaceae	A number of different species, but particularly *Phaseolus* spp.		Indigenous, food security crop species that is also being commercially produced, but local varieties, cultivars, races or landraces under threat.
	Tarwi/Andean lupin	Fabaceae	*Lupinus mutabilis*		Indigenous, food security crop species that is also being commercially produced, but local varieties, cultivars, races or landraces under threat.
	Pacay/ Pacae	Fabaceae	*Inga feuillei*		Indigenous, food security crop species that is also being commercially produced, but local varieties, cultivars, races or landraces under threat.
Other	Medicinal plants	Plantae	Many families, genera and species		Many different plant species involved and at the onset of the project will have to determine their conservation status in the project area.
	Cotton	Malvaceae	*Gossypium hirsutum* or *Gossypium barbadense*		Indigenous crop species that are also being commercially produced, but local varieties, cultivars, races or landraces under possible threat.
	Caigua	Cucurbitaceae	*Cyclanthera pedata*		Indigenous crop species that are also being commercially produced, but local varieties, cultivars, races or landraces under possible threat.
Trees					

Category	Common Name	Scientific Family	Scientific Name	Status	Justification
	Tara		*Caesalpinia spinosa*	Vulnerable	Indigenous tree species very important in the restoration of the local traditional landscape.

Category	Name		Scientific Name	Status	Justification
B. Ecosystems					
	Coastal systems are called “lomas”, and. Atiquipa is the biggest one in the world.	Only occur in Peru and Chile	Tara (*Caesalpinia spinosa*) or arrayan (*Myrcianthes ferreyrae)* are key in restoration.		In Atiquipa the focus would be on Tara or arrayan but other less common species may also be required during the duration of the project – exact restoration needs will determine the species detail.

APPENDIX 10. TRADITIONAL MANAGEMENT PRACTICES OF WILD FLORA AND FAUNA

SUSTAINABLE MANAGEMENT PRACTICES OF WILD FLORA	BRIEF DESCRIPTION	APPLIES		WITH REGARD TO MAINTENANCE, GENETIC EVOLUTION AND FUNCTIONALITY OF AGROBIODIVERSITY	REGIONS WHERE THESE INDICATORS ARE OBSERVED
		YES	NO		
Care of Cacti (*Waraqo*)	Farmers in communities observe this species during the months of August and September. Its flowering is considered an indicator for starting the sowing of potatoes; the characteristics of flowers are taken into account to determine the weather patterns of the agricultural year: good flowering means a dry season ahead while poor flowering means a rainy season.	X		Cactus flowers are hermaphrodite, but most are incapable of self-pollination. Therefore, they require that pollen grains be transferred from the flower of a plant to the flower of another plant and so the role of pollinating animals is essential here to explain the success of these plants within the ecosystem. This form of zoophilic pollination, called cross-pollination, is thus the first step in the reproduction of cactuses. Cacti must produce attractive flowers for potential pollinators while offering at the same time an energetic reward in the form of nectar and/or pollen In order for pollinators to approach. For farmers, this interesting mechanism is a climate indicator and they have preserved these species for many years.	Lares – CUSCO Huayana – APURIMAC Laria - HUANCAVELICA
Care and conservation of *Giganton* (*Hawaqollay*)	This is another cactus that grows in the lowland areas of the communities. Its flowering indicates that the rainy season will arrive earlier than expected. It is closely linked to the growing of maize.	X			Lares – CUSCO Huayana – APURIMAC Laria - HUANCAVELICA
Conservation of *Roque*	The flowering of this thorny shrub is also related to the sowing of maize in the lowlands and to the sowing of potatoes in the mid and high zones.	X		This is a ligneous shrub, with abundant thorns used as a defence mechanism and especially to hold moisture. Farmers maintain and look after this plant as it is used as a living fence to protect maize fields and mainly to avoid the attack of rodents and other plagues.	Lares – CUSCO Huayana – APURIMAC Laria - HUANCAVELICA

SUSTAINABLE MANAGEMENT PRACTICES OF WILD FLORA	BRIEF DESCRIPTION	APPLIES		WITH REGARD TO MAINTENANCE, GENETIC EVOLUTION AND FUNCTIONALITY OF AGROBIODIVERSITY	REGIONS WHERE THESE INDICATORS ARE OBSERVED
		YES	NO		
Care of Tin –Tin *(Passiflora silvestris)* in the fences of farmers' households	Farmers use this plant to observe the flowering behaviour. Abundant flowering means a low production of potatoes while poor flowering is a sign of high production.	X		This is a fruit of the Passifloraceas family; Its flowers attract pollinating insects. Besides being consumed by humans, this fruit is also consumed by some birds that spread its seed in the low and mid areas of valleys. Families also use this plant as a food resource and an indicator of production since the optimal climatic conditions for its production are not suitable for growing potatoes. It is closely related with this crop on the basis of agrobiodiversity.	Lares – CUSCO Huayana – APURIMAC Laria - HUANCAVELICA
Preservation of algae - Laqo	Farmers observe this alga in the rivers of Andean zones. Its colour also indicates the beginning of the agricultural year.		X	Scientific literature has been searched in this regard, but apparently this is more an element particular to the Andean worldview since rivers are considered living beings as they are part of the environment and algae express rivers' messages. Unlike technicians, a river is not a water resource for farmers; for them it is a matter of still waters or rough waters, and this is expressed through the river.	Lares – CUSCO Huayana – APURIMAC Laria - HUANCAVELICA
Preservation of squash	Farmers engaged in maize cultivation observe if the production of this cucurbitaceae is high, as it is a sign that the production of maize will be very poor.	X		Very similar to the Tin-Tin plant in that the optimal climatic conditions for the production of this species are not suitable for growing maize, and therefore farmers use it as reference for the cultivation of maize. For farmers in these areas, there are no "good years" or "bad years", under any circumstance there is always an	Lares – CUSCO Huayana – APURIMAC Laria - HUANCAVELICA

SUSTAINABLE MANAGEMENT PRACTICES OF WILD FLORA	BRIEF DESCRIPTION	APPLIES		WITH REGARD TO MAINTENANCE, GENETIC EVOLUTION AND FUNCTIONALITY OF AGROBIODIVERSITY	REGIONS WHERE THESE INDICATORS ARE OBSERVED
		YES	NO		
				abundant or poor production and the presence of these wild plants determine the expectation of families for the following agricultural year.	
Care and protection of medicinal and aromatic plants (sage, *muña*, rosemary, *chiri – chiri*)	Families of the communities of these districts take great care in growing medicinal and aromatic plants as they are used for the treatment of bronchial and pulmonary diseases; there are also digestive and relaxing plants, among other. In these districts plants are classified as well as "cool plants" and "warm plants"; for example, rosemary and sage are considered warm plants and muña is considered a cool plant.	X		Besides being medicinal plants, *muña* and sage are also aromatic plants. In particular, *muña* is used by the farming families as a plague repellent when storing tubers and grains, so it is widely used.	Acora – PUNO Lares -CUSCO
Temporary rotation of natural pastures and medicinal plants growing with sea fog	Lomas de Atiquipa present a very special and interesting characteristic: its entire vegetation (pastures, trees and shrubs) is produced by sea fog. The role of this vegetation was to trap the moisture from the sea fog and eventually the water thus harvested would turn into streams that flowed down the ravines of the area. At present there is vegetation cover degradation due to the abandonment of management practices and the overexploitation of the scarce vegetation remaining.	X		Because of this sea fog phenomenon, *tara*, *arrayan* and *huarango* are endemic to the Atiquipa zone. These species date back to ancient times. According to information from the area, this was the place from where the Inca came down from Cusco, the capital, to the coast. This is confirmed by the quechua names of different places in the high areas (Cahuamarca); also, the Inca Trail (*Qapaq Ñan*) that connected the four regions (*suyos*) of the Inca Empire crosses this zone. Fog-catching practices have contributed to maintaining these species.	Atiquipa - AREQUIPA

SUSTAINABLE MANAGEMENT PRACTICES OF WILD FLORA	BRIEF DESCRIPTION	APPLIES		WITH REGARD TO MAINTENANCE, GENETIC EVOLUTION AND FUNCTIONALITY OF AGROBIODIVERSITY	REGIONS WHERE THESE INDICATORS ARE OBSERVED
		YES	NO		
Respect and consideration for foxes' howls – Atoq (Cannis…)	In communities, the howl of the fox is linked to the start of sowing; if sowing must be carried out sooner or on a later date. Also, prolonged and continued howls indicate a very dry year.	X		The natural habitat of this species is increasingly being reduced due to the increase of grazing areas. In many cases, foxes are hunted as they reduce the sheep population. However, in the Puno area foxes are considered messengers of Mother Earth; if villagers find a fox that is eating a baby alpaca or sheep, they let it continue so it doesn't come back and Mother Earth doesn't get upset.	Acora – PUNO Laria – HUANCAVELICA Lares – CUSCO
Observing the behaviour of birds called *Sguanas* – *Kallwas*	The presence of these birds in flocks and flying around indicate a good year. At other times, these birds leave inter-Andean valleys and start to fly around in flocks at dusk; this means that it will be a rainy year.	X		These birds feed on wild or cultivated species of fruits and grains and so are a means of dissemination and propagation of seeds. They also sense the behaviour of the hydrological cycle of basins, and their behaviour is linked to the evaporation of surface water and for many years this has enabled farmers to recognize and use them as indicators of a rainy or dry year, and accordingly decide on which plots will tubers and grains be grown.	Acora – PUNO Laria – HUANCAVELICA Lares – CUSCO Huayana - APURIMAC
Verifying the presence of sow bugs – *Tarpuy Curu*	In communities where maize is grown, the presence of this bug in September, October and November is common. Good-sized sow bugs in big groups indicate a good harvest while dispersed sow bugs mean a poor harvest.	X		Andean people consider themselves part of the environment; their understanding is that they do not manage the environment, and instead feel that they are part of it; there is a close relationship with the environment, crops are taken care of, and this perception is associated with the Andean worldview. The environment is seen as messages from Mother Earth so	Laria – HUANCAVELICA Lares – CUSCO Huayana - APURIMAC

SUSTAINABLE MANAGEMENT PRACTICES OF WILD FLORA	BRIEF DESCRIPTION	APPLIES		WITH REGARD TO MAINTENANCE, GENETIC EVOLUTION AND FUNCTIONALITY OF AGROBIODIVERSITY	REGIONS WHERE THESE INDICATORS ARE OBSERVED
		YES	NO		
				that its children may make provisions and be prepared. This is why offerings to the Mother Earth are made.	
Observing the *lequecho*	These birds live in high areas and are seen in the communities at times of frost only. They are found in surface depression areas where water is stored. If they lay their eggs in areas close to the base, it indicates a dry year; if eggs are laid in high places of wetlands (*huayllar*), it is an indicator that it will be a rainy year. Likewise, their presence means that the frost will continue.	X		These birds sense the changes in climate especially temperature fluctuations (Julio Valladolid – Andean Vision of Climate – Lima 1994). Based on their migratory habits in the high areas of micro-watersheds, their behaviour is linked to the coming of a rainy or dry year and the presence of cold air currents (frosts). This also enables farmers to plan the crops based on agrobiodiversity.	Acora – PUNO Laria – HUANCAVELICA Lares – CUSCO Huayana - APURIMAC
Monitoring the presence of the *chiwanco*	These birds appear following sowing activities in the low areas of the communities, which means that the harvest will be good. The presence of these birds flying around is a sign for starting the cultivation of maize.	X		The presence of these birds in farms, according to quechua mythology, is considered a message of good or bad news. They are highly sensitive to small changes in the environment and are associated to the Andean worldview. For many years farmers have used these birds to predict the agricultural year.	Lares – CUSCO Huayana - APURIMAC
Observing herons - *wagar*	Communities state that if these birds are seen in the rivers of low areas, it is a sign that rains will come; therefore they are indicators of normal or delayed rains, especially for the sowing of maize and potatoes in rain-fed areas.	X			Lares – CUSCO Huayana - APURIMAC
Following up the behaviour of wild rodents in different areas	The presence of these animals in enclosed fields where the seeds of tubers are planted indicate if sowing must be made at an earlier or later date.	X		Rodents are part of the food chain as they feed many species of birds of prey. Their presence is necessary for the food chain.	Acora – PUNO Laria – HUANCAVELICA Lares – CUSCO Huayana - APURIMAC

SUSTAINABLE MANAGEMENT PRACTICES OF WILD FLORA	BRIEF DESCRIPTION	APPLIES		WITH REGARD TO MAINTENANCE, GENETIC EVOLUTION AND FUNCTIONALITY OF AGROBIODIVERSITY	REGIONS WHERE THESE INDICATORS ARE OBSERVED
		YES	NO		
Following up of frogs - *hampato*	The colour of the frog's skin indicates or predicts climate behaviour. A dark colour means rainfall and a light colour stands for Indian summer or drought.	X		The function of this batrachian is essential in a crop field as it is the main biological controller of the many plagues that attack crops based on agrobiodiversity.	Acora – PUNO
Care and breeding of bees	Pollinating insects of many species, especially in the lower areas of communities.	X		Bees play an important role in the pollination and maintenance of many plant species.	Laria – HUANCAVELICA Lares – CUSCO Huayana - APURIMAC
Care and protection of vizcachas	The community members of the area consider that this rodent is an important part of the ecosystem.	X		Vizcachas play a role in the seed dispersal of many species that these rodents eat.	Atiquipa - AREQUIPA

APPENDIX 11. MARKET STUDIES

This annex provides information about the following aspects: a) market access opportunities of small producers, b) abstracts of the most relevant market studies for different products based on agrobiodiversity such as quinoa, native potato, cañihua, alpaca fibre, kiwicha, and maca.

The market studies presented herein allow—according to the available data—to provide secondary baseline information on different products based on agrobiodiversity in relation to the demand, supply, prices, customer characteristics, trends, competitiveness, and conditions required by the market, among other specific information for each type of product, on the one hand; and on the other, the enormous potential of products and services based on agrobiodiversity and the barriers they face.

I. OPPORTUNITIES TO ACCESS DIFFERENT TYPES OF MARKETS

The export of Andean products based on agrobiodiversity has shown a significant upward trend in recent years, reaching US$433 million FOB in December of 2014, representing 3.72% of total exports. The products in greatest demand are quinoa, cochineal, maca, Brazil nut, yacón, sacha inchi, huito, purple corn, camu camu, barbasco, aguaymanto, chirimoya, sangre de grado, guanábana, chancapiedra, tuna, granadilla, pasuchaca, chuchuhuasi, muña, cocona, copaiba, and tumbo.

There are no complete statistics for the domestic market; however, it is estimated that the consumption of products based on Andean agrobiodiversity continues the upward trend started years ago, mainly due to their use as ingredients of the renowned Peruvian gastronomy. The international consumption trends of healthy products such as quinoa, kiwicha, etc. have contributed to the growth being experienced in Peru.

For purposes of the project, different types of markets were identified based on their geographic focus (local, regional, national and international), and characteristics (standard or quality).

1. **Local markets (short circuits):**

These are spaces where producers/providers of goods and services and consumers meet, located very close to the production and/or transformation areas.

For this project, local markets will be considered as such based on the following:

- **Participation in producers' markets**. Producers' markets are an excellent option as shown by previous experiences, like the producers' market in Cusco, which remains active and improves as time goes by.
- **Fairs existing in the community**, in the capital of the district and/or province where the production and/or transformation of a specific good or service takes place. The project will also encourage the creation of new spaces for the development of these local markets in close coordination with local actors and with the committed support of local and/or provincial governments.
- **Sales at the place of production (or home** of the producer of the good or service)**.**

- **Sales in connection with the arrival of tourists, recreational activities, and ecotourism**. Recreational activities and ecotourism represent an opportunity for local markets to expand and to offer goods and services based on agrobiodiversity, especially with regard to wild flora and fauna.
- **Sales in areas of transit** of all types of vehicles.
- **Regular sales in permanent stalls,** or where consumers gather momentarily.
- **Festive and/or religious events** (for instance, carnivals, festivals in honour of the local patron saint, etc.).

Small family farming, through short circuit markets (shaped by little or no participation of intermediaries, geographical proximity, building of social capital), manage to increase the value of its goods and services because of the direct relationship between consumers and producers. Besides short circuit markets, and in the specific case of Peru, the alliance with the "Peruvian Association of Chefs and Cooks" offers a valuable channel for enhancing and shedding light on agrobiodiversity, and for small producers in charge of maintaining and conserving it. Territorial markets are another option for small producers, where the basket of goods and services and biocultural assets are closely linked.

2. **Regional markets**

Regional markets are larger than local markets. In the case of the project, the access to regional markets will take place when commercial interaction occurs outside the province to which the producer of goods and services based on agrobiodiversity belong; thus, other provinces of the department are also considered. For participation to be successful at regional level, product differentiation on the basis of origin and quality is necessary.

3. **National markets**

As its name suggests, potential buyers in this type of market are spread throughout the country. A clear example is the annual participation in Mistura of producers of goods and services based in agrobiodiversity or in diverse eco-fairs that are carried out in Lima districts. To facilitate the access of the producers linked to the project, previous coordination with such spaces of commercial promotion is necessary, as well as compliance with the requirements established.

Coordination with hotels and restaurants that meet highest quality standards will be considered for the project, as well as the linkage with the Peruvian Gastronomy Association (APEGA), which focuses on developing a data and marketing system of the best and most unique products provided by small agricultural producers for the gastronomic market.

Through the cook-farmer alliance (an alliance with the most renowned chefs) efforts will be made—with respect to food markets and gastronomic fairs—to promote the gastronomic culture linked to products based on agrobiodiversity, ensuring the access of Peruvian families to quality agricultural products. In this regard, it is necessary to work with producers' associations and strong organizations in order to develop marketing and distribution channels of gastronomic products based on agrobiodiversity.

Following is a list of the main eco/bio-fairs developed in the city of Lima, in districts with high purchasing power:

NAME OF BIO-FAIR	ADDRESS	PRODUCTS
MIRAFLORES(*) BIO-FAIR	Calle 15 de Enero, Parque Reducto No. 2, Miraflores Saturdays from 8 a.m. to 3 p.m.	Organic, fresh, and processed products; seasonal vegetables and fruits, Andean herbs and natural medicine, arts and crafts, under the philosophy of just trade and healthy food in general.
CIENEGUILLA BIO-FAIR	Av. Nueva Toledo s/n, III Etapa, Cieneguilla Sundays from 9 a.m. to 4 p.m.	Honey, strawberries, artisanal bread, sweet tamales and Andean herbs.
LA MOLINA HEALTHY MARKET	Av. Alameda del Corregidor cuadra 5, La Molina) Saturdays from 8 a.m. to 1 p.m.	Besides food, this market promotes wellbeing in general (yoga, recycling).
PACHAKÁMAQ ECO-FAIR	Mercado Jumbo de Av. Poblet Lindt 3111, Pachacámac Saturdays from 9 a.m. to 5 p.m.	A variety of healthy food and products with organic materials.
MISTURA (*) AGRICULTURAL FAIR	Av. Brasil cuadra 32, Magdalena Sundays from 8 a.m. to 2 p.m.	Organized by APEGA nearly two years ago to keep a space where small producers may continue offering their products, such as avocado, oils, tamales and cacao, among other products.
SAN BORJA ECO-MARKET	Polideportivo Rosa Toro. Av. Javier Prado cuadra 31, San Borja Saturdays from 8 a.m. to 4 p.m.	Over 40 products are offered at affordable prices.
SAN ISIDRO ECO-MARKET	Calle Miguel Dasso Sundays from 8:30 a.m. to 1 p.m.	Organic foods and products based on organic materials.
EL POLO GREEN	Centro Comercial El Polo, Surco / Sundays from 8 a.m. to 3 p.m.	Arts and crafts, kokedamas, artisanal marmalades, pickled peppers, aromatic soaps, and more.
BARRANCO ECOLOGICAL FAIR	Av. El Sol Este cuadra 1, Barranco / Sundays from 9 a.m. to 3 p.m.	Partnership between Calandria and the Municipality of Barranco. Organic vegetables and fruits, milk and dairy products, vegetable milk, prepared meals, vegan and vegetarian alternatives, personal care products, seeds, grains and beans, traditional and ecological bread, organic vinegars and oils, macerated products, and more.
UNIVERSIDAD AGRARIA(*) FAIR	Av. La Molina s/n, La Molina, right side of	Fresh products, vegetables, seasonal fruits, meat, dairy products and bread, among other.

main entrance to the university (UNALM)

4. **International markets (Biocommerce)**:

An international market arises when the producers' association or small enterprises extend their activities outside the country's borders. Biocommerce is an alternative for connecting small producers with this type of market. Peru offers an interesting potential by reason of its vast native biological diversity; however, this rich natural capital is very fragile and so the sustainable use of such capital must respond to the conservation criterion of biological diversity, an essential requirement in order to link it to Biocommerce. Other principles that must be followed are equitable distribution of benefits, economic viability, compliance with national and international regulations, and social and environmental responsibility.

Within the framework of the project and based on the abovementioned coordination alternatives, any type of specialization that puts the variability of agrobiodiversity (monoculture) at high risk will be avoided since it would undermine the ecosystem sustainability. Support will be provided to goods and services aimed at specific market niches, and gourmet products will be sought, making sure that products are adequately priced in the value/productive chain.

Brief summary of sustainable companies

Company	Product	Description
Shiwi is a biocommerce initiative that turns chestnuts into an opportunity for development and conservation in Madre de Dios. Since 2011, this initiative maintains 1,200ha of chestnuts under patterns of environmental and social sustainability. **www.shiwi.pe**	**Chestnut**	Shiwi presents a business alternative that goes hand-in-hand with the forest to create, in the long term, a society based on respect and appreciation for the environment, economically active, and able to offer food and cosmetics with aggregate value that come from alive and healthy forests. With the support of the Andean Biocommerce Project, Shiwi strengthens and improves the productive capacity of chestnut by-products.
Algarrobos orgánicos, a company of strong family roots, started its operations in 2007 using the fruits of Piura's dry forest in a sustainable way. As part of its diversification strategy, began an inclusive work that made an impact on 200 producers of the Association of Small Andean Producers (APPAGRO), in over 96 hectares of land dedicated to organic lucuma, harvested naturally. **www.algarrobosorganicos.pe**	**Lucuma**	With the support of the Perubiodiverso Project and the Biocomercio Andino Project, Algarrobos Orgánico consolidates its sustainable management and implements successfully biocommerce aspects for its different products and lines of action, achieving the social and economic development of the families with which it works and the standards of eco-efficiency, placing the company at a leading position in the international market.
Villa Andina began operations in 2007 opting for aguaymanto. It works currently under a system that links 520 small farmers from the rural areas of Cajamarca to the company's supply chain.	**Aguay-manto**	Developed with a strong capacity-building component and technical assistance in cultural activities and organic production, Villa Andina manages over 230 hectares of organic aguaymanto, especially. Based on a relationship with farmers,

www.villaandina.com		provides capacity building in issues related to the management of micro-businesses and establishes alliances with organizations in favour of the aguaymanto productive chain. With the support of the Biocomercio Andino Project, Villa Andina strengthens its commercial activities and is committed to implementing biocommerce principles.
Wiraccocha del Perú S.A.C. is a company established in 2008, in the district of San Juan Bautista, province of Huamanga, in the department and region of Ayacucho. **www.wipersac.com**	**Organic black, red and white quinoa, and organic kiwicha**	The company develops the concept of productive inclusion, incorporates in the productive chain families living in extreme poverty in the region and in Huancavelica, and provides assistance in productive activities in the field. Emphasizes the revaluation of Andean crops, ancient costumes and good practices; innovation through seed adaptation; compost preparation; adaptation to market changes and research, and integration through confidence building and the transmission of values such as transparency, cooperation, unity, and loyalty.
CANDELA PERÚ (acronym for Comercio Alternativo de Productos No Tradicionales y Desarrollo para Latino América Perú) is an alternative commerce organization that has been in the market since 1989, that is, long before biocommerce incentives were formally set in place in the country by the State. **www.candelaperu.net**	**Organic chestnut**	This organization carries out training activities, workshops and surveys, developing local social actions such as procedures for managing conflicts; validation of procedures for fair prices and production costs; identification of forests with high conservation value; awareness-raising of chestnut farmers for flora and fauna conservation, and to maintain their forest concessions productive. It applies procedures that comply with the principles of biocommerce, organic certification, and fair trade.
Molinos Asociados SAC Gomas y Taninos is a Peruvian company engaged in the production and distribution of tara gum powder, focusing on the country's food industry. It has a modern and well equipped plant for tara gum processing in Villa El Salvador.	**Tara gum powder**	This company complies with biocommerce criteria, a new marketing concept that distributes benefits equitably among those who participate in the productive chain, and encourages as well sustainable environmental actions and natural biodiversity. Tara is included in the prioritized list of the National Programme for the Promotion of Biocommerce (PNPB) and is the product that ensures that companies, such as Molinos Asociados, invest on processing and export activities.

5. Markets for organic products

The last report published in the journal The World of Organic Agriculture, Statistics and Emerging Trends (2015)[133], states that the size of the market for organic products is led by the United States with a demand for these products of €24.3 billion, followed by Germany and France with a demand of €7.6 billion and €4.4 billion, respectively.

[133] **The World of Organic Agriculture 2015: The 2015 edition of "The World of Organic Agriculture" was launched in February 2015 at the BIOFACH organic trade fair in Nuremberg, Germany.** www.organic-world.net/yearbook/yearbook2015.html

6. Markets for "gourmet products"

There are no global statistics that will allow analyzing the market of gourmet products since there is a great diversity of products, and volumes are significantly lower than those of the potato commodity. According to Torres (2016), the quality concept associated with the current paradigm of consumption in developed countries—which is already starting to be transmitted to developing countries—refers broadly to three attributes (Torres, 2016):

- ✓ Product's safety. In the case of the potato, since it is a product that is cooked prior to consumption or another process is used to sterilize it, it does not affect the farmer in terms of competition.
- ✓ Presentation of end product and organoleptic properties. This refers to the quality aspects perceived by the consumer through its own senses; they are highly variable and will depend on the potato characteristics as an input and on the industrial processing and presentation of the product to the consumer. It is an attribute that requires market intelligence to be able to capture the trends, which are transmitted with direct information from the chain that interacts with the end consumer backwards in the chain to get to the farmer.
- ✓ Origin characteristics and environmental and social considerations in the productive process. In general this attribute is not perceived by the consumer through his senses, except in the cases in which the place of cultivation (not referred to the origin of the cultivar) is a decisive factor for the organoleptic characteristics of the end product. Therefore, this attribute necessarily entails the consumer confidence that what is being sold to him was definitely cultivated in a specific region or country, and that the productive and industrialization processes were indeed carried out considering the elements that he requires.

The Andean origin and the characteristics, fair trade, and sustainable production of ethno-products without the use of chemical inputs is a competitiveness element that will not be solved easily by obtaining supplies from other producing areas of the world. On the other hand, it should be taken into account that the confidence that the consumer has when buying what he thinks he is buying may be automatic for a tourist who buys in the same high Andean area where the product is produced or at best in the urban areas of the corresponding region, but for a consumer that buys the product in an European, American or Japanese supermarket, a certification process will be required necessarily in order for the attribute to be reflected on the final price (Torres, 2016).

Finally, the information about the export of products based on agrobiodiversity demonstrates that there is an increasing demand in international markets. It also shows Peru's high potential in terms of the wide range of goods and services that it offers based on agrobiodiversity, from different regions of the country (Torres, 2016).

7. Fair Trade markets

Fair Trade is an international network based on dialogue, transparency and respect, aimed at maximizing equity in international trade. At present, over one million small producers and

workers are organized in 3,000 grassroots organizations, with associations in more than fifty southern countries. Their products are sold in thousands of Fair Trade shops, in supermarkets and other points of sale in the developing countries. The current chain structure comprises five main agents (Torres, 2016):

- ✓ Producers. Groups or organizations made up of poor families living in rural and urban areas of southern countries. Some of these organizations manage directly their commercial export activities, or find support in intermediary organizations, companies, or institutions.

- ✓ Organizations supporting producers. Known as "Southern Alternative Trading Organizations (ATOs)", these organizations provide support to producers in logistic and economic aspects relating to the delivery of products; in addition, they offer consultancy services in the areas of production, quality control and development of new products.
- ✓ Importers. Known as "Northern ATOs", they are the chain's key agents as they carry out import activities and connect to the following link: retail stores or establishments. They are in a privileged position that allows them to determine demand trends for current and potential products, as well as new consumer demands.
- ✓ World Shops. These are retail outlets. They are also spaces for the development of public awareness on the principles and values that inspire Fair Trade. At present it is estimated that the network of World Shops in Europe comprises around 3,000 establishments in 15 European countries, and in the United States there are 12,000 establishments where products with Fair Trade certifications are sold.
- ✓ Consumers. According to the Fair Trade concept, consumers play an essential role; they are the system's driving force as they determine the demand and are willing to pay a surcharge for the Fair Trade product, thus allowing to transfer greater benefits to southern producers. Some studies indicate that in European countries between 2% and 5% of consumers are willing to pay a 10% to 15% surcharge (ESPANICA, 2005)[134]. In the United States, the profile of the end consumer for Fair Trade is equivalent to the prototype of Lifestyles of Health and Sustainability (LOHAS), which values highlight health, the environment, social justice and the planet sustainability, among other aspects. This segment would comprise around 60 million people.

8. Product market linked to the geographical origin of communities

In the case of non-commodity markets—markets that do not trade goods in bulk and where goods are sold based on their quality rather than on their price—there are two main ways to address the market and which are linked to two large country blocs: the valuation of products based on brands, developed to a larger extent in the so-called "new world countries" (United States, Canada and Australia as major benchmarks), and the valuation of products based on their geographical origin, which represents a model developed in countries where high-quality traditional products linked to their geographical origin are preserved and valued, such as in the European Union, and increasingly in Asia, Africa and Latin America. In Latin America, the

[134] ESPANICA is a project of alternative economy and fair trade, created to establish an alliance between small producers of the south and consumers of the north, with the purpose of overcoming unfair relationships established by a traditional economy. Website: espanica.org

concept of quality linked to origin was developed through "territorial identity", which the product presents as aggregate value. When the territory's image is also sold through a product, the culture, gastronomy and even the landscapes and agriculture are considered; thus, tourism becomes a great promotion tool for the products linked to origin and, at the same time, the exported products serve to promote other products of the area, including tourism itself.

Currently there are over 10,000 protected Geographical Indications (GI) worldwide, with an estimated commercial value of more than US$ 50 billion (ITC, 2009). Many are well know, such as Colombian coffee, Darjeeling tea, Bordeaux wine, Parmigiano Reggiano cheese, and Idaho potatoes. However, there are many more that are unknown and frequently unprotected.

A recent study conducted by FAO on the economic impacts of GI (forthcoming in 2017) based on nine cases around the world, shows important aggregated values thanks to the GI process. There is a significant impact on the final prices of products of 20% to 50% in most cases, and a better redistribution of the value among primary producers (for instance, in the case of Colombian coffee, the process has generated GI + 25% in the price paid to producers). There is an important increase in volume in the long term and after a potential initial reduction, while the access to the market has increased. The most positive results observed were in terms of resisilience, especially through diversification and decommoditization (less dependence on world market prices), although these are exploratory results and more data would be necessary to mainstream them. Through a domino effect, GIs can have a substantial positive impact on other sectors of the economy. Various types of externality of the GI process can thus be observed across the cases, for example, increase in the price of a substitute product, diffusion of innovative practices to non-GI producers, ability of the GI process to act as a trail-blazer for the development of other GIs.

II. MARKET STUDIES RELATED TO MAIN PRODUCTS BASED ON AGROBIODIVERSITY

For the purposes of the project, there is a set of market studies and short studies that will serve as reference sources, especially in the case of quinoa (2014 and 2015 studies), native potato (2007) and alpaca fibre (2014). The following is a brief summary of the data obtained from these studies.

2.1. Market studies on quinoa

The quinoa market has changed dramatically over the past 15 years. Nowadays there is an international demand for this product as a result of the huge increase in consumer demand in many countries.

Demand for quinoa and market trend

Foreign demand presents the following characteristics:

- ✓ Increase in foreign demand of around 10% annually.
- ✓ Potential for doubling the aggregate demand within a period of 5 to 6 years.

- ✓ United States is the main market for quinoa exports. The volume exported increased from 3.31 million kilograms in 2007 to 31 million kilograms in 2013. This meant a change in the price from US$4.5 in 2006 to US$8 in 2011.
- ✓ New export markets have been developed. Peru has started exporting quinoa to eight new markets since 2013, including Poland, Taiwan, Singapore, Thailand and China, and 18 new export destinations were added in 2014 with Malaysia, South Korea, Saudi Arabia, Rumania and Portugal being the most important ones.
  According to data from the Ministry of Agriculture (MINAGRI[135]), quinoa varieties with the highest demand are "Salcedo-INIA", "Pasankalla", "Kcoyto Negra", "Yellow Marangani", "Chullpi" and "Cuchi Wila".

Domestic demand presents the following characteristics:

- ✓ Peruvian consumers consider quinoa a very nutritious natural food but are undemanding in terms of the quality of the grain and processed products, on account of the limited development of the quinoa industry in the Puno region.
- ✓ Intermediation raises the price of products and Peruvians are not demanding enough with regard to the quality of the grain.
- ✓ According to the MINAGRI[136], the per capita consumption of quinoa for 2018 should increase to two kilograms, considering that the current level of consumption ranges from 800 grams to one kilogram.
- ✓ Low demand for processed quinoa products such as quinoa flour, due to its high cost compared to wheat flour.
- ✓ No analysis of the domestic demand.

Market trend

The quinoa market is currently in the developments stage owing to its nutraceutical properties. Consumer preference is growing, as well as production in other countries. The importance of quinoa is renewed since it is not only a healthy and gluten-free food but also may be sold in many presentations. 98% of quinoa exported by Peru is sold in whole grain form and efforts need to be made to take advantage of the high margins that would be obtained from the export of quinoa products with greater aggregate value. For example, quinoa cookies (150g) are sold in Italy and the United Kingdom at an average price of US$3. In Australia, Germany and the United States, a box of quinoa flakes (350g) costs US$5 dollars on average (Myperuglobal, 2014).

The main trend is the consumption of organic foods produced under agricultural systems that apply natural processes, along with practices to conserve natural resources, improve biodiversity, and maintain a sustainable ecosystem (ILO, 2015). According to the Ministry of Foreign Trade and Tourism (MINCETUR), there is a trend for consuming "green" or "bio"[137] products in Western Europe. These trends have boosted quinoa sales significantly in Germany and the rest of Europe. There are low-carbohydrate American diets that are

[135] http://www.agronoticiasperu.com/385/especial1-385.htm

[136] http://www.andina.com.pe/agencia/noticia-consumo-per-capita-quinoa-aumentara-a-dos-kilos-cinco-anos-468617.aspx

[137] Organic and/or trade fair products are considered green or bio products. This trend is particularly popular among people with an education and high income, since it is necessary to know what makes a product organic and this type of food is normally more expensive than conventional food. Quinoa and kiwicha are considered "bio" o "green" since they are organic products and in most cases trade fair products.

becoming more relevant in Germany, such as the Atkins diet. Consumers are becoming aware that quinoa may be used to make bread and prepare meals (using quinoa flour, for instance), besides the fact that quinoa is gluten-free. This product represents a solution for the issues that this trend may face.

Over the past few years, the organic sector has accounted for only 0.5% to 3.7% of total consumption (ILO, 2015). The main blocs of consumers of organic products are the European Union with a 45% share, United States with a 51% share and the rest of the world with barely 4% of total consumption. Italy, France, Germany and the United Kingdom are the countries with the highest consumption rates for these products.

In general there is a new generation of consumers that are increasingly aware of health aspects, environmental conditions, animal wellbeing, and sustainability, in addition to associating the production of organic products with fair trade and the consumption of ethno-products.

Production

Quinoa cultivation is expanding; at present quinoa may be found in over 50 countries. 80,000 hectares of quinoa worldwide were recorded in 2002, the majority of which are located mainly in the Andean region. The top quinoa producing countries are Bolivia, Peru and Ecuador. Quinoa is one of the few crops that grows under extreme weather conditions and in different altitudes. The considerable adaptation of quinoa to climatic variations and its efficient use of water make it an ideal alternative crop for climate change.

International production

Quinoa cultivation has transcended continental borders. It is grown in Australia, France, England, Sweden, Denmark, the Netherlands, and Italy. It is produced in the United States (Colorado and Nevada), and in Canada (Ontario). Peru is presently the main quinoa producer worldwide, according to the information provided by FAO and the major independent commercial information agencies.

Domestic production

According to MINAGRI[138] official figures, the production of quinoa in 2014 was 114,000t, representing an increase of 119% with respect to 2013 (52,000t). The increase in production volumes is explained by the increase of cultivated areas and also by the increase in physical productivity per hectare. This growth took place mostly in the regions of Arequipa (522%), Puno (23%) and Junín (173%). Puno is the main quinoa producing department[139]. During the 2012/2013 agricultural year 31,258ha were sown and 32,929ha were sown during the 2013/2014 agricultural year. Total production for 2014 was 36,158t and 29,331t for 2013. Ayacucho sowed 5,768ha during the 2012/2013 agricultural year and 7,979ha during the 2013/2014 agricultural year. Total production in 2014 for this region was 9,982t, nearly doubling the 4,925t of 2013. The figures for 2014 may vary the production ranking per

[138] Article in Gestión newspaper: "MINAGRI increases areas under cultivation of quinoa, grapes, avocado and cacao in Peru."
[139] Synthesis of information from the Ministry of Agriculture and Irrigation – Directorate General for Policy Monitoring and Evaluation – Agricultural Statistics Bureau.

department, especially due to the inclusion of Arequipa, Lambayeque and other coastal departments that are producing conventional quinoa at a great scale.

The following quinoa varieties are sold in the domestic market: yellow Maranganí, Kancolla, white quinoa from Juli, Cheweca, Witulla, Salcedo-INIA, Iplla-INIA, Quillahuaman-INIA, Camacani I, Camacani II, Huariponcho, Chullpi, red quinoa from Coporaque, Ayacuchana-INIA, Huancayo, Hualhuas, Mantaro, Huacataz, Huacariz, pink quinoa from Yanamango, Namora, Tahuaco, Yocará, Wilacayuni, Pacus, pink quinoa from Junín, white quinoa from Junín, Acostambo, and white quinoa from Ayacucho.

Production evolution in Peru

According to FAO (2014), cultivated areas in Peru increased slightly, less than 25%, from 28,889ha to 35,641ha during the 2000-2013 period. However, despite the fact that there was less area under cultivation, the volume of production exceeds that of Bolivia, which is explained by the greater yields per hectare obtained that practically double those obtained in the neighbouring country. The available information does not allow to identify the reasons of this very marked difference in productivity, which may be linked to better agroecological conditions or to an improvement of the genetic quality and cultivation techniques, or more likely to a combination of such factors (FAO, 2014).

The distribution of Peruvian production is carried out as follows (ILO, 2015):

- ✓ 35% of production is destined for export.
- ✓ Producers distribute their total productions in the following way:
    - 20% for self-consumption
    - 10% for seeds
    - 20% is stored as savings to cover potential "liquidity" requirements, and destined to the "free" market gradually.
    - 15% of quinoa total production covers domestic demand.

Peru's main competing country as regards the production of quinoa is Bolivia, which leads world production in terms of export volumes. However, Peru has advantages over Bolivia, such as higher yields per hectare and trade agreements that allow greater opportunities to access new markets with tariff preferences (Myperuglobal, 2014).

Production characteristics

According to a study conducted in 2015 by the Inter-American Institute for Cooperation on Agriculture (IICA), quinoa production has experienced a significant growth, from 22,269t in 2001 to 114,530t in 2014, with a national growth rate of 13.4% per annum, and 119.79% between 2013 and 2014. In 2014 the production of quinoa in Peru reached 114,000t, an increase of 119% compared to 52,000t in 2013 (IICA, 2015). This increase occurred mainly in the regions of Arequipa (522%), Puno (23%) and Junín (173%) based on greater sowing and, accordingly, increased harvests. The gross value of production (GVP) of quinoa between January and December 2013 was S/.63.7 million nuevos soles (S/.) and S/.139.7 million in 2014 for the same period; contributing 0.26% to the agricultural and livestock GDP in 2013 and 0.57% in 2014; and in relation to the agricultural GDP, contributing 0.39% in 2013 and 0.84% en 2014, given the increase in production in the previous year (MINAGRI, 2014).

Quinoa production showed an upward trend with an annual rate of 13.4%, from 22,269t in 2001 to 114,343t in 2014 (nearly doubling production compared to 2013), driven by the production reached in the departments of Arequipa, Ayacucho and Junín. It is worth mentioning that the production achieved in 2014 placed Peru as the world's leading producer of quinoa (IICA, 2015).

Exports

In 2013, Peru's quinoa exports amounted to US$79.12 million, a 153% increase compared to 2012, influenced by a 73% increase in the volume of quinoa traded and by favourable international prices. Quinoa was exported to the United States, Canada, Australia, United Kingdom, the Netherlands, France, Germany, Brazil, Israel, New Zealand, Japan, Russian Federation, Mexico, Sweden, South Africa, India, and Uruguay. Quinoa exports grew in a sustainable manner by more than 143%, driven by the demand of international markets based on the high nutritional quality of the Andean grain. In 2012, quinoa was exported to 37 countries and the top export destination was the United States. The exports to this country totalled over US$21 million, a 24% increase compared to 2011, accounting for 67.5% of total exports. Other export destinations were Canada with US$1.6 million; Australia with US$1.4 million; Germany with US$1.4 million and Israel with US$900,000 among others. In 2012, quinoa exports from Peru reached nearly US$30 million and US$187 million FOB in 2014, an 143% increase with respect to 2013 (US$77 million), an all-time high. The Peruvian quinoa or "Golden Grain" is conquering the world. On the other hand, if the statistics disseminated recently by the National Statistics Institute of Bolivia concerning quinoa exports from that country (US$196 million) are taken into account, it is noted that the price of Bolivian quinoa is US$6.64 kg, whereas the price of quinoa in Peru according to independent commercial registers is US$5.64 kg, in other words, one dollar less per kilogram. It is worth mentioning that quinoa tends to become a commodity, so its price is determined by the international market and it does not vary significantly whether it comes from Bolivia or Peru; therefore, a major price difference between both products is unlikely.

Regional quinoa exports

The external sales of Bolivia, Ecuador and Peru as a whole have shown a strong and constant growth during the past twenty years. In current values they grew from US$700,000 in 1992 to US$111 million in 2012, representing an annual cumulative increase of 28.8%.

Quinoa exports

In 2014, quinoa ranked fourth in non-traditional agricultural exports with 4.6% of the value exported (Adex Data Trade/Customs 2015)[140], reaching 36.5 million tonnes, while in 2013 the volume reached was 18.7 million tonnes. During the 2000-2104 period, the volume exported showed an annual average growth of 47.7%. This growth is explained by the demand of the international market (IICA, 2015). Based on the data obtained from Customs, in 2014 Peru exported 36.5 million tonnes, of which 67.6% was marketed by companies located in Lima; followed by Lambayeque with 9.9% of total exports, a region that registered a significant growth and outran traditional exporters such as Puno and, lately, Arequipa (IICA,2015). Peruvian quinoa is exported to the international market as conventional and organic quinoa.

[140] The Commercial Intelligence System provides the most complete information about Peru's foreign trade activities in the world.

During the past five-year period (2010-2014), conventional quinoa accounted for 75.4% of exports with an annual growth rate of 67% while the annual growth rate for organic quinoa was 82% (IICA, 2015).

Results of the study International Markets and Customers of Quinoa, Myperuglobal Commercial Intelligence Area – Foreign Trade Consulting Company. 2014

- **FOB value of quinoa exports:** Quinoa exports have been growing considerably, reaching the highest peak in 2013 with US$79.2 million FOB compared to 2012 with US$31.5 million.
- **Export volumes (weight):** Export volumes increased significantly during the past five years. In 2013, 18.6 million kilograms were exported.
- **Market opportunities:** According to PROMPERU, Thailand and the United Arab Emirates represent two new market opportunities. At present, Thailand is one of Peru's main commercial partners in Asia, and in recent years the business relationship between both countries has been strengthened, with volumes worth over US$700 million, of which US$145,000 account for quinoa exports. In the United States, the main quinoa marketing channels are managed by companies that buy the product and sell it with their own brands at main supermarkets such as Cotsco and Whole Foods, important chains of organic products.
- **Countries that buy from Peru:** The five main countries that bought quinoa from Peru in 2013 were the United States, Canada, Australia, United Kingdom and the Netherlands, each country showing a percentage variation above 50% in relation to 2012. United States is the country with the largest demand and share (59%), followed by Canada with a share of 9%. Both NAFTA countries account for 68% of Peruvian quinoa exports.
- **Main Peruvian export companies:** Exportadora Agrícola Orgánica is the main export company of Andean grains in Peru, with a share of 25.6% of total exports. In 2013, their exports, mainly to the United States and Australia, totalled over US$20 million. 10 other export companies represent 79% of the world's Peruvian quinoa market, such as Alisur, Grupo Orgánico Nacional, Interamsa Agroindustrial and Vínculos Agrícolas, among others.

Trends in Peruvian exports

Quinoa grains (natural state) account for 84% of quinoa exported. In 2014, over 80 companies exported this product for the first time in response to the world demand. 50% of exports are carried out by six companies: Agrícola Orgánica, Vínculos Agrícolas, ALISUR, Grupo Orgánico Nacional, Wiracocha del Perú and Aplex Trading[141]. The 10 main Peruvian export companies represent 79% of the world market of quinoa from Peru; their headquarters are located in Lima and their branch offices for the collection of products operate in the different regions, mostly in the coast (Arequipa, La Libertad, Lambayeque and Tacna, among others).The price in 2014 was US$7 kg and US$4.26 kg in 2013. Peru exports larger volumes of conventional quinoa compared to organic quinoa.

Evolution of regional exports of quinoa

According to FAO (2014), regional exports of quinoa, i.e., the external sales of Bolivia, Ecuador and Peru as a whole, have shown a significant and continued growth over the last twenty years. In current values they grew from US$700,000 in 1992 to US$111 million in 2012, representing an annual cumulative increase of 28.8%. This figure is well above the expansion rhythm registered by ALADI for joint exports, for such year (10.6%). It must be noted that the growth rate of regional quinoa exports has not been stable; rather it has accelerated along the mentioned period. In fact, sales were multiplied by 4 during the first ten years and between 2002 and 2012 sales were multiplied by 39.

[141] Based on the data of the Lima Chamber of Commerce. http://gestion.pe/economia/ccl-exportacion-quinoa-crecioseis-veces-mas-ultimos-dos-anos-2124236

Commerce of quinoa between regions and export prices

When comparing the evolution of export prices in international markets obtained from Bolivia, Ecuador and Peru, it is noted that these three countries followed the same trajectory in general (FAO, 2014). However, the main difference is that Ecuador had been registering a higher price in the years prior to the price escalation, but following the increase its price (US$2.60 kg) dropped below the price of the other countries (US$3.00 kg) (FAO, 2014). The comparison of the many export prices according to the destination market shows considerable differences among some such markets. At one end, according to 2012 figures, placements in Australia obtain unitary values (US$3.40 kg) that are significantly higher than average (US$3.00 kg) (FAO, 2014). On the other hand, exports to ALADI countries register lower prices (US$2.20 kg), and significantly lower than average (-27.7%). The commercial exchange of quinoa between member countries of ALADI has increased considerably in the past 20 years, from barely US$21,000 in 1992 to US$3.5 million in 2012, representing an annual cumulative increase of 28.8% (FAO, 2014).

Prices

Ancient and organic production has been valued in the different markets, as shown by the prices registered in recent years, except for 2015, when quinoa prices dropped due to fluctuations in the domestic market.

World price

The average world price has also increased. In 2014, the price established for the middle of this year is US$5.61 kg compared to US$4.26 in 2013 (Myperuglobal, 2014). The average price of the 10 main export markets is between US$3.64 and US$4.68 kg, showing that the main 5 countries that buy from Peru are willing to pay a price above US$4.00 kg (Myperuglobal, 2014).

Export prices

- According to FAO (2014), when comparing the evolution of export prices obtained by Bolivia, Ecuador and Peru in international markets, it is noted that these three countries followed the same trajectory in general. However, the main difference is that Ecuador had been registering a higher price in the years prior to the price escalation, but following the increase its price (US$2.60 kg) dropped below the price of the other countries (US$3.00 kg) (FAO, 2014). The comparison of the many export prices according to the destination market shows considerable differences among some such markets. At one end, according to 2012 figures, placements in Australia obtain unitary values (US$3.40 kg) that are significantly higher than average (US$3.00 kg). On the other hand, exports to ALADI countries register lower prices (US$2.20 kg), and significantly lower than average (-27.7%) (FAO, 2014).
- Prices in European markets, which demand organic quinoa only, have not been reduced and are maintained within the same range registered in 2014, that is, between €13 kg and €15.20 kg. According to research, the export price for organic quinoa is approximately US$5.00 kg in 2015.

Farm prices

The average farm price of quinoa in 2011 was S/.3.65 kg; S/.3.88 kg in 2012; S/.6.29 kg in 2013, and S/.7.88 kg in 2014. In Puno, farm prices went from S/.3.73 kg in 2011 to S/.9.58 kg in 2014, thus exceeding the national average. Ancient technologies and methodologies produce higher quality crops in relation to other markets, resulting in price differentials owing to crop management. The difference between farm and export prices has ranged between 45% and 58% (ILO, 2015).

Prices for Peruvian consumers

In January 1995, the average consumer price was S/.3.19 kg, and in February 2013, quinoa was sold locally at S/.9.87 kg. In 2014, consumer prices experienced two stages: during the first six months of the year, the price was around S/.20.00 kg and during the second half of the year, prices were reduced by more than 30% due to speculation (return of quinoa from USA), reaching an average of S/.16.00 kg in the local market.

Perspectives: risks and advantages (FAO, 2014)

Risks:

- ✓ Producers in the country, especially in the coast, are using agrochemicals due to quinoa pests and diseases.
- ✓ In Bolivia, greater production of quinoa has allegedly increased deforestation and displaced other native crops, and even replaced the consumption of quinoa with other products in order to sell it at best relative prices in the market.
- ✓ The major risk is an increased production in countries with cutting-edge technologies, which would allow them to improve production volumes, productivity, and quality.
- ✓ Another risk for Peruvian quinoa might be the self-supplying capacity of the United States (currently, consumption of Peruvian quinoa in USA is 43%).

Advantages:

- ✓ Exporting countries grow conventional quinoa; the quinoa produced in Peru, Bolivia and Ecuador has special characteristics.
- ✓ As noted before, the market perspectives for quinoa are auspicious in international markets as well as local and regional markets. It has been stated also that this crop is developed almost exclusively by small producers. From the perspective of producers, it seems appropriate to strengthen their association activities so as to reduce the number of intermediaries within the marketing process in different links of the chain, in order to reduce transaction costs and at the same time obtain greater shares of the value generated along the production, marketing, industrialization and distribution chains in local or foreign end markets (FAO, 2014).

2.2. Market studies on native potatoes

The potato is a food product of global importance. According to FAO statistics, this tuber is the world's fourth largest food crop, following wheat, rice, and maize. In 2004, potato production worldwide reached 326,759, 417 tonnes. The main producing countries are China (70 million tonnes), Russian Federation (36 million tonnes) India (25 million tonnes), and Ukraine and the United States (220 million tonnes each). At continental level, 42 million

tonnes were harvested, the major producing countries being the United States, Canada and Peru. The production of potatoes showed an increase of 29% in continental production between 1990 and 2004, with Peru registering the most significant increase of 160% (Torres 2006).

In Peru the potato is the main crop of the highlands and of small producers, for whom potatoes represent the most important food, source of income, and even a means of preserving ancient traditions (Ordinola, 2010). As the country of origin of the potato, Peru is home to a vast biodiversity of this tuber, and produces 72% of potato varieties existing worldwide. The international importance of this crop is well known; it has become the fourth staple food in many parts of the world, contributing to the reduction in food deficit, especially in a context where the main substitute goods are scarce, such as rice.

Potato producers are not homogeneous nationwide, they may belong to the sector that is most integrated to markets or they may be farmers for local consumption; thus, the value chains concerning the different type of producers are not the same.

Production in Peru

Production characteristics

According to Alvarez Mayorca (2001), the potato is still one of the main crops in Peru, both in terms of hectares sown and the population engaged in their cultivation (following maize, the second most important crop). Harvested areas have experienced dramatic changes, from around 300,00ha in 1970 to 146,000ha in 1990, bouncing back to 240,000ha in 1995-1997 (FAOSTAT, 1998).

Yields per hectare have increased slightly in the highlands although in the coast this increase is significant (Alvarez Mayorca, 2001). In recent decades a sustained increase nationwide is noted, above the average of other South American countries, although yields are still relatively low at absolute levels (Scott and Maldonado, 1998). Concerning regions, the average productivity of the coast and the highlands are quite different. Highland yields do not reach half the average yields of the coast. This situation is even more critical in the case of native potatoes, which in most cases have yields below the commercial hybrid varieties of the highlands. Domestic availability per capita shows fluctuations (Alvarez Mayorca, 2001). In 1970 a reduction of around 100 kg/person was registered, and even less than 50 kg/person in 1992 due to the increase in population and the drop in production (Alvarez Mayorca, 2001). However, in recent years, because of the rebound in production and a slower population growth, the annual consumption per capita has grown from less than 50 kg/person in 1992 to 63 kg/person in 1994-1996 (Scott and Maldonado, 1998). On the other hand, market potential is characterized by the size, growth trends, location, income levels, tastes, and preferences of the population. Changes in situation and circumstances also have an impact, such as the society's commercial organization, media development, openness of the economy, and governmental policies (Alvarez Mayorca 2001).

Processed potato products in Peru

At the end of 1990, the potato processing industry in Peru was traditional and underdeveloped (Alvarez Mayorca, 2001). There were 16 brands of processed potato products and more than half were ingredients for the preparation of foods. There were only three brands of snacks and two of instant purees (Alvarez Mayorca, 2001). Out of the 13 national companies selling these products, 8 were just packing firms (4 of them packed dry potato produced manually by micro and small rural producers; 3 packed imported starch and one imported purees). The demand for processed potato products was satisfied mostly with artisanal production due to the underdeveloped national industry and the restriction to imports. The opening up of the economy since 1990 allowed an increased entry of imported products (Alvarez Mayorca, 2001).

In 1994 there were 55 types of processed potato products in Peruvian supermarkets; 21 were national brands and 20 were imported brands (Alvarez Mayorca, 2001). Unlike the previous stage, around 80% were instant products, and the number of products used as ingredients for the preparation of foods at home was reduced (Alvarez Mayorca, 2001). The number of companies supplying supermarkets had nearly doubled. However, 11 of the 12 Peruvian companies were packing companies only. The group of Peruvian companies was still traditional and only one out of the 12 companies that offered snacks was a national company. By mid-1995, the processing potato companies—mainly the companies that offered snacks—decided to modernize their production and facilities. At present, the supply is fundamentally focused on snacks and purees (Alvarez Mayorca, 2001).

International and domestic trade

According to Torres (2006), the international potato trade is considered residual with regard to production, as only 2.9% of the world production is traded across frontiers (FAO figures for 2003), since the multiple varieties existing in the world allow their production in most parts of the world, and the fact that phytosanitary barriers make the entry of foreign fresh potatoes to many markets difficult, and the product value is low on account of their high volume and transportation cost. Actually, major transactions are carried out within European countries; which are low-cost transactions with less phytosanitary barriers (Torres, 2006). Because of this, the levels of production by country has more to do with high domestic demand for the product than with productive efficiency, explained either by the large number of consumers and/or by high consumption per capita (Torres, 2006). While fresh potatoes have, to a greater extent, phytosanitary restrictions and value limitations owing to volume as mentioned previously, frozen potatoes have no phytosanitary problems and the value for volume exported is significantly higher. For this reason, the international trade of frozen potatoes is increasingly more important than that of fresh potatoes. Thus, the international market of frozen potatoes is acquiring its own characteristics, trending toward a behaviour that is less dependent on the internal supply and demand fluctuations of countries that are the result of climatic events and market failures due to the lack of information on the part of producers, and which in some cases bring about significant seasonal and annual variations in the price of fresh potatoes for the producer and consumer (Torres, 2006).

Two types of potatoes are basically commercialized in Peru's domestic market: the white potato and the yellow potato, which are subdivided into specific varieties. The yellow potato is a native cultivar for mass consumption, and its price is normally higher that that of the white potato, although the volumes produced, and traded in the market, are significantly lower. The highest price paid is a reflection of the higher quality perceived by the consumer, and it becomes clear that through promoting the product, greater mass demand could be obtained and, thus, a larger market to increase national production (Torres, 2006).

Potato exports

The Peruvian native potato is among the products with the greatest demand, particularly in the past five years (2011-2015) when the export of this ancient product grew by 211%. Compared to 2010, when the country's native potato exports totalled US$821,000 (snacks, frozen, dehydrated and fresh potatoes), the volume exported totalled US$2.5 million in 2015. Native potato snacks registered the greatest increase in demand: in 2010, the country exports hardly reached US$85,000 while in 2015 exports totalled US$1.7 million, that is, an increase of 1,962%.

In 2015 Bolivia became the major market destination for the Peruvian native potato, with a 48% share and a 43% increase, totalling US$1.2 million, followed by United States with US$488,000 and Chile with US$340,000. Canada and Australia are the next markets to be consolidated, especially in connection with the dehydrated native potato. As regards new destinations to be explored, the United Arab Emirates and China are markets with a great potential. These countries are considered future opportunities (ADEX[142]).

According to the Institute of Peruvian Studies (2008), the export of potatoes is not a recent activity in Peru since the country has been exporting yellow potato for the last 12 years, at least. The lesson learned so far is that the process must be improved for greater efficiency and costs optimized for competitiveness purposes. A report from Proexpansión (2011) indicates that Peru's share for potato exports worldwide was low: 0.01%. At present, 9 different tariff headings of potato are marketed. Potatoes cooked in water or steamed and frozen potatoes ranked number one in the case of Peru (Institute of Peruvian Studies, 2008). It is worth mentioning that:

- The tariff headings for frozen potatoes, potatoes fresh or chilled, and potato starch showed the best development in terms of exports.
- The tariff headings for potato starch, potatoes prepared or preserved, potato flakes, and potatoes prepared or preserved, not frozen, showed the highest values in terms of imports.

Given these results, in 2007 Peru was a net importer of potato, totalling US$9 million (Institute of Peruvian Studies, 2008). However, the study recommends taking the following into account:

- Potato trading has increased, both in the case of imports and exports.
- Potato imports are not related directly to domestic consumption, as potatoes are used mostly as inputs for subsequent processing.

[142] ADEX: Institución empresarial fundada en 1973 con la finalidad de representar y prestar servicios a organizaciones asociadas como exportadores, importadores y prestadores de servicios al comercio.

Market trend

According to Torres (2006), the current paradigm of agricultural development is the demand economy, in other words, "to produce what sells" rather than "to sell what is produced". This element, combined with the globalization of consumption, has definitely influenced the movement of native potatoes in the market of consumption potatoes. In general, in the potato commodity market, the consumer looks for value-for-money, where price is very relevant when deciding; however, when it comes to quality attributes, the origin and the fact that potatoes are native and grown by poor farmers has little relevance in that market. In turn, competing on the basis of price requires improving production efficiency permanently, which entails genetic improvement (of native material or incorporation of exotic cultivars), and an increased use of fertilizers and pesticides, among others (Torres, 2006).

In general, for commodity products worldwide, profit margins are low in the chain (Torres, 2006). In the case of the potato, given that it is a not a product as open to markets as wheat, maize, or other commodities (bearing in mind that only 2.9% of the volume worldwide is traded between countries), there is always the risk of loss in an operation as well as the option of increased profits due to seasonal price fluctuations or inter-annual variations, but over time profits are likely to standardize along the different links of the chain (Torres, 2006). These low average margins in the mid-term require operating with large volumes to cover fixed operating costs; therefore, facing a market with a larger homogeneous volume will always be an advantage for the potato as a commodity (Torres, 2006). In addition, according to Torres (2006), if commercialization is organized in this way, the negotiating powers of farmers will be improved, an element that is highly relevant in monosopnistic or oligosopnistic markets. Another option is a more direct commercialization—skipping some link of the chain—which actually requires more solid, pragmatic and commercial organizations. Likewise, the feasibility of the business should be evaluated thoroughly, especially in competitive markets, in other words, when there are many agents competing in each level of the chain, the fact that intermediaries take high risks must not be overlooked; risks that in some cases are transferred to the farmer's organization (Torres, 2006).

Opting for the gourmet native potato is not an easy choice but it may be taken by efficient organizations of producers and/or with the support of public or private development institutions. The value of this product lies in the fact that its image is strongly linked to the culture of indigenous peoples. It implies lower volumes compared to the commodity product but can generate significant profits.

Gourmet native potato: the experience of Jalca Chips in Peru

This experience was driven by the International Potato Centre (CIP), which identified the most convenient market segment in order to place coloured native potato chips. As a first step, the chips were presented at an international food fair; consumers were interviewed to value the characteristics expected for this type of product, which ended up being its exclusive nature and the fact that there are healthier and more natural than conventional chips. These characteristics were particularly highlighted and the product was named after the agroecological area located 3,500 metres above sea level, where these coloured potatoes are grown. Opinions were later sought in five-star hotels about the packing and

label, and the suggestions were used to design the final bag. Jalca Chips are sold in duty-free shops at Lima airport, and access to the market of tourists is expected eventually in order to position the product in the segment where it will be most appreciated (Bernet, T). This initiative, besides adding value to the native potato, aims at reaching markets that are more fertile for local products, such as the market of tourists from developing countries.
Source: Concepts, guidelines and tools: Participatory approach in chains and platforms of consensus. July 2005 . Native Potato Project.

Demand and perspectives

A study conducted by Soluciones Prácticas (2007) evaluated the current perception and attitudes of final consumers and institutions concerning native potatoes. The results regarding the tourist appeal and the cultural valuation given to native potatoes are an important aspect, as well as the willingness to collaborate in the promotion and dissemination of the product. These results are summarized as follows (Soluciones Prácticas, 2007):

- **End consumers**

Native potatoes are widely known by the population of the city of Cusco. The two most known varieties of native potato lead the market and these are the ones that are most consumed. Cusco inhabitants highlight basically the following two advantages of native potatoes: 1) their flavour and 2) their floury texture and, thirdly, the fact that they are natural, nutritious products. On the other hand, the disadvantages considered are: 1) the poor commercial presentation of native potatoes ("they arrive dirty", "they arrive flawed"), as well as 2) the price ("they are expensive") and the poor distribution ("they not available in the market", "they are difficult to find in the market"). Most households buy native potatoes, and few households are supplied by friends or family members. The most important fact revealed by this research is the widespread acceptance of the need to improve the presentation of native potatoes for marketing purposes, that is, clean, selected, and packed in nets. The size and cleaning are the most important elements for this new presentation. The market is not only willing to purchase them in this way but also is willing to pay more for them if native potatoes are sold under this new concept (up to S/.0.20 kg). On the other hand, the majority of Cusco's population is not familiar or has not tasted native potato chips. The fairs are commercial spaces where most consumers buy agricultural and/or agro-industrial products produced by hand. The people surveyed agreed that the Huancaro Fair is unquestionably the most important, and so suggested that producers participate in this and other relevant events, not only to promote their products but also to present the diversity of native potatoes, show them as quality products, conduct tastings, and offer them at affordable prices.

- **Institutions**

The many public and private institutions carrying out activities in Cusco have substantial knowledge of native potato cultivars. Native potatoes are also found in tourist restaurants and eateries. The two most widespread cultivars in the market of native potatoes are Peruanita and Compis. Markets and intermediaries are the purchasing channels. There is no supplier of native potatoes or an association of providers duly linked to the market. The most acknowledged advantages of native potatoes were the same as those stated by the population: 1) flavour, 2) texture, 3) natural state and 4) rapid cooking (this was the only difference), while the disadvantages mentioned were basically: 1) shortage in supply, 2)

inherent characteristics, and 3) product marketing ("too small", "too many eyes", "difficult to peel", "turn out with worms", "fall apart when cooked", "arrive with worms", "too dry", "unripe", "flawed", "too dirty", "with dirt"). Agricultural fairs were considered important by all the interviewees of institutions. They were of the opinion that producers should promote and offer quality products, conduct tastings, establish micro-enterprises, disseminate the characteristics of native potatoes, and participate in fairs. They also stressed, to a lesser extent, that prices should be lowered or the need to offer discounts, indicating above all that the natural qualities of these potatoes should be highlighted, as well as the need to sell them clean and to take samples in optimum conditions to all the restaurants and hotels of the city. It must be noted that the interviewees were willing to collaborate in the promotion of native potatoes by displaying in their places of business posters, pictures, recipes and brochures of native potatoes; developing experience-based tourism programmes; buying the potatoes to include them in menus; organizing fairs, and disseminating the cultivars. However, they demand the permanent participation of the state, the regional government and the municipality, in addition to capacity-building activities for all those interested in promoting the consumption of these varieties through seminars, so they may provide information to tourists and the population. They also recommend the organization of gastronomy fairs, and that the First Festival of Native Potato be held in the city of Cusco.

Within the framework of the Potato Innovation and Competitiveness Project (INCOPA) of the International Potato Centre (CIP), which is executed with COSUDE funds and in alliance with public and private associates, a study was conducted to identify the changes occurring in the potato sector in Peru, based on the project intervention. The results achieved concern: i) commercial innovation or new products (fresh native potatoes selected, coloured potato chips, yellow potato puree, white potato starch or selected tunta); ii) institutional innovation and new regulations (public-private alliances, National Potato Day, Law on Potato Wholesale Trade, and Technical Standard for Tunta, among others), and iii) technological innovation (post-harvest management, quality seed production, and integrated management of crops, among others). Evidence indicates that the enhancement of the value of native potatoes cultivated by small farmers and their revaluation as cultural heritage makes it possible for farmers to be paid prices 20% above prices of traditional commercial channels; an increase in yields from 10 to 14t/ha, and an improved quality. In brief, the following results and conclusions were reached (Ordinola et al., 2009):

- ✓ **Commercial innovations**: changes in end products that allow greater and better access of small producers to dynamic markets with an improved aggregate value. In this regard, the following are included: "My Potato, Selected and Classified" (wholesale trade), white potato starch (tunta) in bags (local and export market); "Andean Puree" (export); "Tikapapa" (supermarkets), and Jalca Chips (export). Taking these initiatives as a starting point, new brands based on native potatoes have been launched recently on the market (Lay's Andeans, Inca's Gold, Natu Krunch, Nips, and Mr. Chips, among others).
- ✓ **Institutional innovations:** changes in ground rules whereby agents of the chain and other public actors communicate and interact. They may be new institutions (CAPAC Peru, Tunta Institutional Alliance, Andean Potatoes Initiatives) or new regulations (National Potato Day, International Year of the Potato, Technical Standard for Tunta, Law on Potato Wholesale Trade). Likewise, the incorporation in the political agenda (policies) of the need to develop in a sustainable way the potato sector in Peru is an essential topic. It

must be noted that the INCOPA Project works with a wide network of public and private partners that allows extending the coverage of actions and supplementing activities.

- ✓ **Technological innovations:** changes in technology required to improve efficiency or the quality of the production and transformation processes to respond to market demands. The following may be mentioned: quality regulations and standards for My Potato, sprout inhibitors, dissemination of strategies for integrated crop management, storage technique, and seed production technique. The combination of these results has an impact on the prices, number and size of markets of products cultivated by small producers.
- ✓ **Conclusions:**
    - The commercial success as a gourmet food has helped to demonstrate the value of native potatoes grown by small producers and their revaluation as cultural heritage; its trade allows farmers to be paid prices 20% above the prices of traditional commercial channels (combining an increase in yields from 10 to 14t/ha, and an improved quality). The experience has driven the establishment of public-private alliances and has generated important additional investments for the development of products based on potato biodiversity.
    - The potato sector in Peru—in particular the segment of yellow potato and native potato—is undergoing changes. There are products developed by private companies or new products being analyzed by companies because markets require it. In order for this process to keep succeeding, it is vital that all the actors of the value chain share the common mission to sell quality products, both fresh and processed, in order to satisfy market demands.

Revisiting the conclusions of Hidelgardi Venero Farfan (2008), the following is summarized:

- The total export value of the potato and its by-products has increased considerably over the past 5 years.
- There are new ways to present the potato in the domestic market, with the potential to be exported in the mid-term.
- Although there are different types of producers nationwide, there are successful experiences of producers who participate in more profitable markets, which can even modify the value chain.
- The native potato has significant potential; however, it faces problems such as low productivity, which limits the supply in markets with excess demand. An important aspect is that not all producers react in the same way when the price of this product is increased.

2.3. Market studies on alpaca fibre

The excellent quality of alpaca fibre is widely recognized by professionals, which is part of the reason for the positioning of Andean products in the market.

Alpaca world production

Peru is the leading alpaca fibre producer, accounting for 80% of the world's production, followed by Bolivia, Australia and the United States. In 2006, there were 3,597,753 alpacas in Peru and 373,640 alpacas in Bolivia. It should be noted that based on its ample experience

in Merino wool, Australia has started the production of alpaca fibre. Its highly developed wool industry allows a greater productivity per animal than that of Andean countries (ProChile, 2015).

With regard to the quality of the fibre, it is frequently stated that the fibre produced in Australia lacks the quality and resistance of the Bolivian fibre. Peru and Australia produce the royal or extra-fine quality, unlike Bolivia, which stays behind in terms of the finest qualities that may be offered and which the market demands. In the case of Peru, the royal or extra-fine quality is the quality with less percentage of alpaca fleece: 0.5%. The largest production in Peru occurred in 2005, when the country produced 3,597mt. In 2007, production dropped to 3,247mt. In the case of Bolivia, it is estimated that fibre production reached approximately 360mt in 2010 (AVSF, 2013).

The breeding of camelids in Bolivia and Peru takes place in areas with extreme weather conditions, where in many cases it is the only possible productive activity. A number of actors around the world participate in the production and marketing of alpaca fibre, which are dynamic and complex activities. This textile chain is undoubtedly one the largest international chains, since the breeding and primary transformation activities are carried out in southern countries; the transformation takes place in Asian countries (China, Bangladesh, etc.), and the manufacturing, marketing and consumption occur mostly in Europe. It is precisely this characteristic of the textile chain—in particular with regard to the alpaca—that makes the situation of thousands of camelids breeding families of Bolivia and Peru so fragile, given that the income for fibre producers depends fundamentally on the price determined by the large consortia and transnational corporations (AVSF 2013).

Alpaca fibre trade

Up to 2011, the trade of alpaca fibre in Peru was carried out by three main companies: Michell y Cia. S. A., IncaTops S.A., and Productos del Sur S. A. Their exports in 2010 and 2011 accounted for 97% and 95%, respectively, of the total exported by Peru. Despite the fact that exports are conducted by a small number of companies, in 2011 Peruvian organizations of alpaca breeders were able to export for a total of over US$300,000 (AVSF 2013).

Peru exports

Between 2006 and 2011, Peruvian exports showed an upward trend, from US$2.7 million to US$43.8 million, with China and Italy being the main destinations; the other six destination countries are South Korea, Japan, United Kingdom, Taiwan, Australia, and Germany.

The export trend for the alpaca fibre is slightly different. It is not focused on two countries only but rather on four (2011): Italy, Hong Kong, South Korea, and China. There are four other main destinations for alpaca fibre: Norway, Japan, Bolivia, and the United Kingdom. It should be noted that China is not one of the main destination countries for alpaca fibre, but since 2011, when it ranked fourth (11.2%) up from eight (4.6%) on the list of Peru's exportable production, it has showed its intention to become one of the first destinations (AVSF 2013).

Alpaca market trends (PROMPERU, 2016)

The alpaca line has grown by 5.1% over the past 5 years (2011 – 2015). This line includes clothing: +4.0% (+US$7 million), textiles: +5.5% (+US$20 million), and household textiles: +7.2% (+US$2 million).

The fastest-growing markets in 2015 were:

- Clothing: USA (+6.9% +US$1 million), Mexico (+218.3% +US$1 million), Australia (+23.8% +US$327,000), Belgium (+6.9% +US$455,000).
- Textiles: South Korea (+62.8% +US$3 million), New Zealand (+223.0% +US$2 million).
- Household textiles: Germany (+102.2% +US$228,000), Latvia (+122.4% +US$240,000), United Kingdom (+41.9% +US$90,000).

Alpaca clothing (2011 – 2015):

- Clothing: +4.0% (+US$7million) in the last 5 years. / +2.3% for 2014/2015 period. / As of May 2016: -6.8%
- Knitwear accounts for 74% of exports and grows by (+1.6%) 2011/2015
- Three products account for 57% of exports (sweaters (33%), scarves (12%), and coats (12%)
- The five main markets for alpaca clothing account for 74% of market's total exports.

A study was conducted by ProChile (2015) on the French market since the increasing demand for alpaca fibre is an opportunity for high fashion markets, and the markets for household textiles, and women's, men's and children's clothing. The study recommends developing a supply of high-quality fibres, while taking special care of the environmental and social development of the production area. It is important to highlight the ancestral knowledge of the artisans that have always worked with this fibre; in other words, to raise the awareness of the consumer about a "responsible and fair" purchase. In France there is concern also about the wellbeing of animals, which must be taken into account when promoting the product. In the French market the alpaca fibre is not yet as renowned as the Merino or cashmere wool fibres.

Market studies in Peru

In December 2011, market studies on alpaca clothing and other combinations were conducted in Peru (Ministry of Production, 2012) in the cities of Lima, Arequipa, Cusco, Puno, and Ayacucho aimed at entrepreneurs, merchants and buyers (at points of sale). Surveys were also carried out among national consumers (interviews in households) in the abovementioned cities, and in Trujillo, Chiclayo, and Iquitos as well.

<u>Peruvians owning and buying alpaca fibre products</u>

- ✓ 4 out of 10 persons surveyed indicated having alpaca products at home.
- ✓ Artisanal fairs are the main locations for purchasing these products, especially in Puno, Huancayo and Ayacucho. In bigger cities, shops show an increase in purchases, especially in Incalpaca stores in Arequipa (twice a year, the Inca Group organizes clearance and sale events at its warehouses).

- ✓ The entrepreneurs of the sector—manufacturers and/or merchants—indicated a steady and considerable increase of their sales in the domestic market (approximately between 25% and 30%). This result would be due to the increased purchasing power of part of the population.
- ✓ The truthfulness of this assertion was ratified when merchants were consulted; they stated that around half of their clients are Peruvians (although they account for a lower share of their sales since they purchase smaller quantities and/or less expensive goods compared to foreigners).
- ✓ When conducting buyers' surveys (in stores selling alpaca fibre clothing) it was found out that 42% of buyers were Peruvian.
- ✓ The lower percentage of Peruvian buyers (compared to foreigners) was found in the city of Arequipa, where the mean average of Peruvian buyers is 2 out of 10. The largest percentage of national buyers is found in Ayacucho and Huancayo.

Sales

- ✓ Only in Lima and Arequipa merchants had acceptable results for the last 12 months. In other cities, sales figures were negative.

Purchases

- ✓ Lima, Cusco and Puno registered the largest number of purchases (By foreigners: Cusco and Puno; by Peruvians: Lima, Cusco and Puno).
- ✓ North Americans purchase the largest number of clothing items as gifts, followed by Asians (up to 7 out of 10) and Peruvian buyers.
- ✓ South American tourists purchase the lowest number of gifts.
- ✓ Maximum amount registered for purchases of Peruvian customers: S/. 700,00
- ✓ Maximum amount registered for purchases of foreign customers: S/. 1 500,00

Two conclusions of study

- ✓ Concerning improvements of the sector: within the processes of the chain value there are considerable differences in capacity levels; thus, on the one hand processes face major issues and an incipient development and, on the other, there are highly developed processes (industrial sector) although with few actors.
- ✓ Concerning marketing development: there is great interest on the part of tour guides to take tourists to specific stores to encourage purchases; they are not formal workers necessarily and take no responsibility for the products they offer to customers.

Mapping of the alpaca fibre chain in the community of Phinaya - Cusco region

The organization *Asociación Ecología, Tecnología y Cultura en los Andes* (ETC Andes) commissioned Soluciones Prácticas to analyze the performance of the alpaca fibre market with the purpose of improving the marketing of the alpaca fibre producers of the Phinaya community (Soluciones Prácticas, 2013). The results are summarized as follows:

Producers of the community of Phinaya

- ✓ 146 families of small-scale producers (less than 30 alpacas) and medium-scale producers (between 30 and 180 alpacas) living in the community of Phinaya, raise around 17,379 alpacas; moistly white (20% of total alpacas in the district of Pitumarca). They sell their production through local and regional middlemen.
- ✓ 12 large-scale producers raise around 15,200 alpacas. They have direct access to companies engaged in the processing alpaca fibre and textile companies. These producers negotiate prices and delivery conditions directly.

Middlemen

- ✓ Local middlemen. 4 local middlemen were identified, who buy 80% of fibre from the small- and medium-scale producers of the community of Phinaya and later deliver it to regional middlemen. They collect the fibre and transport it to the city of Sicuani, where it is weighed for the corresponding payment.
- ✓ Regional middlemen. 2 regional middlemen were identified. They obtain the alpaca fibre from several local middlemen and from communities, and later sell it to textile companies in the city of Arequipa (Inca Tops, Michell y Cía.). In 2011, regional middlemen paid S/.9 per pound, and collected 336 quintals from the community of Phinaya.

Companies

Inca Tops and Michell y Cía. S.A. produce products made from alpaca fibre. These major companies dominate the market. They collect the largest amount of alpaca fibre from the community of Phinaya (80%) and transform it into tops, yarns, textiles and clothing for sale. The organized producers of Phinaya also sell the fibre to a producers' cooperative (COOPECAN), which collects, transforms and commercializes the fibre of its members.

Service providers

In addition to the actors that participate directly in the commercialization chain of the alpaca fibre, there are others that provide other type of services, such as financial, transformation and technical assistance services.

Financial services

- ✓ Agrobanco**:** In agreement with COPECAN, it offers lines of credit to producers' organizations at a preferred interest rate of 4%/year. This allows producers to receive advance payments for the delivery of fibre by the collectors' committee of the community.
- ✓ Middlemen: They represent an alternative financing source for alpaca fibre producers since in exchange for a commitment by producers to deliver the fibre, they make advance payments starting July. In many cases there are kinship relationships and godfather-godson relationships between middlemen and producers.

Types of consumers

- ✓ Those who demand products made of 100% alpaca fibre. An exclusive or niche market where customers are familiar with the benefits of the fibre and are able to pay the highest prices for the products. This is a low-turnover market.
- ✓ Those who demand clothing made with a combination of yarns; the alpaca fibre is part of the yarn, which includes other fibres such as cotton or sheep fibre, and especially synthetic materials. This yarn has the greatest demand, not only due to its lower cost but also because it increases the resistance to deformation of clothing. This is a larger market; profits are obtained based on the volume of sales.

Technical standards

- ✓ Alpaca fleece. Establishes the definitions, grading, requirements, and labelling of the alpaca fleece, determining the testing methods to verify requirements. Code: NTP 231.300 2004, published on February 8, 2004.

- ✓ Classified alpaca fibre. Establishes the definitions, grading per quality group, requirements, and labelling of the alpaca fibre. Determines the sampling method and the testing methods to verify requirements. Code: NTP 231.301 2004, published on February 8, 2004.
- ✓ Alpaca fleece. Establishes the grading procedure of the alpaca fibre and the verification method by grading. Code: NTP 231.302 2004, published on January 22, 2004.

Critical points identified

- ✓ Inadequate and ineffective production technology
  - Traditional shearing
  - Erosion of soils and pastures
  - Genetic degradation of livestock and lack of technical assistance in health issues
  - No productive infrastructure
  - Small production is unprofitable (less than 200 alpacas).
- ✓ Dependence on third parties for commercial coordination
- ✓ Limited coordination of the alpaca fibre chain in promotion actions
- ✓ Limited technical assistance services
- ✓ No research
- ✓ Limited market information
- ✓ Limited supply of financial services.

2.4. Market data on kiwicha

Known as amaranto in Peru, kiwicha was domesticated in America more than 4,000 years ago by pre-Columbian cultures; it was grown and used together with maize, beans and squash by the Aztecs in the Mexico valleys, by the Mayas in Guatemala, and by the Incas in South America, in Peru, Bolivia and Ecuador. Archaeological excavations show that amaranto was an important plant, mostly because of its leaves, which are no longer used.

Kiwicha was not only one the staple foods of the Incas, it was also used in indigenous rituals so much so that Christian missionaries prohibited its cultivation. In this way, the religious zeal destroyed the balanced diet of the indigenous peoples, which has not been recuperated in the 500 years that have passed since then.

Kiwicha crops have been maintained in the country due to the persistence of the Andean farmers as part of their culture and to the genetic adaptation of the seed to altitudes up to 3,200 metres above sea level; however, the forms of consumption in the production areas are limited to traditional preparation customs. Given the known benefits of kiwicha, this status quo in the development of the product by its producers becomes a lost opportunity. The reasons, among other, are linked to the limited access to capital goods and/or financial resources, negative credit rating, weak innovation and development capacities, low level of education, loss of the kiwicha “brand” value and capitalization, and lack of awareness of the benefits of kiwicha by those responsible for implementing food safety policies in the country.

Producing countries: Peru, Bolivia, Ecuador, Argentina, India, and Nepal.

Producing departments in Peru: Arequipa, Cusco, Ancash, Ayacucho, Apurímac, La Libertad, Cajamarca, and Huánuco.

Uses: consumption: as an input for the preparation of flours, beverages, sweets, nougats and for agro-industrial purposes. Food of the future; NASA provides it to astronauts.

Yield: Grains, from 2 to 4mt/ ha.

Exports: Kiwicha exports have doubled, reaching US$ 1million as of May 2016, at an average price of US$2.48 kg (Source: Agrodataperu[143])

EXPORTACIONES KIWICHA			2	FUENTE: SUNAT					
MES	2,016			2,015			2,014		
	FOB	KILOS	PREC. PROM	FOB	KILOS	PREC. PROM	FOB	KILOS	PREC. PROM
ENERO	93,432	47,409	1.97	12,717	2,829	4.50	187,437	51,543	3.64
FEBRERO	205,787	96,683	2.13	22,952	5,555	4.13	134,593	31,705	4.25
MARZO				78,013	24,010	3.25	138,788	32,668	4.25
ABRIL				317,847	90,824	3.50	29,041	6,537	4.44
MAYO				12,455	2,990	4.17	53,971	12,412	4.35
JUNIO				172,665	58,059	2.97	432,609	94,782	4.56
JULIO				75,777	26,650	2.84	618,284	156,408	3.95
AGOSTO				109,933	31,571	3.48	403,073	84,126	4.79
SEPTIEMBRE				90,530	36,587	2.47	70,631	15,735	4.49
OCTUBRE				116,798	52,770	2.21	192,330	41,043	4.69
NOVIEMBRE				71,241	27,832	2.56	17,023	4,687	3.63
DICIEMBRE				104,072	52,077	2.00	173,998	44,114	3.94
TOTALES AÑO	299,219	144,092	2.08	1,185,000	411,754	2.88	2,451,778	575,760	4.26
PROMEDIO MES	149,610	72,046		98,750	34,313		204,315	47,980	
%CREC.PROMEDIO	52%	110%	-28%	-52%	-28%	-32%	58%	-3%	62%

Source: Gestión newspaper, 2016

2.5. Market data on maca

In 2015, maca exports registered 763t totalling over US$6.6 million, representing an increase of 44% compared to 2014.

Last year's main destination countries for fresh maca were Hong Kong, accounting for 79% of total exports, followed by China with 11%, and Vietnam with 4%. These three countries accounted for 93% of total fresh maca exported by the country.

In 2015, maca flour exports registered 1,411t totalling US$26.8 million, which meant an increase of 12% in FOB value owing to the product's favourable quotation in the international market. The main destination countries in 2015 were United States (35%), Canada (8%), United Kingdom (8%), Germany (7%), China (7%), Japan (7%) and the Netherlands (4%), which together accounted for 76% of total maca flour exported. On the other hand, in 2015 maca showed a record production of 58,000t, an increase of 173% compared to 2014 (21,000t).

[143] Agrodataperu gathers and processes information in connection with Peru's agricultural foreign trade. The information provided is seen on a monthly basis by over 70,000 companies and professionals around the world linked to the agricultural sector. Agrodataperu stores effectively data provided by SUNAT on the Peruvian foreign trade.

During the 2011-2015 period, the production of this crop increased by 235%, registering an average annual growth rate of 35%.

The main producing regions are Pasco, Junín and Huancavelica, which shows the capacity of the highlands of Peru to produce diverse and high-quality products and generate value for the country (MINAGRI, El Comercio newspaper, 2016).

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MINAGRI (El Comercio newspaper) 2016	http://elcomercio.pe/economia/peru/peru-primer-exportador-mundial-maca-dice-minagri-215770

APPENDIX 12. QUANTIFYING CARBON BENEFITS

The carbon benefits from the project are estimated in terms of lifetime direct as well as indirect GHG emission avoided over the default time horizon of 20 years under the IPCC guideline and the guidance of the GEF Tracking Tool for LULUCF. For this project, the durations of implementation phase and the capitalization phase are defined as 4 years and 16 years, respectively. The carbon benefits are calculated using EX-Ante Carbon balance Tool (EX-ACT).

In the GEF Tracking Tool for Climate Change Mitigation projects, direct lifetime GHG emissions avoided are the emissions reductions attributable to the investments made during the project's supervised implementation period, totalled over the respective lifetime of the investments. The following variables and assumptions are used for the calculation.

Variable	Value	Unit	Note
Lifetime length for direct GHG emission avoided	20	years	4 year implementation phase plus 16 year capitalization phase
Climate, and Moisture regime	Cool Temperate Moist	-	EX-ACT data
Dominant Regional Soil Type	LAC Soils	-	EX-ACT data
Total area of target landscapes	312,046	ha	Project target

Forests in the area of influence of the project, dispersed patches in the regions of Cuzco, Huaraz, Lima, Arequipa, Moquegua and Tacna, are classified as Temperate continental systems based on FAO's Global Ecological Zones (FAO, 2011). These types of forest have an estimated total biomass of 148.7tC/ha, consisting respectively of 41.3tC/ha of above-ground biomass[144], below-ground of 19.9tC/ha, litter of 10.5 tC/ha[145] and soil carbon of 77tC/ha[146].

The target areas for management improvement consist of a combination of on-farm forest remnants and off-farm forest areas under communal ownership, management and use, subject to norms and regulations developed and applied, with varying degrees of effectiveness, by local communities and their traditional authority structures. These forests are subject to ongoing pressures stemming from the extraction of forest products (firewood and building materials), grazing, and wildfires, which maintain them in a degraded condition with low levels of regeneration and fragmented structure.

Carbon benefits will be generated through a combination of reforestation and restoration (including agroforestry, tree/livestock systems, riverside planting and replanting of forests in watersheds) and improved management of existing forests (including assisted natural regeneration).

The areas affected (within a total project area of 312,046ha) will be as follows:

	Direct project support (file 'EXACT FAO Peru ABD direct')	**Indirect impact through replication (file 'EXACT FAO Peru ABD indirect')**	**Totals**
Reforestation (EXACT sheet '2.LUC')	1,130 (cell M31)	3,585	**4,715**
Improved management (EXACT sheet '5.Management')	19,620 (cell T13)	58,665	**78,285**
Totals	**20,750**	**62,250**	**83,000**

[144] FAO/ SERFOR. 2017. Nuestros bosques en números. Primer reporte del Inventario Nacional Forestal y de Fauna Silvestre. Lima.

[145] based on the IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry.

[146] Reported by Vásquez et al. 2014 for *Polylepis* forests.

It is projected that without the project, forest degradation would continue at the baseline "low" level of 20% (the EX-ACT default value), and that improvements to forest management through direct project support over an area of 1,130ha would reduce this to "very low" (10%).

Replication (indirect impact) would result in degradation being reduced from "low" (20%) to "very low" (Tier 2 value of 15% in Cell R144 of the file 'EXACT FAO Peru ABD indirect').

No fire occurrence has been considered in either scenarios.

On this basis, total GHG benefits calculated through EX-ACT are as follows (tCO_2eq):

	Direct project support (file 'EXACT FAO Peru ABD direct')	**Indirect impact through replication (file 'EXACT FAO Peru ABD indirect')**	**Totals**
Reforestation (EXACT sheet '2.LUC')	446,660	1,417,060	**1,863,720**
Improved management (EXACT sheet '5.Management')	765,082	1,143,821	**1,908,903**
Totals	**1,211,742**	**2,560,881**	**3,772,623**

EX-ACT input and output tables:

Continent	South America	
Climate	Cool Temperate	
Moisture regime	Moist	
Dominant Regional Soil Type	LAC Soils	
Duration of the Project (Years)	Implementation phase	4
	Capitalisation phase	16
	Duration of accounting	20

Direct impact

Land Use Change

2.2. Afforestation and Reforestation

AEZ map — Zone 1 = Temperate oceanic forest — Zone 2 = Temperate continental forest — Zone 3 = Temperate mountains systems

Type of vegetation that will be planted	Fire Use? (y/n)	Previous land use	Area that will be afforested/reforested Without	*	With	*	Total Emissions (tCO2-eq) Without	With	Balance
Forest Zone 3	NO	Degraded Land	0	D	1130	D	0	-446,660	-446,660
Select the vegetation	NO	Select previous use	0	D	0	D	0	0	0
Select the vegetation	NO	Select previous use	0	D	0	D	0	0	0
Select the vegetation	NO	Select previous use	0	D	0	D	0	0	0
Select the vegetation	NO	Select previous use	0	D	0	D	0	0	0
Select the vegetation	NO	Select previous use	0	D	0	D	0	0	0
Select the vegetation	NO	Select previous use	0	D	0	D	0	0	0
Select the vegetation	NO	Select previous use	0	D	0	D	0	0	0

* Note concerning dynamics of change : "D" corresponds to default/linear, "I" to immediate and "E" to exponential (Please refer to the guidelines)

Tier 2

Total Af-/Reforestation 0 -446,660 -446,660

Degradation and management

5.1. Forest degradation and management

AEZ map — Zone 1 = Temperate oceanic forest — Zone 2 = Temperate continental forest — Zone 3 = Temperate mountains systems — Zone 4 =

Type of vegetation that will be degraded	Degradation level of the vegetation: Initial State	At the end: Without project	At the end: With project	Fire occurrence and severity: Without (y/n)	Without Periodicity (year)	Without Impact (% burnt)	With (y/n)	With Periodicity (year)	With Impact (% burnt)	Area (ha): Start	Without	*	With	*	Total Emissions (tCO2-eq): Without	With	Balance
Forest Zone 3	Low	Low	Very low	NO	1	100%	NO	1	100%	19,620	19,620	D	19,620	D	0	-765,082	-765,082
Select the vegetation	Select level	Select level	Select level	NO	1	100%	NO	1	100%		0	D	0	D	0	0	0
Select the vegetation	Select level	Select level	Select level	NO	1	100%	NO	1	100%		0	D	0	D	0	0	0
Select the vegetation	Select level	Select level	Select level	NO	1	100%	NO	1	100%		0	D	0	D	0	0	0
Select the vegetation	Select level	Select level	Select level	NO	1	100%	NO	1	100%		0	D	0	D	0	0	0
Select the vegetation	Select level	Select level	Select level	NO	1	100%	NO	1	100%		0	D	0	D	0	0	0
Select the vegetation	Select level	Select level	Select level	NO	1	100%	NO	1	100%		0	D	0	D	0	0	0
Select the vegetation	Select level	Select level	Select level	NO	1	100%	NO	1	100%		0	D	0	D	0	0	0

* Note concerning dynamics of change : "D" corresponds to default/linear, "I" to immediate and "E" to exponential (Please refer to the guidelines)

Tier 2

Total Forest Degradation and Management 0 -765,082 -765,082

Tier 2 values

Type of vegetation that will be degraded	All values are in t of carbon per ha (tC/ha)									
	Above-ground		Below-ground		Litter		Dead wood		Soil carbon	
	Default	Tier 2	Default	Tier 2	Default	Tier 2	Default	Tier 2	Default	Tier 2
Forest - Zone 1	84.6		18.6		21.00		0.0		85.0	
Forest - Zone 2	61.1		13.4		21.00		0.0		85.0	
Forest - Zone 3	61.1	41.3	13.4	19.90	21.00	10.5	0.0		85.0	77.0

Results

Components of the project	Gross fluxes Without	With	Balance	Share per GHG of the Balance All GHG in tCO2eq CO_2			N_2O	CH_4	Result per year Without	With	Balance
	All GHG in tCO2eq Positive = source / negative = sink			Biomass	Soil	Other					
Land use changes											
Deforestation	0	0	0	0	0		0	0	0	0	0
Afforestation	0	-446,660	-446,660	-234,294	-212,367		0	0	0	-22,333	-22,333
Other LUC	0	0	0	0	0		0	0	0	0	0
Agriculture											
Annual	0	0	0	0	0		0	0	0	0	0
Perennial	0	0	0	0	0		0	0	0	0	0
Rice	0	0	0	0	0		0	0	0	0	0
Grassland & Livestocks											
Grassland	0	0	0	0	0		0	0	0	0	0
Livestocks	0	0	0				0	0	0	0	0
Degradation & Management	0	-765,082	-765,082	-515,810	-249,272		0	0	0	-38,254	-38,254
Coastal wetlands	0	0	0	0	0		0	0	0	0	0
Inputs & Investments	0	0	0			0	0	0	0	0	0
Fishery & Aquaculture	0	0	0			0	0	0	0	0	0
Total	0	-1,211,742	**-1,211,742**	-750,104	-461,639	0	0	0	0	-60,587	-60,587
Per hectare	0	-58	-58	-36.1	-22.2	0.0	0.0	0.0			
Per hectare per year	0.0	-2.9	-2.9	-1.8	-1.1	0.0	0.0	0.0	0.0	-2.9	-2.9

Indirect impact

Land Use Change

2.2. Afforestation and Reforestation

AEZ map — Zone 1 = Temperate oceanic forest — Zone 2 = Temperate continental forest — Zone 3 = Temperate mountains systems

Type of vegetation that will be planted	Fire Use? (y/n)	Previous land use	Area that will be afforested/reforested Without	*	With	*	Total Emissions (tCO2-eq) Without	With	Balance
Forest Zone 3	NO	Degraded Land	0	D	3585	D	0	-1,417,060	-1,417,060
Select the vegetation	NO	Select previous use	0	D	0	D	0	0	0
Select the vegetation	NO	Select previous use	0	D	0	D	0	0	0
Select the vegetation	NO	Select previous use	0	D	0	D	0	0	0
Select the vegetation	NO	Select previous use	0	D	0	D	0	0	0
Select the vegetation	NO	Select previous use	0	D	0	D	0	0	0
Select the vegetation	NO	Select previous use	0	D	0	D	0	0	0
Select the vegetation	NO	Select previous use	0	D	0	D	0	0	0

* Note concerning dynamics of change : "D" corresponds to default/linear, "I" to immediate and "E" to exponential (Please refer to the guidelines)

Tier 2

Total Af-/Reforestation 0 -1,417,060 -1,417,060

Degradation and management

5.1. Forest degradation and management

AEZ map — Zone 1 = Temperate oceanic forest — Zone 2 = Temperate continental forest — Zone 3 = Temperate mountains systems — Zone 4 =

Type of vegetation that will be degraded	Degradation level of the vegetation Initial State	At the end Without project	With project	Fire occurrence and severity Without (y/n)	Periodicity (year)	Impact (% burnt)	With (y/n)	Periodicity (year)	Impact (% burnt)	Area (ha) Start	Without	*	With	*	Total Emissions (tCO2-eq) Without	With	Balance
Forest Zone 3	Low	Low	Very low	NO	1	100%	NO	1	100%	58,665	58,665	D	58,665	D	0	-1,143,821	-1,143,821
Select the vegetation	Select level	Select level	Select level	NO	1	100%	NO	1	100%		0	D	0	D	0	0	0
Select the vegetation	Select level	Select level	Select level	NO	1	100%	NO	1	100%		0	D	0	D	0	0	0
Select the vegetation	Select level	Select level	Select level	NO	1	100%	NO	1	100%		0	D	0	D	0	0	0
Select the vegetation	Select level	Select level	Select level	NO	1	100%	NO	1	100%		0	D	0	D	0	0	0
Select the vegetation	Select level	Select level	Select level	NO	1	100%	NO	1	100%		0	D	0	D	0	0	0
Select the vegetation	Select level	Select level	Select level	NO	1	100%	NO	1	100%		0	D	0	D	0	0	0
Select the vegetation	Select level	Select level	Select level	NO	1	100%	NO	1	100%		0	D	0	D	0	0	0

* Note concerning dynamics of change : "D" corresponds to default/linear, "I" to immediate and "E" to exponential (Please refer to the guidelines)

Tier 2

Total Forest Degradation and Management 0 -1,143,821 -1,143,821

Tier 2 values

Back

Use this part only if you want to refine the analysis with Tier 2 coefficients.

(default values are provided for your information only, while EX-ACT will use Tier 2 values automatically wherever specified)

Degradation level (% of biomass lost)		
Select level	Default	Tier 2
None	0	
Very low	10	15
Low	20	
Moderate	40	
Large	60	
Extrem	80	

Type of vegetation that will be degraded	All values are in t of carbon per ha (tC/ha)									
	Above-ground		Below-ground		Litter		Dead wood		Soil carbon	
	Default	Tier 2	Default	Tier 2	Default	Tier 2	Default	Tier 2	Default	Tier 2
Forest - Zone 1	84.6		18.6		21.00		0.0		85.0	
Forest - Zone 2	61.1		13.4		21.00		0.0		85.0	
Forest - Zone 3	61.1	41.3	13.4	19.90	21.00	10.5	0.0		85.0	77.0

Results

Components of the project	Gross fluxes Without	With	Balance	Share per GHG of the Balance All GHG in tCO2eq CO_2 Biomass	Soil	Other	N_2O	CH_4	Result per year Without	With	Balance
	All GHG in tCO2eq Positive = source / negative = sink										
Land use changes											
Deforestation	0	0	0	0	0		0	0	0	0	0
Afforestation	0	-1,417,060	-1,417,060	-743,313	-673,747		0	0	0	-70,853	-70,853
Other LUC	0	0	0	0	0		0	0	0	0	0
Agriculture											
Annual	0	0	0	0	0		0	0	0	0	0
Perennial	0	0	0	0	0		0	0	0	0	0
Rice	0	0	0	0	0		0	0	0	0	0
Grassland & Livestocks											
Grassland	0	0	0	0	0		0	0	0	0	0
Livestocks	0	0	0				0	0	0	0	0
Degradation & Management	0	-1,143,821	-1,143,821	-771,151	-372,669		0	0	0	-57,191	-57,191
Coastal wetlands	0	0	0	0	0		0	0	0	0	0
Inputs & Investments	0	0	0			0	0	0	0	0	0
Fishery & Aquaculture	0	0	0			0	0	0	0	0	0
Total	0	-2,560,881	**-2,560,881**	-1,514,464	-1,046,416	0	0	0	0	-128,044	-128,044
Per hectare	0	-41	-41	-24.3	-16.8	0.0	0.0	0.0			
Per hectare per year	0.0	-2.1	-2.1	-1.2	-0.8	0.0	0.0	0.0	0.0	-2.1	-2.1

APPENDIX 13. BASELINE INITIATIVES IN THE TARGET LOCALITIES

Component 1:

Apurimac:

Project/Component 1	Results
Recovery and improvement of the forest cover to extend environmental services to Pincos and Toxana micro-watersheds in the province of Andahuaylas	I. Increased availability of forest plantations II. Effective installation of forest plantations III. Appropriate strengthening practices following plantation
Improvement of community management for the development of forest activities in 20 micro-watersheds and 4 sub-watersheds of the Apurimac region	I.-Adequate planning and management of community forestry resources II.-Increase in the level of knowledge of the rural population for the development of forest activities III.-Improvement of the cultural level and understanding of forest issues of community members
Recovery and improvement of the forest cover to extend environmental services in the Chincha sub-watershed	I. Increased availability of forest plantations II. Effective installation of forest plantations III. Appropriate strengthening practices following plantation

Source: INVIERTE.PE System (Ministry of Economy and Finance)

Arequipa:

Component 1	Results
Recovery of ecosystem services for water regulation and erosion control in Lomas de Atiquipa	I.-Water harvesting and recovery of forest cover II.-Capacity building
Improvement of water services for irrigation purposes in the Atiquipa sector	I.- Installation of fog collectors to harvest water for irrigation purposes II.- Capacity building of users through technical assistance in irrigation and cultural work III.-Environmental impact

Source: INVIERTE.PE System (Ministry of Economy and Finance)

Cusco:

Component 1	Results
Capacity building for the establishment of regional conservation areas in the provinces of Anta, Convención and Quispicanchis	I.-Production of technical documents on conservation and preservation of natural and cultural resources II.-Implementation of equipment and furnishings for the establishment of regional conservation areas

	III.-Awareness-raising programmes on management of regional conservation areas
Improvement and strengthening of comprehensive water resources management in the Vilcanota basin	I.-Increased knowledge for the improvement of water resource management II.-Active operating units for basin management III Sufficient equipment and furnishings for area conservation IV.-Better regulatory tools for the creation and management of the Basin Council V.-Active technical instruments for control and monitoring purposes
Capacity building for the sustainable management of vicuñas in rural conservationist communities of the region	I.- Effective management and conservation techniques for the breeding of vicuñas II.- Adequate management and conservation of natural pastures III.- Good organization of vicuña breeders IV.-Increased knowledge of technical management, vicuña fibre processing and efficient market articulation
Adaptation to climate change, conservation, and management of usable biodiversity in the native communities of Bajo Urubamba	I.-Reforestation with timber species II.-Management of community conservation areas III.-Agroforestry cropping systems with fruit trees IV.-Strengthening of management V.-Management of *collpas*
Introduction of *tara* in agroforestry systems in rural communities of the provinces of Anta, Calca, Paruro and Urubamba	I.- Access to technology transfer and technical assistance II.-Increase in productive capacity of *tara* seedlings and renovation of *tara* groves in agroforestry system III.-Efficient organization of *tara* producers IV.-Knowledge of economic and environmental value of *tara*

Source: INVIERTE.PE System (Ministry of Economy and Finance)

Huancavelica

Component 1	Results
Improvement of the quality of support services for farmers	I.-Improved levels of technology adoption in agricultural production II.-Appropriate capacity building of agricultural operators III.-Adequate management capacity of agricultural producers
Improvement of the support service for agricultural extension to include Andean tubers in the productive chain in five provinces	I.- Knowledge of techniques applicable to tuber production systems II.-Optimal development of capacities and skills to give aggregate value to *olluco* and

	mashua III.-Producers are organized and have management abilities IV.-Knowledge of negotiating mechanisms, potential markets, commercial articulation, and marketing
Improvement of forestry services in the agricultural agencies of Lircay and Acobamba	I. Productive infrastructure of forest seedlings in appropriate and renovated conditions II. Population with capacity for the management of natural forest resources III.-Wide participation in forestry actions of population engaged in agricultural activities
Improvement of pastures and conservation of soils in Huaytara and Castrovirreyna	I.-Preparation of technical file II.-Knowledge of the real value of ecosystems and adequate techniques for the management of high Andean pastures III.-Implementation of conservationist practices IV.-Strengthening of producers' organizations
Improvement of the services of protection and conservation of vicuñas in high Andean communities	I.-Infrastructure for the protection and better use of vicuñas; II.-Technological transfer for rational use of vicuñas III.-Management and organization of communities and surveillance committees IV.-Capacity building of community members and park rangers for the protection of vicuñas
Recovery of environmental services of natural resources for the sustainable development of the Ichu river micro-watershed	I.-Recovery and regulation of water system II.-Soil conservation and revegetation III.-Establishment and management of self-sustaining systems IV.-Organizational strengthening
Establishment and recovery of environmental services for soil protection and water regulation in the Vilca river sub-watershed	I.-Increase in forest cover II.-Appropriate management of high Andean pastures III.-Improvement of water and soil technological management IV.-Capacity building in water and soil management V.-Strengthening of organization following water and soil management
Recovery of ecosystem services and treatment of Ichu river in the Chuñuranra section	I.-Adequate conditions of the Ichu riverbed; recovery of forest cover II.-Suitable treatment of areas surrounding the Ichu river III.-Appropriate infrastructures installed on the Ichu river IV.-Improved organization and capacities in the management of resources and soil and water conservation

Source: INVIERTE.PE System (Ministry of Economy and Finance)

Puno:

Component 1	Results
Strengthening of productive capacities to improve competitiveness in the breeding of alpacas	I.- Management of human resources and natural pastures II.-Technical capacity in health management III.-Handling of alpaca herds IV.-Territorial management and political advocacy
Recovery of forest cover in areas around lakes in the highlands	I.-Adequate productive infrastructure for forestation purposes II.-Strengthening of social organization for forestry activities III.-Improvement of forest management and planning
Improvement of service for the conservation of biodiversity in Selva Verde, San Gabán, Punta Perdida, Cotacucho Puno, Jucomarini, Cushini, Condor River, Tavara River and Paco Pacuni	I.- In situ information for biodiversity management II.- Equipment and infrastructure for conservation purposes III.- Strengthening of biodiversity management IV.-Capacity building for the management of institutions V.-Development of sustainable economic activities VI.-Generation of economic instruments for sustainability purposes
Improvement of the alpaca fibre value chain	I.-Greater technology transfer for genetic enhancement II.-Appropriate management of water resources, soil and vegetation III.-Increased capacities for the promotion and reproduction of breeding stock IV.-Organization and management capacities
Improvement of the agro-productive capacity of organic Andean grains of quinoa, *cañihua*, broad bean and *tarwi*	I.- Adequate knowledge of productive handling of certified seeds II.- Appropriation of knowledge regarding the production of organic Andean grains III.-Appropriate technologies for the processing of Andean grains

Source: INVIERTE.PE System (Ministry of Economy and Finance)

Component 2:
Apurimac

Component 2	Results
Improvement of competitiveness of the quinoa productive chain in the region	I. Effective quinoa cultivation II. Generation of aggregate value of quinoa III. Effective market articulation

Source: INVIERTE.PE System (Ministry of Economy and Finance)

Cusco

Component 2	Results
Improvement of competitiveness of the organic quinoa and *cañihua* productive chains in the provinces of Acomayo, Anta, Calca, Canchis, Chumbivilcas, Espinar, Paruro, Quispicanchis and Urubamba	I.-Availability and use of genetically good-quality quinoa and *cañihua* seeds II.-Appropriate knowledge of sustainable technologies for the agronomic management of quinoa and *cañihua* crops III.-Adequate procedures to obtain quality organic quinoa and *cañihua* grains during and after harvesting IV.-Improved organizational capacities of producers V.-Better understanding of commercial management and dissemination of products

Source: INVIERTE.PE System (Ministry of Economy and Finance)

Huancavelica

Component 2	Results
Improvement of competitiveness of the productive chain through the establishment of aeroponic systems in the production of potato in high Andean communities	I.-Establishment of aeroponic production system to obtain pathogen-free seeds of native and improved potatoes II.-Transfer of modern technology in the production of native and improved potatoes III.-Strengthening of organization of native and improved potato producers

Source: INVIERTE.PE System (Ministry of Economy and Finance)

Puno

Component 2	Results
Improvement of the agro-productive capacity of organic Andean grains of quinoa, *cañihua*, broad bean and *tarwi*	I.-Improved knowledge on commercial management II.-Adequate organizational management

Source: INVIERTE.PE System (Ministry of Economy and Finance)

Component 3:

Ministry of the Environment (MINAM):

Component 1	Description
National Forest Conservation Programme for Mitigation of Climate Change	The programme aims to ensure that by 2021 net greenhouse gas emissions produced by deforestation will be reduced and trending to zero.
Technical Assistance Programme PAT-USAID-MINAM	Contribute to the sustainable use of natural resources by strengthening the MINAM as governing body of the national environmental management system, and implementing activities to build its technical, logistical and financial capacities through 4 bureaus: General Bureau of Biological Diversity; General Bureau for the Assessment, Valuation and Financing of Natural Heritage; General Bureau of Policies, Regulations and Instruments of Environmental Management, and General Bureau of Climate Change, Desertification and Water Resources.
Public Investment Programme for Strengthening the Environmental and Social Management of the Indirect Impacts of the South Interoceanic Highway – Stage 11	1.-Conservation: Contributes to the recovery of ecosystems that have been damaged or that could be in a very vulnerable situation; with the participation of the population. 2.- Cluster of environmental projects: Support regional and local initiatives through the cofinancing of public investment projects that contribute to the conservation of ecosystems.
Sustainable Management Programme for the Economic and Strategic Development of Natural Resources (PRODERN)	1.-Governance and territorial management 2.-Biodiversity management and conservation 3.-Enhancement of the value of ecosystem services 4.-Scenic beauty and ecotourism
Component 2	**Description**
Sustainable Management Programme for the Economic and Strategic Development of Natural Resources (PRODERN)	1.-Value chains 2.-Environmental education
Public Investment Programme for Strengthening the Environmental and Social Management of the Indirect Impacts of the South Interoceanic Highway – Stage 11	1.-Competitiveness
Component 3	**Description**
Sustainable Management Programme for the Economic and Strategic Development of Natural Resources (PRODERN)	1.-Strategic environmental information 2.-Environmental participation and citizenship

Source: MINAM Annual Institutional Plan and Strategic Plan

MINISTRY OF AGRICULTURE (MINAGRI):

Component 1	Description
Budgetary Programme 0042: Exploitation of water resources for agricultural use	Improve the efficiency of water resources exploitation for agricultural use
Budgetary Programme 0089: Reducing degradation of agricultural soils	Sustainable use of soils in the agricultural sector
Budgetary Programme 0130: Competitiveness and sustainable use of forestry resources and wild fauna	Competitiveness and sustainable use of forestry resources and wild fauna
Budgetary Programme 011: Programme for Rural Agricultural Productive Development-AGRORURAL Budgetary Programme 2235888: Strengthening the management of micro-watersheds within the scope of the small and medium irrigation infrastructure programme in the highlands of Peru.	Improve the management of micro-watersheds, their recuperation and conservation in the upper and medium areas of water units of high Andean ecosystems. Component 1: High Andean micro-watersheds characterized within the scope of the project with sustainable data and management plans of natural resources, especially water. Component 2: Local actors requiring water are aware, trained, and participate in the care, saving and management of water resources at the level of micro-watersheds. Component 3: Committees for the management of micro-watersheds are organized and trained for the care of water resources at the level of micro-watersheds. Component 4: Supplementary coordination and activities for the execution, administration, monitoring and evaluation of actions in micro-watersheds.
Budgetary Programme 011: Project 2249921: Recovery and conservation of degraded soils for adaptation to climate change; Pichigua micro-watershed, district of Pichigua, province of Espinar, Cusco region	Adequate rainwater infiltration in Pichigua micro-watershed
Budgetary Programme 011: Project 2250154: Recovery and improvement of the environment with reforestation and conservation of soil and pastures in the communities of Lambrana and Atancama, district of Lambrama-Abancay - APURIMAC	Recovery and sustainable management of natural resources in communities
Component 2	**Description**
Budgetary Programme 0121: Improvement of market articulation for agricultural producers	Improved access of small agricultural producers to market. Component 1: Strengthening the market of innovation services. Component 2: Promoting the creation of strategic competencies in research, development and innovation.

Project 2194085: Strengthening the agricultural innovation system	Appropriate conditions for technological innovation in Peru
Component 3	**Description**
Project 2250051: Improvement of the Agricultural Statistics Information System and the Agricultural Information System for Rural Development	Improve the quality, relevance, reliability and availability of agricultural information in the country, in order to increase the quality of agricultural policies and the income of farmers. Component I: Improvement of the Agricultural Statistics Information System. Component II: Providing information to producers through the participation of the private sector using information and communication technologies.
Project 2194993: Improvement of strategic agricultural innovation services	Improve strategic agricultural research/transfer services. Component 1: Support in the administration of research management and execution processes. Component 2: Support in the improvement of strategic agricultural innovation services.

Source: MINAGRI Annual Institutional Plan and Strategic Plan

Apurimac

Component 3	Results
Improvement of institutional management of forestry activities in 20 micro-watersheds and 4 sub-watershed in the region	I.-Adequate institutional organization for interventions of forestry activities in the region II.- Increased capacity building of professionals and technicians engaged in forestry activities III.- Appropriate mechanisms to generate information on regional forestry activities

Source: INVIERTE.PE System (Ministry of Economy and Finance)

Puno

Component 3	Results
Improvement of water resource management in watersheds	I.-Capacity building in integrated water resource management II.-Appropriate water resource information system III.-Capacity building in water management IV.-Adequate planning system

Source: INVIERTE.PE System (Ministry of Economy and Finance)

APPENDIX 14. EXAMPLE OF PAYMENT FOR ENVIRONMENTAL SERVICE (PES) SCHEME IN PERU

A behaviour and attitude-changing two-step PES scheme in Peru[147]

Source: Cranford, M., Mourato, S. (2011) Community conservation and a two-stage approach to payments for ecosystem services. *Ecological Economics*. 71: 89–98

Contact: m.c.cranford@lse.ac.uk

Theme(s): Environmental economics, Environmental information services, Forests

Two approaches to conserving biodiversity and managing natural resources are community conservation and PES. Community conservation combines human development with biodiversity conservation. Typically indirect conservation methods are used, such as changing practices that harm ecosystems (e.g. agricultural intensification); encouraging development opportunities that provide eco-system services (e.g. ecotourism); or increasing incomes to reduce overuse of the natural resources. PES, on the other hand, directly pays people to conserve nature, by providing a market for the ecosystem services supplied, for example, paying communities to sustainably manage forests that protect watershed services or sequester carbon. Both approaches have received criticism. Community conservation, for example, has been said to be not cost-effective and does not deliver the necessary level of ecosystem protection. PES has been criticised for not effectively enforcing the conditions required for the payment.

This study investigated how elements of community conservation can be incorporated into a two-stage PES system that is an improvement on a traditional PES design. The researchers evaluated the use of community conservation to preserve *Polylepis* forests in the southern Peruvian Andes and used a household survey to assess the outcome this had on local conservation attitudes and behaviour. *Polylepis* woodlands, together with some of the bird and mammal species living in these forests, are threatened by the activities of local people, especially clearing woodland for agriculture, grazing livestock in the forests, burning nearby grasslands, and cutting trees for timber and firewood.

A local non-governmental organisation (ECOAN1) initiated a community-based project to conserve *Polylepis* forests. The project tackled, for example, the demand for *Polylepis* firewood by providing energy efficient stoves and alternative fuel sources. Building on the community conservation base already established, the longer-term goal of making the project self-financing includes some PES mechanisms, supported from actions such as ecotourism.

Since the beginning of the ECOAN project, 61% of surveyed households reduced or stopped previous activities that caused forest degradation. Of the surveyed households that reported carrying out specific forest-degrading activities prior to ECOAN's involvement, 81% reported reduced use of *Polylepis* firewood, 53% reported reduced forest livestock grazing, 68% carried out reduced forest conversion for agricultural purposes and 63% reported reduced grassland burning. This was the result of the ECOAN initiatives, including educational activities that had instilled a belief in conservation, the use of alternative energy sources and a community-based motivation to obey regulations that limit the removal of *Polylepis* trees from the forests.

[147] **European Commission DG ENV** News Alert Issue 275 1 March 2012**1 March 2012 The contents and views included in Science for Environment Policy are based on independent, peer-reviewed research and do not necessarily reflect the position of the European Commission. To cite this article/service:** "Science for Environment Policy": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

Overall, a shift in the community culture towards a conservationist stance was evident. However, the value placed on ecosystem services was determined by an individual's direct experience with the forest, rather than with the community conservation initiatives implemented by ECOAN.

The researchers propose that a two-stage PES system might be a more effective way for communities to protect ecosystems. In the first stage, apart from putting in place the formal institutional systems of PES, community conservation initiatives could lay the groundwork by developing environmentally friendly attitudes and behaviours of local communities. In the second-stage, direct payments made through market-based mechanisms (such as carbon credits and water payments) can be used to reinforce this conservationist behaviour.

1. See: www.ecoanperu.org

APPENDIX 15. ANALYSIS OF FIDUCIARY RISKS AND MITIGATION MEASURES

Project Title and Logo:	Sustainable management of agro-biodiversity and vulnerable ecosystems recuperation in Peruvian Andean regions through Globally Important Agricultural Heritage Systems (GIAHS) approach.
Name of Operational Partner:	PROFONANPE
Type of Operational Partner:	Private non-profit
Overall risk classification assigned:	Low

Risks Identified	Risk mitigation measures and corrective actions	Date	FAO staff members responsable for follow-up
Legal proceedings currently active against OP There are currently eight active lawsuits that have been brought against, or are involving PROFONANPE. These lawsuits include both administrative and labour actions. PROFONANPE collaborate with SERNANP and INRENA on certain projects and as such are also being sued as the indirect employer of the plaintiff. The administrative action was due to non-attendance at a labour reconciliation hearing in Iquitos relating to social benefit payments in 2012. The labour actions were due to non-compliance with labour standards and failure to pay social security. There have been no recent updates on these cases as the legal process is extremely slow in Peru.	The Administration team should inform the Board of Directors of any updates on proceedings. Liabilities should be updated in the accounts, if required, depending on the likelihood of any financial penalties.		Operations Officer contracted with the approval of the Assistant Representative (Administration) of the FAO Representation in Peru
Insufficient staff training We noted that staff employed in the accounts department, who were primarily bookkeepers / administrators, had not received training on United Nations (UN) requirements for financial management and reporting. Lack of sufficient training increases the risk of error and failure to comply with the UN financial reporting requirements.	The organisation should ensure staff are properly trained and aware of UN financial reporting requirements.	Wednesday 10th October 2017 During the first months (quarter) or 2018	Operations Officer contracted with the approval of the Assistant Representative (Administration) of the FAO

Risks Identified	Risk mitigation measures and corrective actions	Date	FAO staff members responsable for follow-up
			Representation in Peru
No staff time-recording system Currently the staff are employed under contracts for services or as employees. Management have not considered a time recording system to be necessary, as a lot of these staff are based away from the office at any one time, or are assigned to only one project, and so it is felt by the OP that it would not be necessary or practical to implement. We consider this, however, to represent a control weakness; future projects and programmes, together with any future staffing requirements, may mean such a system becomes necessary to ensure that time spent by staff on specific programmes can be calculated and evidenced as charged to the relevant financial report.	Management should consider the introduction of an accurate system to record the time spent by staff on various activities and projects. One such system would be to require staff to complete monthly timesheets recording the actual number of hours spent by them on different projects or activities for each day during the month. For control purposes, the timesheet should be signed by the staff member and approved by line managers / budget holders. The timesheets for the reporting period would constitute good supporting documentation to evidence the time spent by individual staff members on different projects or activities.	Wednesday 10th October 2017 Reporting format agreed	Operations Officer contracted with the approval of the Assistant Representative (Administration) of the FAO Representation in Peru
Physical verification of fixed assets is only performed once per year Fixed asset counts only occur once a year. Therefore the loss, damage and misappropriation of any assets could occur but not be discovered until the year end when it may be too late to retrieve misappropriated items. Impairments could also be necessary, but again would not be identified until the end of the year.	Physical asset counts should be performed every quarter to ensure there are no impairments and that depreciation is accurately calculated. This would also allow for any loss, damage or misappropriation of assets to be detected and investigated at an earlier stage, increasing the likelihood of a successful outcome.	Quarterly reporting (March, June, September and December)	Operations Officer contracted with the approval of the Assistant Representative (Administration) of the FAO Representation in Peru
Recovery of Value Added Tax PROFONANPE is a private non-profit entity that is not registered in the APCI and therefore cannot recover Value Added Tax.	PROFONANPE is registered in the APCI to be able to recover Value Added Tax and is accredited as such.	Before project start-up (approximately July 2018), as a condition for the transfer of funds	Assistant Representative (Administration) of the FAO Representation in Peru

Risks Identified	Risk mitigation measures and corrective actions	Date	FAO staff members responsable for follow-up
		under the Operational Partner Agreement	

Planned Risk Reduction Measures [See MS 701.6.10 "Elaboration of Risk Reduction and Mitigation Plan"]

Type of Risk Reduction Activity	Carried out by	Planned anual frequency and date	Cost	Covered by	Date	FAO staff members responsable for follow-up
Audits	Audit Company	Annually (5 audits are provided for, in case the implementation period is extended)	$ 22,500	Project Budget managed by FAO	December 2019 December 2020 December 2021 December 2022	Operations Officer contracted with the approval of the Assistant Representative (Administration) of the FAO Representation in Peru
Spot checks	Audit Company	The first spot check will be carried out 6 months after Project start, and then every 12 months.	$14,000	*Covered by FAO fee*	December 2018 (expected start of implementation second half of 2018) December 2019 December 2020 December 2021	Operations Officer contracted with the approval of the Assistant Representative (Administration) of the FAO Representation in Peru
Programmatic Monitoring	Lead Technical Officer, Project Coordinator, Budget Holder, administrative and operational	Periodically; overall management and follow-up of compliance with the provisions of the Operational Partner Implementation Model (OPIM): i) Manage the results of OPIM, including supervisión of risks and overall	USD 209,550	Operations officer - USD 135,000 *Covered by FAO fee* Final evaluation USD 60.000	*Quarterly in 2018, 2019, 2020, 2021 and 2021* (expected start of implementation	Operations Officer contracted with the approval of the LTO AND THE Assistant Representative

	assistant and project task group	compliance with the conditions established in the signed OP agreement ii) Guarantee implementation of the mitigation and risk guarantee plan. Review and update the plan in the light of changing circumstances during implementation iii) Follow up and ensure that the OP implements all the actions and recommendations agreed during risk reduction activities. iv) Review and approve financial and project reports received from the OP and certify requests for funds in accordance with the requirements of the signed OP agreement, review and approval of the revised budget, and the annual workplan and budget v) Evaluate and inform on collaboration with subcontracting partners annually and at project end.		(Project Budget, managed by FAO) Final report USD 6,550 (Project Budget, managed by FAO) Local supervision trips USD 5,000 (Project Budget, managed by FAO) Training on UN financial management and reporting issues USD 3,000 (Project Budget, managed by FAO)	second half of 2018)	(Programmes) of the FAO Representation in Peru (Budget Holder)