

# INTERNATIONAL TROPICAL TIMBER ORGANIZATION

## ITTO

### PROJECT DOCUMENT

TITLE:	DEVELOPMENT OF A REGIONAL STRATEGY FOR THE RESTORATION AND REHABILITATION OF DEGRADED AREAS ON THE SOUTH COAST OF PERU
SERIAL NUMBER:	PD 852/17 Rev.4 (F)
COMMITTEE:	REFORESTATION AND FOREST MANAGEMENT
SUBMITTED BY:	GOVERNMENT OF PERU
ORIGINAL:	SPANISH

#### SUMMARY

Initiative 20x20 has been launched through the World Resources Institute (WRI) at the 20th Conference of the Parties (COP20) of the United Nations Framework Convention on Climate Change (UNFCCC). It is a country-led initiative to change land restoration dynamics in Latin America with the aim to contribute to global efforts in this field by undertaking a commitment to restore 20 million hectares of degraded lands by 2020.

The overall target will be achieved by fulfilling a combination of goals related to resilient and climatically sustainable agroforestry; agropastoral activities; agricultural improvement; and natural reforestation, among others. It also includes avoided deforestation and the implementation of land restoration programs, requiring an initial investment of \$100 million from private sources.

In this context, Peru expects to restore and rehabilitate a total of 3.2 million hectares of degraded lands, comprising 2.0 million hectares for reforestation and 1.2 million hectares for rehabilitation in the coastal, Andean (highlands) and Amazon (rainforest) regions, considering that the southern coastal region of Peru contains approximately 0.6 million hectares of lands that have been degraded or are in the process of becoming severely degraded due to inappropriate land use and depletion of the original vegetation cover, particularly in the "lomas"<sup>1</sup> (*hills*) formations, where a semi-dry or sub-humid tropical climate is predominant.

EXECUTING AGENCY:	FOUNDATION FOR AGRARIAN DEVELOPMENT (FDA)
COLLABORATING AGENCIES	NATIONAL FOREST AND WILDLIFE SERVICE (SERFOR) OF THE MINISTRY OF AGRICULTURE AND IRRIGATION
DURATION:	24 MONTHS
APPROXIMATE STARTING DATE	UPON APPROVAL

BUDGET AND POSSIBLE FINANCING SOURCES:	Source	Contribution in US\$
	<b>ITTO</b>	<b>125,000.00</b>
	FDA	153,693.00
	BENEFICIARIES	107,430.00
	<b>TOTAL</b>	<b>386,123.00</b>

<sup>1</sup> Formations along the Peruvian coastline that depend on atmospheric associations generating a dense tree, shrub and herbaceous vegetation cover.

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## PART 1: PROJECT CONTEXT

### 1.1 Origin

Concerns about the destruction of the world's forests and degraded lands, in both moist tropical areas and dry or semi-dry areas, have considerably increased over the last two decades, leading to several initiatives aimed at reverting this trend and establishing sustainable forest management strategies and actions. In this context, policy-makers, researchers, foresters and forest advocacy groups, in general, have focused their interest in large areas of undisturbed or primary tropical forests, neglecting the conservation value and potential of secondary and degraded forests and forest lands in dry and sub-humid areas.

Dry and sub-humid lands cover approximately 47% of the land area of the planet, and include dry and semi-dry regions, meadows, savannahs and Mediterranean landscapes. These fragile environments, which are home to many endemic species, warrant priority attention to avoid the irreversible loss of biological diversity. The biodiversity of dry and sub-humid areas is well adapted to severe conditions characterized by irregular precipitation patterns that lead to droughts and flooding and, more often than not, to high temperatures, thus exacerbating the effects of climate change.

The Convention on Biological Diversity (CBD) has a work programme for dry and sub-humid lands aimed at addressing knowledge gaps, supporting best management practices and promoting relations between countries, institutions and other conventions [*Living in Harmony with Nature*, [www.cbd.int/drylands](http://www.cbd.int/drylands); Drylands Development Centre (DDC) of the United Nations Development Programme, [www.undp.org/drylands](http://www.undp.org/drylands); United Nations Convention to Combat Desertification (UNCCD), [www.unccd.int](http://www.unccd.int); Food and Agriculture Organization of the United Nations (FAO), [www.fao.org](http://www.fao.org); United Nations Educational, Scientific and Cultural Organization (UNESCO), [www.unesco.org](http://www.unesco.org); United Nations Environment Programme (UNEP), [www.unep.org](http://www.unep.org); United Nations Framework Convention on Climate Change (UNFCCC), <http://unfccc.int>; World Conservation Monitoring Centre (WCMC), [www.unep-wcmc.org](http://www.unep-wcmc.org)].

Initiative 20x20 was launched through the World Resources Institute (WRI) at the 20th Conference of the Parties (COP20) of the United Nations Framework Convention on Climate Change (UNFCCC). It is a country-led initiative to change land restoration dynamics in Latin America with the aim to contribute to global efforts in this field by undertaking a commitment to restore 20 million hectares of degraded land by 2020.

The overall target will be achieved by fulfilling a combination of goals related to resilient and climatically sustainable agroforestry; agropastoral activities; agricultural improvement; and natural reforestation, among others. It also includes avoided deforestation and the implementation of land restoration programs, requiring an initial investment of \$100 million from private sources.

In this context, Peru expects to restore and rehabilitate a total of 3.2 million hectares of degraded lands, comprising 2.0 million hectares for reforestation and 1.2 million hectares for rehabilitation in the coastal, Andean (highlands) and Amazon (rainforest) regions, considering that the southern coastal region of Peru contains approximately 0.6 million hectares of lands that have been degraded or are in the process of becoming severely degraded due to inappropriate land use and depletion of the original vegetation cover, particularly in the "lomas" (*hills*) formations<sup>2</sup>, which have a predominantly semi-dry or sub-humid tropical climate.



2013 Google satellite image and on-site photographs (J. Malleux) showing the Atiquipa Lomas formation, Department of Arequipa. This formation covers approximately 28,000 ha

<sup>2</sup> Formations along the Peruvian coastline that depend on atmospheric associations generating a dense tree, shrub and herbaceous vegetation cover.

ITTO financed a small project [PD 583/10 Rev.1 (F)] in 2010-2011 for small scale (100 ha) tara (*Caesalpinea spinosa*) growing and production in the southern region of Peru, which was very successful and attracted the interest of many farmers in the surrounding areas and government agencies, who are establishing new plantations with very promising results, and large areas are beginning to be reforested with tara along the southern Peruvian coast. In order to continue the trials and consolidate the successful results obtained, a new small project (PD 724/13 Rev.1 (F) – 2014-2016) was approved and financed. The main objective of this small project was to develop guidelines for tara plantations with a view to the restoration of degraded lands, in addition to the institutional mainstreaming<sup>3</sup> of a degraded land restoration plan for the entire southern coast region of Peru, with the participation of major government institutions, civil society and private sector enterprises interested in restoring large areas of land to incorporate them into the production system under sustainable forest and agroforestry systems.

The core objective of project PD 724/13 Rev.1 (F) was to develop guidelines for SFM and agroforestry systems aimed at the rehabilitation of degraded lands on the Peruvian coast and a replicable technological package for reforestation with *Caesalpinea spinosa* and agroforestry systems. The following outcomes were achieved: i) Consolidation of technical experiences in the management and competitive production of tara on the southern coast of Peru through the development of a high-productivity module; ii) Development of a technological package for tara management and associated agroforestry systems; and iii) SFM guidelines for tara plantations and the rehabilitation of degraded and *erriaza* (waste) lands to be applied throughout the coastal region of Peru.

In this context, and based on a validated technical foundation for reforestation and restoration, this project proposal seeks to identify areas suitable for restoration and develop a strategy to incorporate those areas into the National Programme for the Restoration of Degraded Areas (*Recuperación de Áreas Degradadas – RAD*), establishing trial modules in different localities with the use of agroforestry systems associated to tara and other tree species in degraded soil conditions of salinity<sup>4</sup>, shortage of irrigation water and vegetation degradation in the *lomas* formations. The replication of the experiences of projects PD 583/10 Rev.1 (F) and PD 724/13 Rev.1 (F) in a larger geographic area will take place in the departments of Ica, Arequipa, Moquegua and Tacna, which make up the southern coastal region of Peru and, given their ecological, environmental and socioeconomic conditions, are extremely important and highly representative of semi-dry or sub-humid regions in the Peruvian tropics.

*Lomas* formations are highly biodiversity-rich, as shown in the study carried out by A. Brack in 1968 as well as the studies implemented by project PD 724/13 Rev.1 (F). In the Atiquipa *lomas* there are several plant species such as wild tobacco (*Nicotiana knightiana*), chanyaico (*Grindelia glutinosa*) and wild tomato (*Lycopersicon peruvianum*), among many others. The shrub vegetation in this area includes heliotrope (*Heliotropium peruvianum*), chamo (*molkenke*) (*Duranta armata*) and angel's trumpet (*Brugmansia candida*); while tree species include tara (*Caesalpinea spinosa*), mito (*Carica candicans*), huarango (*Prosopis pallida*), faique (*Acacia macracantha*), molle (*Schinus molle*) and myrtle (*Myrcianthes ferreyrae*) (Ferreyra 1986). Furthermore, the vegetation and the existence of water sources in the *lomas* area favour the presence of abundant and varied wildlife, including mammal species such as white-tailed deer (*Odocoileus virginianus*), Andean fox (*Dusicyon culpaeus*), Andean skunk (*Conepatus rex*), and birds such as osprey (*Pandion haliaethus*), Harris's hawk (*Parabuteo unicinctus*), American kestrel (*Falco sparverius*), eared dove (*Zenaida auriculata*) and mountain parakeet (*Bolborhynchus aurifrons*), among others (Brack 1986).

In fact, during the pre-Hispanic period, or even in the pre-Incan period, these formations were extremely important for the supply of food products to the ancient Peruvians, who domesticated a large number of species such as wild tomato, tara and molle, and as a source of protein from wild meat from species such as white-tailed deer and other mammals. Thus, the restoration of these formations has scientific, historical, cultural and socioeconomic significance.

The lack of opportunities and alternatives as well as the poor use of land have serious consequences on the degradation of forests and potential forest lands in the Coastal and Forest regions of Peru. However, a reforestation plan using water shortage and salinity resistant species will offer possibilities for the implementation of an important degraded land rehabilitation program on the southern coast of Peru, thus significantly contributing to the improvement of social, environmental and economic conditions in the region.

<sup>3</sup> The Regional Committee for the Southern Coast of Peru has officially been established with the participation of the Ministries of Agriculture and Environment, the Regional Water Authority, the AGRORURAL Programme, the National Forest and Wildlife Service (SERFOR), rural communities, NGOs, and private sector representatives.

<sup>4</sup> Salinity is the main limiting factor in the economic use of soils in the Peruvian coastal region. Tara has shown to have great adaptation capacity and resilience, as well as having very low water requirements, which is extremely important in the dry conditions of the Peruvian coast.

## 1.2 Relevance

This project is clearly relevant when considering the current outlook and prospects at the national and international levels, particularly in relation to the development of forest and agroforestry programs, plans and activities as the most suitable alternatives for the restoration of degraded lands, which are precisely one of the main concerns of ITTO.

The CBD's Aichi Targets established a goal of restoring at least 15% of degraded ecosystems such as natural protected areas; the Bonn Challenge set the target of restoring 150 million hectares of degraded ecosystems by 2020, which was increased to 200 million hectares in the New York Declaration; under Initiative 20x20, a total of 20 million hectares of land will be restored in Latin America, and out of this total, Peru has undertaken a commitment to restore 3.2 million ha.

Environmental relevance: In Peru, there are more than 10 million hectares of degraded lands<sup>5</sup>, caused mainly by land-use changes from forest lands to subsistence agriculture or palm oil plantations. It is estimated that there are approximately 2 million hectares of degraded lands along the tropical coastline of Peru due to over-logging, grazing, land-use changes, salinity, and soil erosion and compacting. All of this is seriously threatening the existence and sustainability of major coastal ecosystems like the *lomas* formations. Initiative 20x20 has estimated that a total of 1.2 million hectares must be restored/rehabilitated.

Considering that approximately 60% of the national population is settled along the coastal region and that this region accounts for 30% of the national territory, it is more than obvious that a program and project for the restoration of these degraded lands is both appropriate and relevant so as to achieve a substantial improvement in the quality of life of the population by enhancing the quality of the environment and incorporating or reincorporating large areas of land into forest and agroforestry systems through the use of species adapted to the aforementioned soil conditions, such as molle (*Schinus molle*), algarrobo (*Prosopis juliflora*), tara (*Caesalpinsea spinosa*), and even fruit species such as fig trees (*Ficus carica*), olive trees (*Olea europea*), mango trees (*M. indica*), passionfruit trees (*passiflora edulis*), pomegranate (*Punica granatum*) and others that can be easily integrated into systems with annual agricultural crops, including passionfruit, water melon and pumpkin, which are resistant to sandy-saline soils, do not require much water and have already been successfully tested.

The identification of the specific areas and sites to be part of the package for the south coast of Peru will be processed through an ecological and economic zoning procedure based on the use of satellite images, land-use maps, field data and quick rural surveys, all of which are part of a land management process that is precisely the system that ITTO has been promoting and supporting for the identification of areas with the greatest land-use capacity, thus avoiding any possible land-use conflicts.

Social and economic relevance: these systems are well suited for a family farm or for small and medium farmers as they have a high yield rate per hectare in marginal soils and therefore do not compete with other agricultural or forest products. Furthermore, these systems contribute to participatory approaches during the production, processing and marketing phases; in all cases, more than 80% of production is sourced from small farms and small-scale producers. It is estimated (ECOBONA 2009) that in Peru alone there are more than 100,000 families directly or indirectly involved in the production of these crops (the great majority of these families own farms that range from 0.1 to 2.0 hectares).

Technological relevance: zoning procedures are well known and there is an increasing number of mapping tools, satellite images (Google Earth) and fast and cost-effective field exploratory systems. Furthermore, the aforementioned forest and agricultural species have a proven track-record of adaptation to the referred climatic, soil and water conditions and their management is relatively easy despite the fact that there is an enormous scope for scientific and applied research, including: selection of varieties, sites, germplasm banks, processing of primary products and higher value-added products, market chains and others.

The use of treated wastewater is a significant component of the project strategy, and the identification of localities that have this type of water treatment plants will be extremely important. For example, it is a well-known fact that in the department of Tacna, where there is a great shortage of water for agricultural purposes and even for human consumption, 100% of residual waters are treated for agricultural use. However, this activity does not efficiently use this resource as there is a high level of wastage or misuse of water due to inadequate resource distribution, which is not done according to the requirements of the crops where it is used (mainly olive tree crops).

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<sup>5</sup> Personal estimate for the whole national territory

Another significant consideration is that the Peruvian coastline is the area that is most affected by the recurring El Niño phenomenon, with periods of torrential rain in the northern region as well as severe droughts and increasingly higher temperatures. It is therefore necessary to develop climate change adaptation and mitigation strategies, which can be achieved through the rehabilitation of large areas of degraded lands and the restoration of *lomas* ecosystems. **El Niño** is a global climate phenomenon, erratically cyclical in nature (Strahler refers to cycles ranging from three to eight years<sup>1</sup>), which consists of a change in the movement patterns of ocean currents in the inter-tropical region and, as a result, causes an overlapping of the warm waters from the Northern Hemisphere, immediately to the north of the equator, over the very cold emersion waters that characterize the Humboldt or Peruvian current. This event causes worldwide havoc due to intense rainfall, which mainly affects both the Atlantic and Pacific coastlines of South America.

### 1.2.1 Conformity with ITTO's objectives and priorities

One of the main ITTO objectives set out in the ITTA is to promote the sustainable management of tropical timber producing forests and improve the contribution of non-timber forest products and environmental services to the sustainable management of tropical forests. The ITTA 2006 provides a large scope for ITTO's work, thus enabling the Organization to help its members in the three tropical regions to define and implement sustainable forest management strategies and increase their capacity to export timber and other forest products that are legally harvested from their forests.

- a. Even though this project is not directly aimed at the production of timber, it will still make a significant contribution to integrated forest utilization based on non-timber forest products, and this will have an impact on the reduction of community pressure on natural forests and their logging.
- b. The proposal is fully consistent with objective (c) of the ITTA as it will contribute to poverty alleviation by promoting economic activities as an alternative to forest logging and providing significant economic income to poor families.
- c. The proposal is also consistent with objective (g) of the ITTA as it will develop mechanisms for the provision of new and additional financial resources with a view to promoting the adequacy and predictability of funding and expertise needed to enhance the capacity of producer members, as well as objective (i) as it will promote increased and further processing of tropical timber from sustainably managed sources in producer member countries, with a view to promoting their industrialization and thereby increasing their employment opportunities and export earnings.

In particular, this project is fully consistent with the ITTO Guidelines for the Restoration, Management and Rehabilitation of Degraded and Secondary Tropical Forests.

The following principles have specifically been taken into account:

Principle 1 under ITTO objectives establishes that secondary forests and degraded lands need to be seen as integral parts of the rural tropical landscape that are affected by off-site conditions. Restored primary forests, managed secondary forests and rehabilitated forests lands can provide numerous benefits and services to society, taking the following into consideration:

This project is particularly consistent with the strategic objectives set out in ITTO's Action Plan 2013- 2018.

Strategic priority 3: Enhance the conservation and sustainable use of biodiversity in tropical timber producing forests by:

- Enhancing local capacity for biodiversity conservation in production forests
- Improving conservation and management of protected areas
- Safeguarding tropical forest biodiversity in forestry interventions, including in REDD+ related projects
- Improving the health and welfare of local communities and indigenous groups through biodiversity conservation and sustainable use of natural resources, including medicinal and aromatic plants.

Furthermore, the following activities should be implemented:

- Incorporate degraded and secondary forests into land-use planning at the micro and macro scales.

- Establish integrated land-use plans that reflect an appropriate balance between conservation, production and sustainable livelihood needs from forests.
- Explore options for restoration and rehabilitation before allocating degraded and secondary forests to non-forest uses.

The project is precisely focused on degraded lands as a core element, proposing their restoration and sustained management as a strategy for the restoration of rural landscapes through reforestation with tara and associated agroforestry systems, an approach that has proven to be highly effective in both environmental and economic terms.

Principle 5: Secure land tenure, land-user access, customary rights and property rights are fundamental to the restoration, management and rehabilitation of degraded and secondary forests. By designing a degraded forest land restoration strategy, the project will also seek to develop strategies to ensure the legal status of those lands as part of the national forest heritage so as to guarantee their preservation by local governments, communities and associations.

Principle 8: Local communities and stakeholders actively participate in and share the responsibility for decision-making in planning and implementing restoration, management and rehabilitation strategies.

Previous projects PD 583/10 Rev.1 (F) and PD 724/13 Rev.1 (F) have carried out extensive participatory work with small farmers and local authorities in their areas of influence and have therefore established a sound and sustainable basis for the implementation of activities and the achievement of the outcomes proposed for this new phase, which has become evident through the multiple expressions of support, agreements and requests submitted by these communities and authorities to continue working on the management and production chains of bamboo and other related species.

Principle 11: The appropriate land-use option for a given site needs to be chosen carefully. The proposed project is precisely aimed at identifying degraded forest areas or landscapes with the greatest potential for restoration in a region that is predominantly under urban and industrial development, which has seriously contributed to landscape degradation.

### **1.2.2 Relevance to the submitting country's policies**

The current legal framework for the forest sector mainly comprises the National Forest and Wildlife Policy, the new Forest and Wildlife Law and its Regulations, and the General Environmental Law.

The National Forest and Wildlife Policy was adopted through Supreme Decree No. 009-2013-MINAGRI; its forest and wildlife management principles include an ecosystem approach that recognizes the importance of natural ecosystems as a space for life, a habitat for fauna and a source of water, and also as a major contributor to food security and living standards among the forest-dependent rural population. It also recognizes the importance of ensuring participation in forest and wildlife management, to guarantee the effective contribution of all stakeholders, including native and farming communities. More specifically, Policy Guideline 2 stresses sustainability based on standards such as the restoration and rehabilitation of degraded forest ecosystems, primarily with native species, especially in basin headwaters; it also stresses the promotion of restoration mechanisms for deforested and degraded areas with forest species that can make a contribution to local development through public and private investment.

In its Preliminary Title, Peru's Forest and Wildlife Law No. 29763, which was passed on 22 July 2011 and whose regulations were approved recently in the second semester of 2015, states the rights and obligations of the population with respect to forests as follows: *“Every person has the right to access, use, utilize and enjoy the forest and wildlife heritage of the country in accordance with the procedures provided by national and regional authorities and local planning and management instruments, as well as the right to be involved in their management. And every person has the obligation to help in the conservation of this heritage and its components, in accordance with applicable legislation”*.

The Peruvian Government promotes the sustainable use, protection and conservation of forest resources and their industrial and non-industrial processing, particularly where such activities are aimed at generating more jobs and at sustainable socioeconomic development of poor rural communities. However, more financial and technological resources are required for this to have a significant socioeconomic and environmental impact and to benefit the neediest sectors of the population.

In this context, it is worth noting the outcomes of projects PD 583/10 Rev.1 (F) and PD 724 Rev.1 (F), which have been highly appreciated by the regional governments of the Departments of Arequipa, Moquegua and

Tacna (Southern Coastal Region of Peru). At different times and in different ways, these governments have expressed their desire to continue these efforts and further advance the technological and socioeconomic aspects of the process. This project proposal has been developed in response to those expressions of interest. It should not necessarily be considered as a follow-up or second phase of the aforementioned projects but rather as a result of their implementation. This new proposal is focused on aspects that require strengthening in a wider environmental, geographic and socioeconomic context.

The National Development Plan of the current Government of Peru, in its Objective Four related to Social Justice, Chapter B: Agriculture and Rural Development, item 242, decides: “to declare the promotion and development of tara crops as a matter of national priority interest, and to this end, the General Forest and Wildlife Directorate (DGFFS) of MINAG has developed forest management guidelines for natural tara forest stands” with a view to promoting the production and marketing of products derived from forest management and plantations.

It is within this framework that this project proposal has been developed, identifying the following limiting factors to reduce the degradation of lands in the Peruvian coastal region and promote their sustainable use:

1. The limited or almost non-existent skills and dissemination of intermediate techniques for the rehabilitation and management of degraded lands in the coastal region;
2. Lack of training and promotion of techniques (know-how) in sustainable management and value-added processing in the region;
3. The almost complete absence of viable alternatives for sustainable socioeconomic development in the Peruvian coastal region, where natural tara formations in the so-called “lomas” are currently disappearing.

## Sectoral policies

Over the last decade, the Government of Peru has given special priority to the sustainable management of tropical forests in consonance with ITTO’s Objective 2000, incorporating in its Agenda 21 and national policies the commitment to establish mechanisms aimed at ensuring the sustainable development of rural communities through forest concessions and permits for the integrated utilization of forest resources under management plans, as well as the promotion of afforestation and reforestation with timber and non-timber species for rehabilitation and land-use change in degraded areas, as established in SD No. 003-2005-AG, stressing the importance of reforestation, and SR No. 002-2006-AG, approving the National Reforestation Plan.

Peru is involved in the Bonn Challenge Programme and is a signatory party to Initiative 20x20, which was established at the COP 20 in Lima and through which the country has undertaken a commitment to implement a national degraded area restoration program (known as RAD) over a total of 3.2 million hectares, of which approximately 0.6 million hectares are located on the coast, mainly in the southern coastal region of Peru. However, no specific areas have been identified or demarcated to date as part of this commitment, and this project would constitute the first initiative and effort towards that end. This project will be implemented in ongoing, full coordination with SERFOR, which, together with the Ministry of the Environment and other relevant agencies, is the government authority in charge of developing plans and programs for the implementation of Initiative 20x20.

## 1.3 Target area

### 1.3.1 Geographic location

The project’s direct area of influence is located in the southern coastal region of Peru, which comprises the departments of Ica, Arequipa, Moquegua and Tacna, along the country’s coastline.

The Coastal region (Costa) is considered to be one of the three traditional regions of the country, a concept introduced in 1865 by Paz Soldan in his “Atlas of Peru”, but it is also considered to be one of the eight natural regions of Peru. The region is 2,250 km long, although the coastline stretches over 3,080 km, and it has a variable width that ranges from 15 km in Arequipa to 180 km in Piura.

The **Costa** (Coast) is the longitudinal region of coastline of the country and covers a narrow and long stretch of territory between the Pacific Ocean and the Andean foothills of Peru, with altitudes ranging from 0 to 500 m.a.s.l.<sup>1</sup>, although other sources indicate higher altitudes.



For the most part, it is a warm or semi-warm region characterized by its low rainfall levels. It has a very arid subtropical climate, with the exception of the northernmost part of the region which has a dry tropical climate. Despite the desertification affecting the region, there is high atmospheric humidity that produces a slight cooling effect, although temperatures rarely fall below 12°C. The summer sun, however, is very strong and temperatures frequently reach 30°C. The central and southern regions of the Peruvian coastline have two well defined seasons: winter, from April to October; and summer, from November to March. On the other hand, the northern region of the coastline is not affected by the cold waters, which results in the region having almost 300 days of sunshine and warm temperatures throughout the year (up to 35°C in summer). The rainy season extends from November to March.

The south coast is less humid and has more sunshine during winter than the central coast, with temperatures of 22°C during the day, although night time temperatures are colder than those of the central coast, falling to about 8°C. In the summer season, from December to April, temperatures reach a hot 28°C in the afternoon and 22°C at night. The region of the Nazca desert has higher temperatures during the day. Spring and autumn temperatures range from 17°C to 22°C.

**Location map of the project area**



The total area of degraded lands in the Peruvian coastal region (Costa) is a little over 2 million hectares, distributed by department as follows: (south region departments are indicated in red)

DEGRADED AND UNPRODUCTIVE LANDS <sup>6</sup> -HA		%
ANCASH	705,000.00	35.05
AREQUIPA	1,071,000.00	53.24
ICA	27,000.00	1.34
LA LIBERTAD	1,900.00	0.09
LAMBAYEQUE	900	0.04
LIMA	48,400.00	2.41
MOQUEGUA	36,000.00	1.79
PIURA	103,000.00	5.12
TACNA	11,700.00	0.58
TUMBES	6,600.00	0.33
<b>TOTAL</b>	<b>2,011,500.00</b>	<b>100.00</b>

Source: Cofopri 2006, prepared in-house

The departments marked in red are those that are part of the south coast region (Arequipa, Ica, Moquegua and Tacna) and cover a total of 1.15 million hectares, or more than 50% of the total area, without taking into account the area of the *Lomas* ecosystems, which accounts for more than half a million hectares; therefore, the task in hand represents a major challenge. However, only 0.6 million hectares have been considered within the framework of Initiative 20x20 for the whole coastal region, which corresponds to a target of 0.3 million hectares for the south coast with an additional 28,000 hectares of the Loma Atiquipa ecosystem, which is currently in an advanced state of degradation despite being the most important *Loma* formation in terms of biodiversity and land area in Peru.

### 1.3.2 Social, economic and environmental aspects

#### Social aspects

The southern coastal region of Peru has a population of approximately 2 million, concentrated mainly in urban centers, and a large part of this population migrated from the Andean region in search of work opportunities, particularly from Puno, Cusco, Ayacucho and Huancavelica, which are the Andean regions with the largest rural populations and highest poverty rates in the south of Peru. This has created serious problems for the provision of basic services (water, sewerage, electricity) and at the same time has caused the depredation of ecosystems and the degradation of lands.

In pre-Hispanic times, the coastal region was inhabited by the Incas who spoke a variety of classical Quechua (coastal or maritime Quechua), particularly in the current departments of Ica and Lima.

The crossbreeding produced between the XV and XVIII centuries in the Peruvian coastal region between white settlers (creoles) and indigenous and black communities resulted in the use of the term “creole” with reference to all “costeños” (coastal dwellers) as almost the entire population lived along the coast (the migration towards the Andean mountain range came later) and it is for this reason that the terms “creole” and “costeño” are in many cases used interchangeably in Peru, although such usage is not always accurate.

Ethnographically, the major ethnic group along the Peruvian coastline is the mestizo community (resulting from the cross-breeding of white Europeans and indigenous peoples), followed by the white population and, in smaller minorities, Afro-descendent and indigenous communities. Black communities are mainly found in the central and southern coastal areas of the country, in cities such as Ica, Chincha or Pisco, while the indigenous population is mainly concentrated in the Sierra or Andes region.

A part of the Peruvian coastal region has African influence, which is particularly reflected in cultural expressions such as dances (for example, the “Negritos” Dance in Chincha), songs, musical instruments (the Peruvian box-drum), literature, sports and Peruvian gastronomy. The largest concentration of Afro-Peruvians is found in El Callao, Cañete, Chincha, Ica and Nazca. The departments with the highest Afro-descendant population are Ica, Lambayeque, Lima, Piura, La Libertad and Tumbes.

<sup>6</sup> “Unproductive” lands (*tierras eriazas*) are lands that because of their very low agricultural production capacity do not currently have any land-use. However, in general, these lands could have potential for agroforestry activities as a means or strategy for their rehabilitation or incorporation into the production system. Degraded lands are those that have suffered serious alterations and reductions to their agricultural or forestry potential and can be restored or reincorporated into the agroforestry production system.

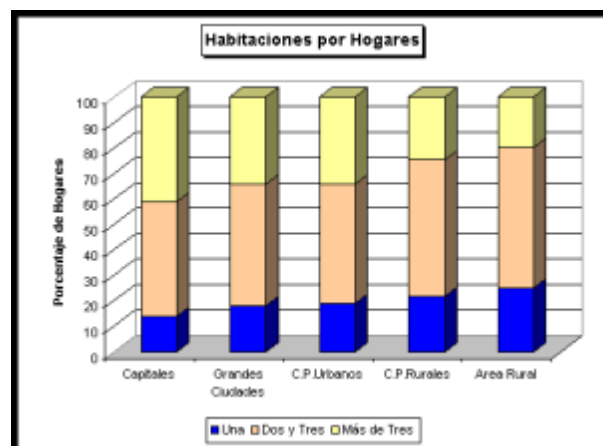
Almost the entire rural population and especially Andean immigrants are involved as permanent and temporary workers in the farming of rice, onion, bean, asparagus and grapevine crops, so many other food products need to be imported from other regions. Poverty rates are still high (25%) and there is an alarming lack of opportunities in the production sector as no alternative production activities have been developed.

### Economic aspects

Historically, the south coastal region has been characterized by having an economic production structure based on agricultural and cattle ranching activities, which was initially based on the production of vegetables for the regional market and, to a lesser extent, for the markets of neighboring regions.

The manufacturing industry has always been geared towards the production of consumer goods such as food, drinks and textiles, which represent 62% of the total value of industrial output, but the production of intermediary goods is not very significant. Industrial activity is concentrated in the urban areas of the region and is mainly made up of small and medium enterprises, with a major part of their production being geared to the domestic market.

Percentage of the contribution of economic activities to the gross domestic product of the South Coast region  
 Agriculture, Cattle ranching, Hunting and Forestry 7.6%  
 Extraction of oil, gas and minerals 26.7%  
 Manufacturing 19.4%  
 Construction 4.7%  
 Public administration and Defense 2.6%  
 Other activities 39.0%



### Environmental aspects

Despite being considered a tropical region, the Peruvian coast is quite arid and faces serious problems due to the inadequate use and deterioration of the quality of water. The inefficient use of this resource is one of the major problems facing the country, as it is endangering the sustainable supply of water in terms of both quality and quantity. The main causes of this are industrial pollution, the lack of waste-water treatment, cocaine production, the indiscriminate use of agrochemicals, and the degradation of river basins due to human activities.

The resources that are under the greatest threat from degradation are agricultural and cattle-ranching lands, particularly as a result of the salinization of the *Costa* region, the progressive erosion of the *Sierra* region and the loss of land fertility in the Amazon region. A total of 8 million hectares of land has been classified as severely eroded and 31 million hectares as moderately eroded. The degradation of soils affects both agricultural and cattle-ranching productivity as it gradually – or in some cases violently (landslides, floods and river erosion) – reduces production levels in rural areas, thus affecting the economy of rural communities. There is no institution in the country that is directly responsible for the management of the scarce agricultural lands. Almost 70% of the Peruvian population lives in urban areas and the cities continue to grow in an accelerated and disorderly manner, causing a number of environmental problems that have a tremendous impact on the communities and their environment. This in turn is increasingly causing the deterioration of the quality and availability of water, as there is a lack of appropriate management of supply sources, and of the distribution and maintenance of systems. The serious deterioration of air quality due to gas emissions, smells

and burning of waste products, is an ever-increasing problem. There is a serious shortage of green and recreational spaces for the population to enjoy.

Despite its great importance, the country's biological diversity is being affected by several processes that are reducing the availability of genetic resources, species and stable ecosystems. Forest logging has tremendous environmental, economic and social consequences. The degradation of significant ecosystems and the threat of extinction of flora and fauna species are also serious problems. The consequences of all these processes on rural populations are many and diverse, and range from the reduction of food security to a greater impoverishment of these communities due to the depletion of resources.

#### **1.4 Expected outcomes at project completion**

The objective of this project is not to modify or improve directly the living standards of the population, nor to hand over an important area of restored or rehabilitated lands for forestry or agroforestry activities. This project has been designed to carry out a baseline study for the identification of areas with the most severe degradation problems and greatest restoration potential so as to develop a regional project for the restoration of degraded areas and, at the same time, prepare a technological package to this end, based on the experiences of projects PD 583/10 Rev. 2 (F) and PD 724/13 Rev. 1 (F), as well as the outputs of the trial modules to be implemented in different representative localities in the project's area of influence (south coast of Peru).

Thus, the national program for the restoration of degraded lands (RAD) will have valid, timely and reliable information available for the development and field implementation of a major project that is expected to cover an area of approximately 300,000 hectares of degraded lands suitable for restoration, which would be a very valuable contribution to the region's development and to the development of a climate change mitigation and adaptation strategy.

Furthermore, a modular technological package will have been developed. This package may later be replicated in similar environmental conditions and will benefit a large number of small and medium scale farmers who currently have no access to this type of technology.

In addition, the project will have established the basis for the design and organization of a national program or plan for the restoration of degraded lands based on reforestation and agroforestry systems for the Peruvian coastal region.

## **PART 2: PROJECT RATIONALE AND OBJECTIVES**

### **2.1 Stakeholder analysis**

The objective of this project is to identify, demarcate and register degraded ecosystems and lands on the south coast of Peru as the basis for the development of a regional strategy for the restoration and rehabilitation of degraded lands and thus provide future direct and indirect benefits to the various stakeholders in the departments within its target area (Ica, Arequipa, Moquegua and Tacna). In this context, it is considered that the target beneficiary group of the project will be the national and regional forest and wildlife authorities. The project will improve their information and assessment tools for the identification of the conditions and location of degraded lands in the south coastal region of Peru, as well as the strategy to tackle the rehabilitation or restoration of these lands. In this context, local governments and rural communities will also be an important part of this target beneficiary group. The direct beneficiaries of the project will be small-scale farmers and, in general, low-income rural dwellers living in the project's direct area of influence, as well as small and medium entrepreneurs in the agricultural sector, some of whom will have access to new lands in the medium term while others will be able to use technological packages to improve the productivity of their lands so as to obtain added value for their products and ultimately achieve greater competitiveness.

In the case of the first group, users will be involved as direct beneficiaries in the work done by the project for the identification of lands suitable for restoration as a result of the application of trial modules, the implementation of a future regional project, the production of plants in nurseries, and planting and maintenance activities. They will also be involved at the individual level in short training courses and workshops, plantations, and forest nurseries. In all of these cases community member involvement will take place in coordination with community and local government (municipal) authorities and after the relevant work plan has been approved.

Regional and local governments or municipalities will be primary stakeholders and will directly benefit from the implementation of the regional project once it becomes operational, as they will carry out production activities to benefit the population in their areas, will train their officials, will establish production and training infrastructure, and will design projects, plans and programs for local and community development. Equal gender involvement will be encouraged as well as the participation of young people interested in the development of innovative agro-activities in the province. This approach is particularly important in a province with a predominantly farming society where the "macho culture" still prevails. The project will develop specific activities to improve the participation of young people and women.

#### ***Level of consensus in support of project implementation***

There is a great deal of expectation from stakeholders and/or potential beneficiaries about the development of a regional (sub-national) plan for the use of systems that will allow the rural population, particularly small, landless farmers, to access lands that have been rehabilitated through forestry and agroforestry systems. There are more than 20 community organizations that are members of the Regional Committee for the Restoration of Degraded Lands in the South Coast of Peru (Regional RAD Committee - South Coast) including the following municipalities: Camaná, Ocoña, Mariscal Cáceres, La Joya, ACAFU, Vitor, Sihuas and Pucchún.

Stakeholders are aware of the need to change the current land-use systems, particularly those that currently do not have access to land, but they are also aware that there are large areas of unused or marginal lands that can be restored for production purposes. In order to achieve this goal, a comprehensive plan for the rehabilitation of degraded lands is required, which is in fact one of the main priorities of the agroforestry sector in Peru. In the 20x20 initiative, under which Peru is committed to the restoration of 3.5 million hectares of forest lands, approximately 600,000 ha are part of the Peruvian coastal region.

The stakeholder groups that will benefit from the project include:

#### ***Direct project stakeholders (immediate beneficiaries)***

Direct project beneficiaries will be the regional forest authorities attached to the National Forest and Wildlife Service (SERFOR) on the south coast of Peru (Ica, Arequipa, Moquegua and Tacna) that will benefit from the implementation of a concrete and objective plan to be used as a planning tool, and the SERFOR, as the technical and regulatory institution that establishes regulations and procedures

at the national level for the management of forest resources, which will play an important role in the implementation of this project as the collaborating agency.

Local Governments (municipalities) will also be direct project beneficiaries as they will have a specific plan that will allow them to identify the most urgent areas for rehabilitation and a socio-economic and geophysical baseline that will enable them to prepare and propose development projects for their implementation. The municipalities are local government bodies that are well aware of the needs of the local communities and relate to them directly on an ongoing basis. There are more than 20 municipalities that are willing to participate in a regional program for the restoration of degraded lands. These municipalities have a population of more than 10,000 landless rural families. The project prioritizes associative land-use planning and indeed the whole of the rural population is organized into associations of small farmers or as part of groups that are associated to local governments (municipalities).

In general, the number of beneficiaries is calculated in terms of the number of families, as the family is the basic unit of work in rural areas, where both men and women are actively involved in all tasks for the support of the family economy. In fact, women generally participate more actively in leadership roles of farmer organizations and children, regardless of their gender, are also quickly incorporated into this dynamic structure and eagerly seek work opportunities in their own communities, rather than having to migrate to large urban centers in search of poorly paid and insecure unskilled work.

#### *Indirect project stakeholders*

Associations, communities and small farmers will all benefit from project outputs, as they will have information available on lands they could access for rehabilitation and restoration through the implementation of forestry and agroforestry systems, which is the primary objective of the strategy to be developed by the project. They will in fact all be able to participate in the management of projects to be formulated and implemented in the short, medium and long terms. To date, more than 60,000 hectares of lands have been identified that could be included in a rehabilitation plan for degraded and unproductive (*eriza*) lands and that could be included in the first phase of the project for the short and medium terms.

The development of a plan based on forestry and agroforestry systems is a social proposal that promotes the participation of both families and communities in the achievement of a common objective and actions that are appropriate for the development of gender equality opportunities.

Educational institutions such as schools and universities also have an important role to play in both the planning and implementation of the project. Research and rural extension institutions will also play an important role, as during the planning stage it will be necessary to have accurate information on soil conditions, adaptation of forest and agricultural species to agroforestry systems, efficient use of water, plantation management, etc.

## Stakeholder analysis

Stakeholder group	Characteristics	Problems	Strengths	Involvement in the project
<b>Primary stakeholders</b>				
Local forest authorities	They are the regional and local offices attached to the national forest authority	They need training in sub-regional planning	Their participation is very important as they can make significant contributions in terms of logistics and engagement of stakeholders	Co-responsible for the supervision and monitoring of project implementation
Local governments	Municipalities are the basis of the management structure and are more directly linked to the local population	They need to improve their planning and technical capacities. They have very limited financial resources	Their participation is of vital importance; they have great political and social influence over the local population	Active participation throughout the implementation of the project as a link between the communities and the development plans
Associations of rural communities	Well organized groups with very precise sets of rules and regulations	They often have or create expectations that go beyond the possibilities offered by the projects	They maintain control and order over the participation of their members. They are fully aware of their needs and priorities; they are good communicators	Active participation throughout the implementation of the project as a link between the communities and the development plans
<b>Secondary stakeholders</b>				
<b>NGOs</b>				
Individual groups of rural farmers	A very limited number of individual farmers or farming families who are not members of associations. They are mostly recent migrants.	They are usually the ones with the lowest level of resources or access to them. They have immediate demands	They are free and immediately available to participate in urgent tasks	They can help with project logistics
<b>Tertiary stakeholders</b>				
Schools and education institutions	Rural schools are important centers for communicating and interacting with heads of families	They have very limited technical and logistic resources.	Their potential contribution during the implementation phase of the project is of great importance	Communicators and social support
Research institutions	There are very few or very weak research institutions; most of the research activities are done at universities	Very limited field experience and resources	They can provide valuable support in the planning phase, baseline development and implementation of field activities	They can provide support in the implementation of studies, surveys and planning meetings

## 2.2 Problem analysis

The problem with Peruvian coastal areas is that due to the lack of moisture and water for the development of agricultural and forestry activities, a high percentage of the lands are unproductive and uncultivated and without future prospects of use. However, it is precisely along the Peruvian coastline that the majority of the national population is settled and this population is in fact growing year after year due to the migrations from the Andean region, where there is also the problem of a lack of lands for agricultural and cattle ranching activities. As a result of this, many of these migrants encroach on State-owned lands to establish precarious human settlements and carry out agricultural activities that exacerbate the degradation of the vegetation cover and soil erosion, taking advantage of the lack of government plans or strategies for land-use planning, with serious social and environmental consequences.

The migrant populations going to the coastal areas, mainly landless farmers, settle in these areas in unhealthy conditions and create social problems when they do not find economic alternatives in the short term to help them improve their living standards due to the lack of opportunities in the agricultural and forest sectors, which is precisely where they can better develop their traditional skills. In this regard, the development of forest plantation activities for restoration or rehabilitation purposes with species that require minimum irrigation water is highly relevant and can perfectly be integrated into agroforestry systems. This constitutes a real opportunity that can turn into a concrete alternative, and this is reinforced by the success achieved in the implementation of project PD 583/10 Rev.1 (F), which obtained important results and provided invaluable experiences that will be used to guide the implementation of a national reforestation program in dry or sub-humid tropical lands like those found in the coastal areas of Peru.

Based on this background, this Project seeks to implement a diagnostic study for the demarcation of an area of approximately 100,000 hectares of degraded lands with restoration potential. To this end, the Project envisages the development of a restoration strategy based on forest and agroforestry plantation systems. At present, most plantations are established without any prior studies on soil conditions, water availability or market surveys. These plantations are dispersed, there is no coordination among plantation owners and, in general, they have very low levels of productivity. At the same time, the demand for tara, molle, carob tree, moringa and other species is steadily increasing and 90% or more of small agricultural producers can only sell dry raw materials to major brokers, middlemen and industrial plants. It is therefore necessary to develop an integrated strategy, starting with the field demarcation of the most suitable areas, so as to promote production chains that can incorporate value-added production, from the planting stage to the export of industrially processed products, thus offering substantial improvements to producers in terms of production quality and sale prices, which in turn will translate into a significant improvement in their family income, raising the per capita GDP by at least 30%.

The water shortage along the Peruvian coastline is being addressed through the use of drip irrigation systems, with a minimum volume of water being used per plant. For example, in the case of tara, projects PD 583/10 Rev.1 and PD 724/13 Rev.1 (F) have shown that with irrigation volumes of 1,500 to 2,000 m<sup>3</sup> of water/ha/year for a tara plantation of 625 plants (4mx4m spacing), it is possible to maintain the plantation and production under good conditions, compared to the 20,000 to 50,000 m<sup>3</sup> that other traditional coastal crops require (sugar cane, rice, fruit trees, onions, asparagus, grapevine, etc.), or in other words 10 to 20 times less demand for water. The other problem stems from the lack of knowledge and experience of farmers with this type of crops in agroforestry systems together with the lack of information and knowledge about these activities that government agencies have on these issues.

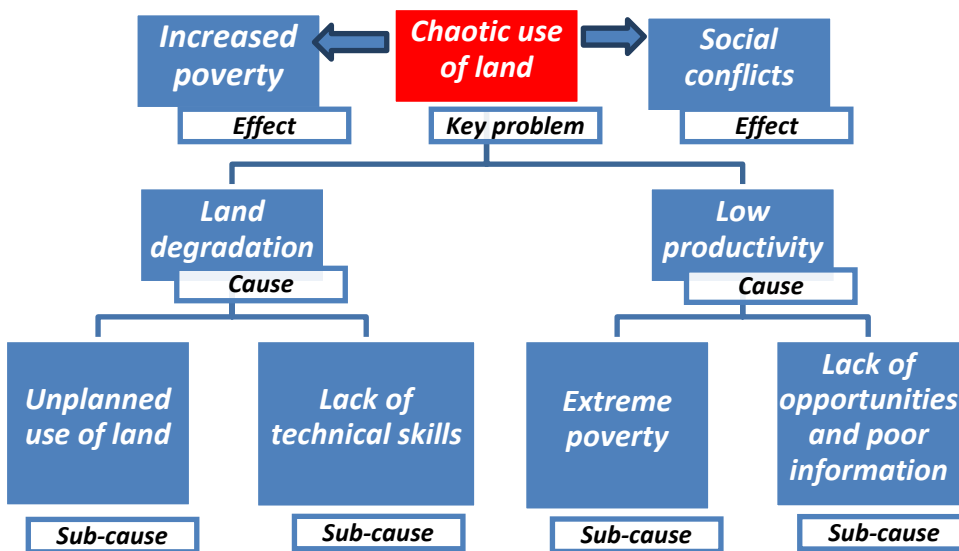
The project rationale is based on the wide availability of lands in need of rehabilitation along the Peruvian coastline, the enormous social pressure placed on this region by migrant Andean communities, who come in search of economic opportunities (work, lands) and the enormous potential that forestry and agroforestry activities represent, particularly those with minimum water requirements and affordable implementation costs. These reforestation activities will be based on the use of *Caesalpinea spinosa*, *Prosopis juliflora*, *Schinus molle* and other associated crops in agroforestry systems, particularly with leguminous species. Finally, there are advantages in only using the fruits of a permanent crop, leaving the plant untouched, as they are excellent tools for sequestering carbon, with accumulations of stocks that range from 8 to 12 metric tons of CO<sub>2</sub>/year, which can easily compete with any other forestry or agroforestry system at substantially lower costs.



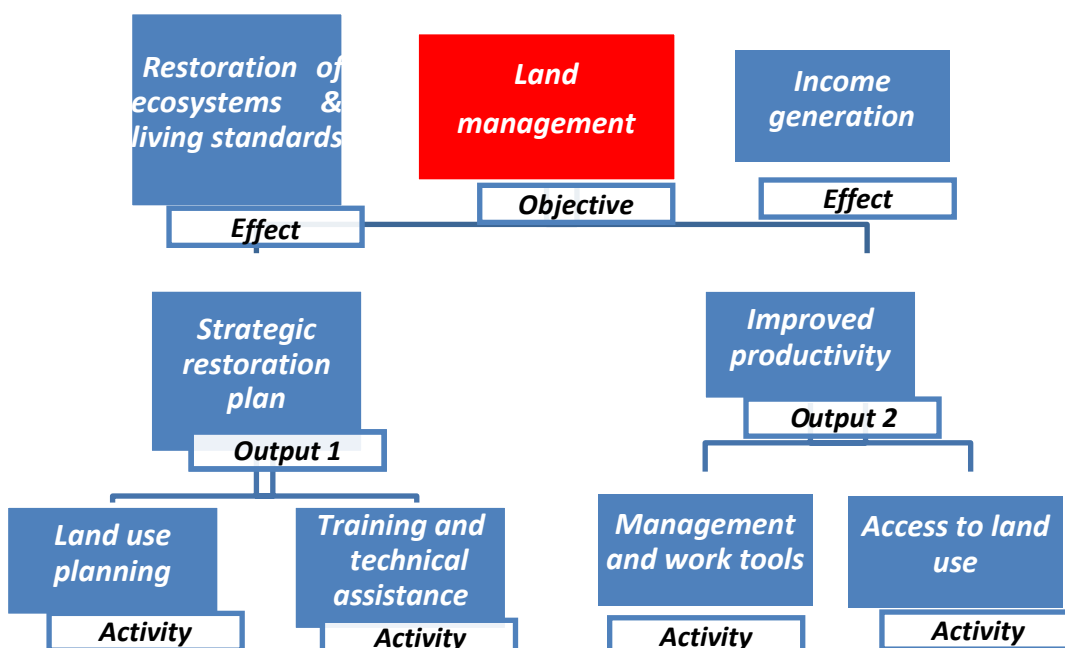
### 2.3 Problem and solutions trees

The main problem encountered by the project is the lack of opportunities for the implementation of sustainable land use activities as a result of a lack of information, or unreliable information, on land-use capacity and the availability of lands for uses other than those traditionally developed by farmers, such as onion, rice and leguminous crops and other annual crops with major water requirements, in a context where the most serious problem is in fact the shortage of water. In addition, there is a lack of promotion of alternative land-use systems that would be more beneficial than those previously mentioned, as well as a lack of technical assistance and access to credit facilities. Therefore, the project should not only be focused on the identification and demarcation of lands for restoration, but should also propose a comprehensive action plan to provide for the implementation of projects aimed at generating socioeconomic results in the short and medium terms.

#### Problem tree



#### Solutions tree



As can be seen in the problem tree above, the central problem is the lack of information or inefficient information available to the State and land-users on the availability of lands and land-use opportunities, which leads to a chaotic system generating serious social, environmental and economic conflicts and eventually resulting in ecosystem degradation with no restoration or rehabilitation strategies. Therefore, it is essential to carry out a diagnostic study on the actual availability of lands for restoration and develop a relevant strategic plan.

## **2.5 Objectives**

### **2.5.1 Development objective and impact indicators**

Provide a land management tool to improve environmental and socioeconomic conditions in the southern coastal region of Peru through the restoration of degraded lands and population access to sustainable forest and agroforestry systems.

#### Impact indicators

Increased and improved opportunities and environmental and socioeconomic conditions for the improvement of the quality of life of the population through the restoration and rehabilitation of degraded lands.

### **2.5.2 Specific objective and outcome indicators**

#### Outcome indicators

The expected impact with the achievement of this objective is to favour the improvement of the rural environment on the south coast of Peru as well as the long-term improvement of the living standards of the rural population throughout the Peruvian coastal region.

The restoration and rehabilitation of a large area of degraded lands and ecosystems in the *lomas* region is expected to lead to a major improvement in the opportunities and alternatives for the sustainable management of land ecosystems, resulting in an increase in the average annual income of small and medium farmers.

## **PART 3: ACTIVITIES, INPUTS AND COSTS**

### **3.1 Expected outputs and activities**

#### **Output 1.0: Map and descriptive report of degraded lands and ecosystems suitable for restoration and rehabilitation**

- 1.1 Detailed demarcation of the project's area of influence
- 1.2 Consultation on and validation of target area at RAD (Recuperation de Areas Degradadas, in Spanish) Regional Committee
- 1.3 Elaboration of the preliminary map for the regional strategy
- 1.4 Establishment of 100 ha. of experimental recuperation sites
- 1.5 Training of users in the establishment and monitoring of trial modules
- 1.6 Monitoring and evaluation of trial modules

#### **Output 2.0: Strategy and action plan for the restoration and rehabilitation of identified and demarcated lands**

- 2.1 Systematization of technical and socioeconomic information on target areas
- 2.2 Environmental, social and economic analysis of target areas
- 2.3 Development and validations participatory strategic plan proposal

#### **Output 3.0: Project document on the restoration and rehabilitation of 100,000 ha of degraded lands**

- 3.1 Feasibility study for a project on the restoration and rehabilitation of approximately 100,000 ha of degraded lands (adjusted according to the government priorities)
- 3.2 Formulation of a project proposal for government/public financing
- 3.3 Government approval of the project proposal and arrangements for financing through external and internal sources

### **3.2 Approaches and methods**

The project will be carried out taking into consideration the guidelines for the rehabilitation and restoration of degraded forest lands that were developed by ITTO, FAO, CIFOR and other international organizations. Special care will be taken to incorporate in the project document the main elements of ITTO objectives, Objective 2000, and the principles and objectives set out in the ITTA 2006.

The project approach will be based on the work methods traditionally used for this type of activities, under the responsibility of a general project coordinator with the participation of national consultants and national staff and including, in particular, contacts, relationships and consultations with the representatives of members of key stakeholder groups, including small and medium producers, associations and communities, small enterprises, national, regional and local authorities, who should all be adequately informed and consulted on an ongoing basis regarding expected outcomes and objectives but especially on their participation and responsibilities.

An important part of the work strategy will be the consultation and advice of the different project stakeholders and beneficiaries through participatory methods, organization of talks, technical meetings and workshops.

Consultation meetings and workshops will be held for the validation and approval of outcomes with the participation of representatives from the South Coast Regional Committee for the RAD Programme.

The project will be implemented in a period of 24 months, which will be divided into four stages on the basis of expected outputs as follows:

**Stage 1: 6 months**

*Collection, analysis and evaluation of information, development of materials and mapping methodologies  
Identification and mapping of users and beneficiaries*

**Stage 2: 6 months**

*Mapping of priority areas for restoration  
Development of draft strategy for the restoration of degraded areas  
Organization and training of users and beneficiaries*

**Stage 3: 6 months**

*Consultations and validation of draft strategy Identification and  
installation of pilot and trial units*

**Stage 4: 4 months**

*Development and dissemination of strategy  
Training of users based on strategy guidelines and methodologies*

**Completion Phase: 2 months**

*Final reports*

### 3.4 Work Plan

ACTIVITIES BY OUTPUTS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Responsible
<b>Output 1.0: Map and descriptive report of degraded lands and ecosystems suitable for restoration and rehabilitation</b>																									P. Coordinator
1.1 Detailed demarcation of the project's area of influence																									Consultant P. Coordinator
1.2 Consultation on and validation of target area at RAD Regional Committee																									P. Coordinator Workshop
1.3 Collection of mapping material and satellite images Elaboration of the preliminary map for the regional strategy																									Consultant
1.4 Selection and Establishment of 100 ha. Of experimental sites with agroforestry on family modules																									P. Coordinator Workshop
1.5 Training of users in the establishment and monitoring of trial modules																									P. Coordinator
1.6 Establishment of trial modules of trial modules																									Consultant P. Coordinator
1.76 Monitoring and evaluation of trial modules																									Consultant, Technical staff
<b>Output 2.0: Strategy and action plan for the restoration and rehabilitation of identified and demarcated lands</b>																									P. Coordinator
2.1 Systematization of technical and socioeconomic information on target areas																									Consultant
2.2 Environmental, social and economic analysis of target areas																									Consultant
2.3 Development and validation participatory strategic plan proposal																									P. Coordinator
<b>Output 3.0: Project document on the restoration and rehabilitation of 100,000 ha of degraded lands</b>																									P. Coordinator
3.1 Feasibility study for a project on the restoration and rehabilitation of approximately 300,000 ha of degraded lands																									Consultant P. Coordinator
3.2 Development of project proposal and international financial source through external and internal sources																									Consultant P. Coordinator
3.3 Approval of project proposal and arrangements for financing																									Workshop P. Coordinator

**3.5 MASTER BUDGET BY ACTIVITIES AND COMPONENTS**

	Local Consultants	Technical assistants	Field workers	Sub-contracts	DSA	Air travel	Ground travel	cartographic material	Training	Irrigation equipment	Office supplies	Inputs(raw materials, fertilizers, others)	Land rental	Miscellaneous	TOTAL
<b>Output 1.0: Map and descriptive report of degraded lands and ecosystems suitable for restoration</b>															
1.1 Detailed demarcation of the project's area of influence	3,000		9,000		1,500	1,200	1,400				500			1,200	17,800
1.2 Consultation on and validation of target area at RAD Regional Committee					1,500	800	900				500				3,700
1.3 Elaboration of the preliminary map for the regional strategy	3,000	2,000			1,200	800	2,400	1,500			500				11,400
1.4 Selection and Establishment of 100 ha. of experimental sites with agroforestry on family modules		3,300	13,000		5,300	1,100	1,600	1,500		30,000	500	18,600	75,000		149,900
1.5 Nursery, seed bank and warehouse building				12,000											12,000
1.5 Training of users in the establishment and monitoring of trial modules, Workshop 1									3,400						3,400
1.6 Monitoring and evaluation of trial modules		4,000	4,400		2,300	1,300	2,050				400			1,200	15,650
<b>Output 2.0: Strategy and action plan for the restoration and rehabilitation of identified and demarcated lands</b>															
2.1 Systematization of technical and socioeconomic information on target areas		3,000													3,000
2.2 Environmental, social and economic analysis of target areas		2,000													2,000
2.3 Development of strategic plan proposal	6,000										500				6,500
Workshop 2									3,400						3,400
2.4 Validation and approval of strategic plan proposal					600	1,200	690				500			800	3,220
<b>Output 3.0: Project document on the restoration and rehabilitation of 100,000 ha</b>															-
3.2 Development of project proposal and international financial source	12,000	2,000			2,600	1,200	900				400			800	24,200
3.3 Approval of project proposal and arrangements for financing		500													2,000
Workshop 3									5,800						5,800
<b>COST OF ACTIVITIES</b>	<b>24,000</b>	<b>16,800</b>	<b>24,860</b>	<b>12,000</b>	<b>15,000</b>	<b>6,000</b>	<b>6,790</b>	<b>3,000</b>	<b>10,200</b>	<b>30,000</b>	<b>3,800</b>	<b>18,600</b>	<b>75,000</b>	<b>4,000</b>	<b>250,050</b>
PROJECT COORDINATOR															48,000
ADMINISTRATOR															12,000
COMPUTER EQUIPMENT															4,000
AUDITING AND INSURANCE															2,517
ITTO MONITORING AND ADMINISTRATION (12% of ITTO Budget)															13,393
Executing Unit management costs (15% of project budget)															56,163
GENERAL EXPENSES															136,073
<b>TOTAL, PROJECT COST</b>	<b>24,000</b>	<b>16,800</b>	<b>24,860</b>	<b>12,000</b>	<b>15,000</b>	<b>6,000</b>	<b>6,790</b>	<b>3,000</b>	<b>10,200</b>	<b>30,000</b>	<b>3,800</b>	<b>18,600</b>	<b>75,000</b>	<b>4,000</b>	<b>386,123</b>

3.6 ANNUAL BUDGET BY COMPONENTS

3.6

	A	B	C	D	E			ITTO	EXECUTING AGENCY	BENEFICIARIES
ITEM	BUDGET COMPONENT	Unit	Quantity	Unit cost	TOTAL	YEAR 1	YEAR 2			
11.10	Project coordinator				48,000.00	24,000.00	24,000.00		48,000.00	
11.20	Administrative accountant				12,000.00	6,000.00		8,000.00	4,000.00	
11.40	LOCAL Consultants	month	8.00	3,000.00	24,000.00	15,000.00	9,000.00	18,000.00	6,000.00	
12.10	Technical assistants, field supervisor	month	21.00	800.00	16,800.00	8,400.00	8,400.00	1,800.00	8,200.00	6,800.00
12.20	Field labors (trial modules)	Days	1,130.00	22.00	24,860.00	14,860.00	10,000.00	11,230.00		13,630.00
<b>SUB TOTAL</b>					<b>125,660.00</b>	<b>68,260.00</b>	<b>51,400.00</b>	<b>39,030.00</b>	<b>66,200.00</b>	<b>20,430.00</b>
15.10	Workshop 1: Selection of project areas	Unit	1.00	3,200.00	2,800.00	2,800.00	2,800.00	2,800.00		
15.20	Workshop 2: Strategic plan	Unit	1.00	3,200.00	2,800.00		2,800.00	2,800.00		
15.30	Workshop 3: Regional project	Unit	1.00	5,600.00	4,600.00		4,600.00	4,600.00		
<b>SUB TOTAL</b>					<b>10,200.00</b>	<b>2,800.00</b>	<b>10,200.00</b>	<b>10,200.00</b>		
	Sub-contracts	Unit	12,000.00	12,000.00	12,000.00	12,000.00		12,000.00		
<b>SUB TOTAL</b>					<b>12,000.00</b>	<b>12,000.00</b>		<b>12,000.00</b>	-	-
31.10	DSA /national consultants-experts	Day	150.00	100.00	15,000.00	8,000.00	7,000.00	5,000.00	10,000.00	
33.10	Local travel, air	Unit	30.00	200.00	6,000.00	3,600.00	3,000.00	4,000.00	2,000.00	
33.20	Local travel, Ground	Unit	97.00	70.00	6,790.00	4,940.00	5,000.00	4,260.00	2,530.00	
<b>SUB TOTAL</b>					<b>27,790.00</b>	<b>16,540.00</b>	<b>15,000.00</b>	<b>13,260.00</b>	<b>14,530.00</b>	-
42.10	Value of Land rent (2 years)	Ha	100.00	500.00	75,000.00	75,000.00				75,000.00
44.10	COMPUTER EQUIPMENT				4,000.00	4,000.00		4,000.00		
44.20	Mapping and cartographic materials	Unit			3,000.00	3,000.00		3,000.00		
44.30	Irrigation equipment and materials for trial modules	Module	20.00	1,500.00	30,000.00	30,000.00		20,000.00	10,000.00	
<b>SUB-TOTAL</b>					<b>112,000.00</b>	<b>112,000.00</b>	-	<b>27,000.00</b>	<b>10,000.00</b>	<b>75,000.00</b>
51.00	Raw materials, fertilizers, pesticides for trial modules	Unit			18,600.00	12,000.00	6,600.00	6,600.00		12,000.00
54.00	Office supplies				3,800.00	1,900.00	1,900.00	1,000.00	2,800.00	

60.10	AUDITING AND INSURANCE				2,517.00		2,517.00	2,517.00		
60.20	Miscellaneous				4,000.00	2,000.00	2,000.00		4,000.00	
69.00	SUB TOTAL				<b>28,917.00</b>	<b>15,900.00</b>	<b>13,017.00</b>	<b>10,117.00</b>	<b>6,800.00</b>	<b>12,000.00</b>
81.00	ITTO MONITORING AND ADMINISTRATION (12% of ITTO Budget)				13,393.00	6,696.50	6,696.50	13,393.00		
85.00	Executing Unit management costs (15% of project budget)				56,163.04	28,000.00	28,163.04		56,163.04	
	<b>SUB TOTAL</b>				<b>69,556.04</b>	<b>34,696.50</b>	<b>34,859.54</b>	<b>13,393.00</b>	<b>56,163.04</b>	<b>-</b>
<b>100.00</b>	<b>TOTAL PRTOJECT BUDGET</b>				<b>386,123.04</b>	<b>262,196.50</b>	<b>124,476.54</b>	<b>125,000.00</b>	<b>153,693.04</b>	<b>107,430.00</b>



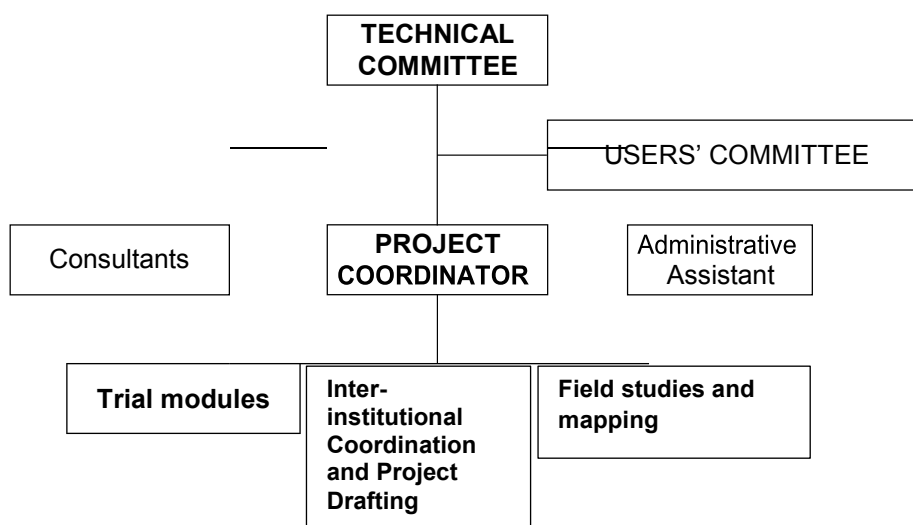
### 3.7 ANNUAL BUDGET BY SOURCES

BUDGET COMPONENT	ITTO			EXECUTING AGENCY			BENEFICIARIES
	TOTAL	YEAR 1	YEAR 2	TOTAL	YEAR 1	YEAR 2	YEAR 1
<b>10 PERSONNEL</b>							
10.1 Project coordinator				48,000	24,000	24,000	
10.2 Administrative accountant	8,000	4,000	4,000				
10.3 Local Consultants	18,000	12,000	600	4,000	2,000	2,000	
10.4 Technical assistants, field supervisor	1,800	1,800		3,000	3,000	3,000	6,800
10.5 Field labor (trial modules)	11,230	6,230	5,000	8,200	4,200	4,000	13,630
<b>SUB TOTAL PERSONNEL</b>	<b>39,030</b>	<b>24,030</b>	<b>9,600</b>	<b>66,200</b>	<b>33,200</b>	<b>33,000</b>	<b>20,430</b>
<b>20 SUB-CONTRACTS</b>							
20.1 Sub-contracts	12,000	12,000					
20.2 Workshop 1: Selection of project areas	2,800	3,200					
20.3 Workshop 2: Strategic plan	2,800		3,400				
20.4 Workshop 3: Regional project	4,600		4,600				
<b>SUB TOTAL SUB-CONTRACTS</b>	<b>22,200</b>	<b>15,200</b>	<b>8,000</b>				
<b>30 DUTY TRAVEL</b>							
30.1 DSA /national consultants-experts	5,000	3,000	2,000	10,000	6,000	4,000	
30.2 Local travel, air	4,000	2,000	2,000	2,000	1,200	800	
30.3 Local travel, Land	4,260	2,260	2,000	2,530	3,680	2,000	
<b>SUB TOTAL DUTY TRAVEL</b>	<b>13,260</b>	<b>7,260</b>	<b>6,000</b>	<b>14,530</b>	<b>10,880</b>	<b>6,800</b>	
<b>40 CAPITAL ITEMS</b>							
40.1 Value of Land rent (2 years)							75,000
40.2 Computer equipment	4,000	4,000					
40.3 Mapping and cartographic materials	3,000	3,000					
40.4 Irrigation equipment and materials for trial modules	20,000	15,000	5,000	10,000	8,000	2,000	
<b>SUB TOTAL CAPITAL ITEMS</b>	<b>27,000</b>	<b>22,000</b>	<b>5,000</b>	<b>10,000</b>	<b>8,000</b>	<b>2,000</b>	<b>75,000</b>
<b>50 CONSUMABLE ITEMS</b>							
50.1 Raw materials, fertilizers, pesticides for trial modules	6,600	6,600					12,000
50.2 Office supplies	1,017	600	417	2,800	1,400	1,400	
<b>SUB TOTAL CONSUMABLE ITEMS</b>	<b>7,617</b>	<b>7,200</b>	<b>417</b>	<b>2,800</b>	<b>1,400</b>	<b>1,400</b>	<b>12,000</b>
<b>60 MISCELLANEOUS</b>							
60 Final independent Audit	2,500		2,500				
Miscellaneous				4,000	2,000	2,000	
<b>SUB TOTAL MISCELLANEOUS</b>	<b>2,500</b>	<b>0</b>	<b>2,500</b>	<b>4,000</b>	<b>2,000</b>	<b>2,000</b>	
<b>SUB TOTAL 10 - 60</b>	<b>111,607</b>	<b>75,690</b>	<b>31,517</b>	<b>94,530</b>	<b>55,480</b>	<b>45,200</b>	<b>152,830</b>
80.1 ITTO monitoring & evaluation: (12% of ITTO's budget)	13,393	13,393					
80.2 Executing Unit management costs : (15% of project budget)				56,163	28,000	28,163	
<b>SUB TOTAL MANAGEMENT COSTS</b>	<b>13,393</b>	<b>13,393</b>	<b>0</b>	<b>56,163</b>	<b>28,000</b>	<b>28,163</b>	
<b>TOTAL</b>	<b>125,000</b>	<b>89,083</b>	<b>31,517</b>	<b>153,693</b>	<b>83,480</b>	<b>73,363</b>	<b>107,430</b>

## PART 4: IMPLEMENTATION ARRANGEMENTS

### 4.1 Executing agency and organizational structure

The project executing agency will be the FOUNDATION FOR AGRARIAN DEVELOPMENT (*Fundación para el Desarrollo Agrario – FDA*), a non-profit organization whose objective is to promote and implement agrarian and forest research, extension and development projects in Peru. FDA is attached to the National Agrarian University of La Molina (UNALM).



#### Technical Committee

The project technical committee will be the highest authority in the project policy and administration structure and will be made up of one representative from ITTO, a SERFOR (MINAGRI) representative, a representative of the executing agency (FDA), a representative of the Regional Government of Arequipa and of the Ica, Moquegua and Tacna regions, a representative of private sector users, and a civil society representative. The committee will meet twice – once to assess project progress and provide guidance to improve project execution and a second time at the end of the project. The technical committee will be the highest authority in the technical execution of the project and it will be responsible for supervising, evaluating, proposing improvements or solutions, and making decisions on project implementation. This committee will also be in charge of preparing all technical and financial reports, managing project personnel, and other duties or activities as required.

#### 4.1.1 Project management team

Project management will be under the responsibility of the Foundation for Agrarian Development, a highly reputable institution at the national and international levels, and the Project Coordinator, who will be responsible for the technical implementation of the project.

The users' committee will be involved in consultations, organization of events, discussions, dissemination of information and implementation of field work.

The representatives of key stakeholders, including associated small producers, individuals and families, will be consulted throughout the project development process. Similarly, community leaders and local government authorities will also participate in information and consultation activities.

### 4.3 Monitoring, reporting and evaluation

Project progress and completion reports

At the beginning of the project, the Coordinator will prepare an inception report to be submitted to ITTO and the Technical Committee, and will also submit a detailed progress report and financial statement within four months of project start-up. These reports will be submitted every four months in accordance with ITTO's

regulations for project formulation and implementation. A project completion report including the final document will be submitted at the end of the 24-month implementation period.

#### **4.4 Risks**

The project as a whole does not pose any significant risks from a social, economic or environmental viewpoint. On the contrary, an initiative such as this will open the door to important alternatives for the restoration and rehabilitation of very degraded ecosystems, which would otherwise be irreversibly lost. In this sense, the project can only provide multiple benefits.

#### **4.5 Sustainability**

Project sustainability is guaranteed by the fact that the government has undertaken the commitment to promote and develop degraded land restoration programs throughout the country, as set out in the international agreement that framed Initiative 20x20. Furthermore, the project outputs i.e. the technological package and the SFM and land rehabilitation guidelines will be policy tools ready to be applied in the field, although they may be subject to future revisions and/or improvements to keep them up to date. Thus, the full model to be developed will be kept current, which will ensure project sustainability. All of this is based on the assumption that subsequent government administrations will continue to give the same or even more importance and political support to the rehabilitation of degraded lands and reforestation in the coastal region of Peru.

Sustainability mechanism

- Curbing of the expansion of the agricultural frontier and hence deforestation
- Development of new sustainable development alternatives
- Generation of employment based on gender-equality criteria, and poverty alleviation
- Reduction of migration to urban areas
- Socioeconomic development of rural areas

#### **4.6 Dissemination and mainstreaming of project learning**

The project will use different means for the dissemination and mainstreaming of achievements and lessons learned, including the following:

- i) Work meetings and workshops, with the participation of direct project stakeholders and beneficiaries but also other invited guests such as local governments, NGOs, official agencies, universities, etc.
- ii) Printed outreach documents prepared in accordance with the training plan and technical brochures on specific topics, which will be widely distributed throughout adjacent and neighboring micro-regions.
- iii) Conferences and work meetings at different levels.
- iv) The project consultative committee.
- v) Participation in information-sharing meetings with small farmers from other micro regions.

## **ANNEX 1: Profiles of the executing and co-executing agencies**

### **A1. FOUNDATION FOR AGRARIAN DEVELOPMENT**

The Foundation for Agrarian Development (*Fundación para el Desarrollo Agrario* – FDA) is a private non-profit institution created by the National University of La Molina (UNALM) to support its research, training, promotion and social projection activities reflected in a contribution to national development and improvement of the quality of life of farmers through the development and implementation of projects, strategies and programs for sustainable rural development.

FDA was established by the National University of La Molina (UNALM) in 1982 with the objective of creating an agency specialized in applied research, provision of services, and channeling of business initiatives, all areas that, together with academic development and professional training, constitute the very essence of the University.

FDA's areas of work:

- ▣ Study, design, implementation and evaluation of projects and programs
- ▣ Scientific and technological research projects
- ▣ Investment projects
- ▣ Training programs and human resource development
- ▣ Social promotion and development programs
- ▣ Business initiatives aimed at contributing to development in rural areas and ultimately to national development.

FDA has a Board of Directors made up of five senior professors of the National Agrarian University of La Molina (Chair, Vice-chair and three members), who are appointed through a Rector's resolution and report to the Accounting and Administration Departments. These Departments are made up of a team of professionals and technicians who are in charge of the accounting and management of each project.

Furthermore, given the nature of its work, the Foundation for Agrarian Development, in the implementation of projects and the provision of services, has the support of professionals and technicians as well as access to the equipment and laboratories of the National Agrarian University of La Molina.

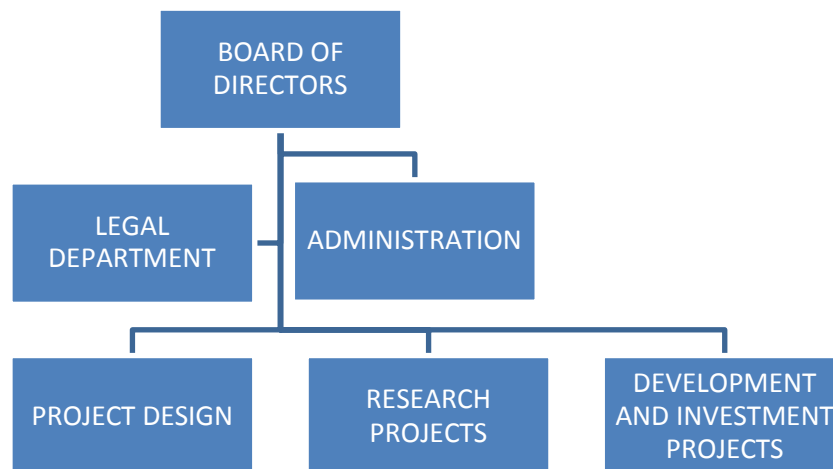
Our institution is an autonomous organization that groups different operating units, work teams and special projects under a dynamic and flexible system aimed at the achievement of our objectives on the basis of our main asset: human and professional expertise that we have been able to build up over the years.

FDA has a multi-disciplinary team of professionals grouped in around 70 specialized fields and integrated through a system of common objectives. These professionals are continuously updating their knowledge, skills, capacities and attitudes to efficiently face challenges posed by a changing context at the national and global levels. Our institution is an autonomous organization centralizing different operational units, work teams and special projects in an expedite and flexible organizational system aimed at the achievement of our objectives.

Under the umbrella of the National University of La Molina (UNALM), a center of academic excellence, the Foundation for Agrarian Development (FDA) offers training programs addressed to students, agricultural professionals and the general public.

FDA has evolved in a context of major changes and transformations in Peruvian society, changes that have impacted us all and have highlighted the need to reflect on the role of Peruvian universities in the achievement of national development, as it is our duty to share responsibilities with the State, business organizations and civil society as a whole.

## **FDA ORGANIZATIONAL CHART**



## **A2. BENEFICIARY STAKEHOLDERS**

Beneficiary stakeholders are organized under the Regional Committee for the Restoration of Degraded Areas on the South Coast (CR-RAD Costa Sur), which is based in the City of Arequipa and has about 40 member institutions, including local governments, small farmers' associations, individual members and several decentralized public agencies from ICA, AREQUIPA, MOQUEGUA and TACNA.

The main role of this Committee is to promote the development of programs and projects aimed at the restoration of degraded and waste lands through reforestation and agroforestry systems, in consonance with the conservation of the environment and the production of goods and services for the benefit of the rural population in the South Coast region of Peru. This process is framed within the 20x20 initiative, under which Peru has undertaken the commitment to restore 3.2 million hectares of land, with 600,000 ha of that total located in the Peruvian coastal region.

The Committee was established in June 2015 and its Technical Secretariat is under the responsibility of SERFOR-Arequipa, on a two-year rotational basis with SERFOR's administrative offices in ICA, Moquegua and Tacna.

### **Its main members include:**

- ▶ Asociación Juntos al Futuro – AJAFUT (membership requested)
- ▶ District Municipality of Nicolás de Piérola (membership requested)
- ▶ Municipality of Mariano Nicolás Valcárcel
- ▶ District Municipality of Samuel Pastor
- ▶ Municipality of the Province of Camaná
- ▶ District Municipality of Atico
- ▶ District Municipality of Cocachacra
- ▶ District Municipality of Cahuacho
- ▶ District Municipality of Bella Unión
- ▶ District Municipality of Mejía
- ▶ Municipality of the Province of Islay
- ▶ Asociación Industrial Valle Encantado
- ▶ AGROIDEAS
- ▶ AUTODEMA
- ▶ AGRORURAL
- ▶ ANA
- ▶ ASOC. BELLA JOYA

## **B. COLLABORATING AGENCY: NATIONAL FOREST AND WILDLIFE SERVICE**

The National Forest and Wildlife Service (SERFOR) is the national forest and wildlife authority in Peru. It is regarded as a specialized technical agency responsible for coordinating with other stakeholders and institutions of the government and civil society of Peru to comply with the National Forest and Wildlife Policy and Law.

SERFOR was established under the new Forest and Wildlife Law – Act No. 29763 within the framework of the National Policy for Public Service Modernization. It is committed to the sustainable management of the Forest and Wildlife Heritage of the Nation. To this end, it provides vital services to all citizens in the country. SERFOR strives to provide services in a streamlined, ethical, efficient and transparent manner, contributing to the country's growth by promoting a green economy based on low carbon emissions.

### **Mission**

Promote the sustainable and participatory management of forest and wildlife resources and the utilization of ecosystem services by providing quality services to contribute to the well-being of the country's citizens.

### **Vision**

To be a public institution with high quality standards in the provision of services to all citizens for the sustainable management and utilization of the country's forest and wildlife heritage and its ecosystem services.

### **Principles**

To provide services to all citizens under five pillars of the State Policy on Public Service Modernization: alignment of public policies and strategic and operational plans; outcome-based budgeting; management based on processes, administrative streamlining and institutional organization; civil service based on meritocratic criteria; and information, monitoring, follow-up, evaluation and knowledge management systems.

Regulate while fully respecting the competences of relevant agencies and contribute to the alignment of policies, plans and strategies towards sustainable development.

Work jointly with regional governments and other sectors of the Peruvian State with a view to ensuring the sustainability, legality and adequate control of the forest and wildlife heritage of our nation.

Promote entrepreneurship ventures and investments related to forests, underscoring social, environmental and economic values. Our work is coordinated with other sectors that provide access to financial services and national and international markets in order to improve the competitiveness of the sector.

Promote ecotourism and the sustainable harvesting of wildlife resources, timber species and other forest products. It is also a priority to encourage new ventures and initiatives related to forest conservation and plantations.

Respect traditional knowledge and encourage research, making use of research results as inputs to guide SERFOR's policy decision-making.

Recognize and value the critical role of indigenous peoples in forest conservation.

Implement the international commitments undertaken by Peru in relation to forest and wildlife resources as part of SERFOR's mandate as a Management Authority of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in Peru.

Combat deforestation as well as illegal access to and illegal trade in forest and wildlife resources.

## ANNEX 2: Terms of reference of key staff

### Project coordinator

- Forest professional with extensive experience in project administration, forest management, land-use management and tara production activities.
- Main duties: project technical and administrative coordination; preparation of technical, progress and final reports; participation in the SC as secretary; and ongoing communication with the ITTO Secretariat, local authorities and all stakeholders involved.
- Duration: 24 months

CV OF POTENTIAL PROJECT COORDINATOR

### CV-PERSONAL/PROFESSIONAL BIO JORGE MALLEUX ORJEDA

E-mail: [jmalleux@gmail.com](mailto:jmalleux@gmail.com), Cell phone: 51 997211899

1. Surname: MALLEUX ORJEDA
2. Name: Jorge Ramón
3. Date of birth: 16 August 1941
4. Nationality: Peruvian – French
5. Marital status: Widower
6. Education:

Institution Date(s) - from (month/year) to (month/year)	Degree(s) or Diploma(s) obtained
Internacional Training Center ITC; 1968-1969	Post-graduate degree in Photointerpretation and Evaluation of Tropical Forest Resources
National Agrarian University of La Molina; 1961-1965	BSc and Engineering degree – Forest Management
National Agrarian University of La Molina 2009	Emeritus Professor – Faculty of Forestry

### 6. Professional profile brief

- ✓ Senior professor of forest management and evaluation of forest resources, Faculty of Forestry, UNALM, until 1987
- ✓ Senior consultant and director of projects and special missions in forest management at FAO, ITTO, World Bank, GIZ, JICA
- ✓ Professor Emeritus, Faculty of Forestry, UNALM
- ✓ Various short courses, seminars and workshops on institutional development; evaluation and integrated management of forest resources; land use planning; institutional development and strengthening in the forest sector; development, management and implementation of environmental projects;
- ✓ Various training courses, seminars, national fora; 1965-2009 – Attendance certificates and diplomas
- ✓ SNIP course diploma

### 7. Language skills: (from 1 to 5 according to the level of proficiency)

Language	Read	Spoken	Written
Spanish	Native language	Native language	Native language
English	1	2	2
French	1	2	3
Portuguese	2	2	3
Italian	2	3	4

8. Membership to professional associations: Emeritus Professor, Faculty of Forestry (FCF), National Agrarian University of La Molina (UNALM); International Consultant for World Bank, FAO, ITTO; Founding Chair of the Peruvian Association of Forest Engineers 1970-1975; Distinguished and Life Member of the Chapter of Forest Engineers of the Society of Engineers of Peru; Honorary Professor at the National Agrarian University of La Molina – Faculty of Forestry; Member of the ITTO Expert Panel, current Chairman of ITTO's Committee on Reforestation and Forest Management

Member of the IPSI (International Partnership for the Satoyama Initiative) Steering Committee (Kanazawa-Japan)

Chair of the NGO COSTA Verde

9. Other skills: User knowledge of Word, Excel, Access, PowerPoint, Project Windows, Photo shop

Current position:

- Forest Conservation Consultant - ProBosque-JICA Project
- Independent International Consultant
- Emeritus Professor, FCF-UNALM

Years in the company/organization:

- Professor, FCF- UNALM: 1965-1985
- FAO Forestry Expert: 1986-2003
- Regional Officer for Latin America, ITTO 2004-2006

10. Key qualifications and specializations:

- ✓ Peruvian forest professional, graduated as a Forest Engineer in 1965, post-graduate studies in evaluation of tropical forest resources at the International Training Centre for Photogrammetry and Photointerpretation – ITC, in Delf, Netherlands (1968-1969).
- ✓ Consultant in research project evaluation for CGIAR.INIA
- ✓ Member and Chair of the ITTO Expert Panel for Project Appraisal
- ✓ During his 47-year professional career, he has gained extensive professional experience at the international level. As a professor of the Faculty of Forestry of UNALM between 1966 and 1985, he was head of forest resource evaluation and management and forest and environmental policy, legislation and administration; during this period, he was the Head of the Department of Forest Management and University Director of Research and Social Projection
- ✓ He has been a member and leader of work teams for the development of SNIP projects for State agencies, international cooperation agencies and NGOs
- ✓ His international professional experience began in 1978 with FAO in Uganda. Since then, he has carried out several short and long term missions for FAO in the area of forest resource evaluation and management, and has served as a consultant, senior expert and project manager in several African countries (Uganda, Mozambique, Senegal, Guinea, Angola, Ghana, Togo, Zaire (now the People's Republic of the Congo), Latin America (Brazil, Guatemala, El Salvador, Honduras, Bolivia, Peru, Venezuela) and Asia (Cambodia and Viet Nam). He also worked as a Forest Officer at FAO headquarters in Rome (1999-2002) in the area of forest resource evaluation.
- ✓ Author of the first Forest Map of Peru (1975) and Mozambique (1979), and has written several scientific and outreach articles on topics related to the environment, conservation and management of natural resources. He is the author of several books, including *Inventarios Forestales en Bosques Tropicales* (1980), *Manual de Dasometría* (1972), *Recursos Naturales del Perú* (1983), and *Causas y Efectos de la Deforestación en América Latina* (2000).
- ✓ He has worked as a consultant and Senior Technical Advisor for FAO projects in Uganda, Mozambique, Sao Tome and Principe, Bolivia, Senegal, Costa Rica, El Salvador, Nicaragua, Honduras, Guatemala, Brazil, Angola, Equatorial Guinea and Cambodia, where he was in charge of a large-scale project related to participatory natural resource management in the Tonle Sap region (1995-1998). Between 1999 and 2002, he was a member of the Expert Panel of the International Tropical Timber Organization (ITTO).
- ✓ Between April and December 2002, he served as FAO Representative for El Salvador and Guatemala; he retired from FAO in November 2002 after reaching 65 years of age.
- ✓ Involved in the ITTO-IUCN working group for the development of guidelines for the conservation of biodiversity in production forests
- ✓ Since 2000, he has served as the Chairman of the *Asociación Pro Desarrollo Agroforestal de Camaná*, which is focused on degraded land restoration and reforestation with Tara (*Caesalpinia spinosa*)



- ✓ Between January 2003 and July 2005, he was the director of WWF's CEDEFOR Project in Peru for the modernization of the Peruvian forest sector, and was a member of the advisory group to the National Environmental Council for the development of the Second National Statement (SCN) on the state of the environment for the United Nations
- ✓ Consultant for the World Bank between June 2004 and October 2005 for Project 4085-AR – Argentine Native Forests Component
- ✓ 2009 – Consultant and Team Leader, Consultancy on the evaluation of the UNDP Project on Biodiversity Conservation in Indigenous Community Lands and Natural Protected Areas in the Central Forest Region of Peru
- ✓ From July 2005 to July 2007, he served as ITTO Regional Officer for Latin America, based in Brasilia, Brazil.
- ✓ As of August 2007, he has worked as a private consultant in the forestry field and is currently completing a consultancy for the Ministry of Agriculture and the Ministry of Economics and Finance of Peru for the development of a regional program on competitiveness for the Peruvian Amazon region, with financing from the Andean Development Corporation
- ✓ Team leader for the evaluation of the UNDP Project on Biodiversity Conservation in Native Communities of the Central Forest Region (Ene, Perené, Satipo)
- ✓ Team Leader of the FDA team for the development of the SNIP Project on the National Forest Conservation Program (PNCB-I) JICA-MINAM
- ✓ Lead consultant for the review of climate change and safeguards in the Peruvian Amazon, with CIAT and the Global Canopy Programme
- ✓ 2010–2013: Project Director, ITTO Project PD 583/10 Rev. 1 (F) for the restoration of wastelands through reforestation with Tara (*Caesalpinea spinosa*)
- ✓ Feb 2015 – to date: Project Director, ITTO Project PD 724/13 Re. 1 (F) for the development of guidelines for reforestation with Tara (*Caesalpinea spinosa*) with a view to the rehabilitation of wastelands in the southern coastal region of Peru

#### Administrator (not yet identified)

- Accounting professional with a minimum of 3 years of experience in project account management.
- Main duties:
  - Project account keeping, including the contributions from ITTO and from the executing agency, co-executing agency and other sources.
  - Preparing monthly accounting reports and reporting to ITTO through the Organization's online monitoring system.
  - Attending Steering Committee meetings to report on and/or clarify project financial and economic issues as required.
- Duration: 24 months.

#### Consultants and Experts

- Forest professionals, economics experts, sociologists, etc. with a minimum of 5 years of experience in the relevant areas of expertise.
- Duties: participate in specific tasks in accordance with the objectives, expected outcomes and activities set out in the project work plan.
- Will work in coordination with the Project Coordinator and will prepare technical reports on the activities carried out in the relevant field of expertise, including progress and final reports as appropriate.
- Duration: between 1 and 6 months as required to meet project needs and in accordance with the schedule of activities and budget availability.

## **ANNEX 3: Workshops**

### **Workshop 1: Selection of areas and map validation**

- Based on studies on a preliminary selection of areas proposed by the project team and the development of an overall map of the future project's area of influence, this workshop will approve final sites, on the basis of which the project will develop a strategic plan with the participation of public sector agencies in the southern region of Peru, communities and associations of farmers and reforestation operators, and civil society.
- The objective of this workshop is to analyze the availability and viability of degraded and *barren* lands to be incorporated into the strategic plan of Initiative 20x20 for the southern coastal region of Peru.
- To be held within 6 months of project start-up.
- Duration: 2 days.

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### **Workshop 2: Strategic plan and Validation of strategy proposal**

- The project team will present to the various stakeholders the regional strategy proposal for the restoration of degraded lands in accordance with the project's specific objective with a view to its validation and subsequent submission to SERFOR.
- To be held between months 18 and 24 of the project implementation period.
- Duration: 2 days.

### **Workshop 3: Regional project consultation**

- Based on the approval of the regional strategy for degraded land restoration, the project team, in conjunction with SERFOR, FDA and other institutions participating in the project, will develop a regional project proposal for an area of approximately 100,000 hectares.
- The objective of this workshop is to analyze, with the participation of all institutions involved in the project (public and private sectors and civil society), the project proposal that should previously be revised by the Steering Committee for the validation of the project document.
- To be held in the last 6 months of the project implementation period.
- Duration: 2 days

## **ANNEX 4**

### **SUBCONTRACT**

The project operation contains one subcontract in order to build up tree infrastructures in the field:

1. One forest nursery of approximately 500m<sup>2</sup>, with a production capacity of 40,000 seedlings per year, this nursery will include the cover of mesh, platform for bags, small warehouse for tools, and a automatic irrigation system
2. One warehouse of 100 m<sup>2</sup> for stocking and primary processing of cropping products and constructed with bricks and cement
3. One hermetic room of 25m<sup>2</sup> for seeds processing and conservation, constructed with bricks and cement

The subcontract will be allocated to a local entrepreneur, selected within three quotations

## ANNEX 5: Terms of reference for scheduled consultancies (6)

<u>CONSULTANCY OBJECTIVE</u>	<u>MONTHS</u>	<u>QUALIFICATIONS /REQUIREMENTS</u>	<u>ACTIVITIES</u>	<u>OUTPUTS</u>	<u>FEES (US\$)</u>
Detailed demarcation of the project's area of influence	1	Forest engineer, specialized in degraded areas 5 years of professional experience	Review of the project's target area Demarcation of areas of greatest potential Development of criteria for the selection of work area Demarcation of an area of 100,000 hectares Preparation of consultancy report	Map of target area at a scale of 1/50,000 Consultancy report	3,000.00
Drafting of preliminary map	1	Forest engineer 5 years of professional experience Forest mapping expert	Based on the results of Consultancy 1 (above): Demarcate the project development area Carry out field checks and adjustments as required Draft a detailed map	Both desk and field work services Field validation results map units Map of 100,000 hectares at a scale of 1/50,000	1,500.00
Selection and implementation of sites for the establishment of 10 two-hectare trial modules	0.5	Development of criteria for the selection of trial module sites (10) Selection and description of sites for trial modules	Report on the results of the selection of sites for 10 trial modules	Consultancy report, including map and description of module sites	1,500.00
Development of strategic plan proposal	0.5	Forest engineer or equivalent 5 years of professional experience in action plans and strategies for degraded land restoration	Participation in consultation and planning workshops Systematization of consultations Summary of action plan strategy	Report including strategy proposal and roadmap	1,500.00
Feasibility study for a project on the restoration and rehabilitation of approximately 300,000 ha of degraded lands	4	Forest engineer 10 years of professional experience Experience in the design of degraded land restoration and development projects	Participation in consultation and planning workshops Development of project profile (concept note) Assessment of the technical and economic feasibility of the project	Report including project feasibility study	12,000.00
Development of project proposal and international financial source	1	Forest engineer 10 years of professional experience Experience in the design of forest projects for international financing	Based on the technical-economic feasibility study (aforementioned consultancy), develop a draft project proposal Participate in project proposal consultations Develop a final project proposal	Full project document for financing through international agencies	3,000.00

## ANNEX 6: Overall assessment and recommendations of the 53rd and 54th Expert Panels and corresponding modifications in tabular form

### ASSESSMENT AND RECOMMENDATIONS OF THE 54TH PANEL

#### Overall Assessment

The importance of this project was recognized by the Panel for the development of a regional strategy contributing to the restoration and rehabilitation of degraded areas on the south coast of Peru through a participatory process of identification, demarcation and registration of degraded lands and ecosystems. It was acknowledged that efforts were made to address the comments in the overall assessment and specific recommendations made by the Fifty-third Expert Panel.

Improvement was still needed in the following sections and sub-sections: (1) map still not having the appropriate scale and not clearly indicating the project target sites; (2) key problem identified in the problem analysis was not consistent with the key problem mentioned in the problem tree, while the elements in the problem tree and objective tree (not following the required format explained and presented in the ITTO manual for project formulation) were worded in form of very short formulation not allowing their better interpretation. The objective tree did not adequately mirror activities mentioned in the work plan which is missing the responsible party for each activity, as well as in the list of activities under each output; (3) while the curriculum vitae (CV) of the project coordinator was padded in annex, the terms of reference for nine consultants were missing; (3) master budget table not following the format presented in the ITTO manual for project formulation as it was based on components instead of activities. Mid-term evaluation and ex-post evaluation funds are required for a small project.

#### General comments about the implementation of the recommendation

*The general assessment and specific recommendations of the 54<sup>th</sup> Expert Panel were very useful for the improvement of the project document, making the revised document clearer and more consistent.*

*All the specific recommendations were incorporated as detailed below:*

#### Specific recommendations

COMMENT	ACTIONS	REFERENCE
1. Provide a good map having on appropriate scale and clearly indicating the project target sites;	A new map has been provided, as per the request	Page 9
2. Subsequent to the 2 <sup>nd</sup> comment of the overall assessment, here above, further improve the format of the problem tree and correlated objective tree, in compliance with the requirements of the ITTO manual for project formulation, while ensuring the consistency of the key problem in both the problem analysis and problem tree. The improved objective tree should be mirrored in the work plan (with consistent activities and related responsible party to be added to each), and also in the list of activities under each output;	The format of the problem and objective trees has been improved accordingly	Page 17
3. Add the terms of reference for all nine consultants to be involved in the implementation of this project, as annexes;	Terms of reference have been prepared and added for 6 consultancies (instead of 9 )	Annex 4
4. Amend the budgets in line with the above overall assessment <u>and</u> specific recommendations and also in the following way		
a. Prepare and add the master budget table (following the format in the ITTO manual for project formulation), as the tables 3.4 and 3.5 are budget tables by component, while providing separate budget tables by component (ITTO and counterpart),	A master budget table by activity and component has been prepared and added accordingly	Pages 22-24

<p>b. Move the funds budgeted for the mid-term and ex-post evaluation in other budget components with a clear justification to be added in the section on the implementation approaches and methods,</p>	<p>The budget funds for the mid-term evaluation (USD 20,000.00) have been reallocated in the following way:  -10,000.00 for field workers, implementation of experimental units and  -10,000.00 for irrigation equipment  The total cost of the project is now USD 403,277.00, instead of USD 400,277.00 without modification of the ITTO budget</p>	<p>Budget by activity and component: pages 22 -24</p>
<p>c. Recalculate the ITTO Programmed Support Costs (sub-item 83) so as to conform with standard rate of 12% of the total ITTO project costs (on budget items 10 to 82); and</p>	<p>The 12% rate for support costs has been verified accordingly</p>	<p>Budget sheets pages 22 - 24</p>
<p>5. Include an Annex that shows the overall assessment and specific recommendations of the 53rd and 54th Expert Panels and respective modifications in tabular form. Modifications should also be highlighted (bold and underline) in the text.</p>	<p>Included</p>	

## ASSESSMENT AND RECOMMENDATIONS OF THE 53RD PANEL

### PD 852/17 Rev.1 (F) Development of a Regional Strategy for the Restoration and Rehabilitation of Degraded Areas on the South Coast of Peru

Assessment by the Fifty-third Panel

#### A) Overall Assessment

The importance of this small project was recognized by the Panel for the development of a regional strategy for the restoration and rehabilitation of degraded areas on the southern coast of Peru through a participatory process of identification, demarcation and registration of degraded lands and ecosystems. It was acknowledged that efforts were made to address the comments in the overall assessment and specific recommendations made by the Fifty-second Expert Panel. However, the Panel noted that there was still the need to address some important weaknesses observed in the sections and sub-sections of the project proposal dealing with the following aspects: map of the project area, problem tree missing the key problem and not following the required format, stakeholder analysis table missing; incomplete profile of the executing agency; curriculum vitae (CV) of each key permanent project staff missing. The Panel also noted that there was a mistake in the calculation of the costs regarding the project coordinator in the ITTO budget.

#### B) Specific Recommendations

The proposal should be revised taking into account the overall assessment **and** the following:

1. Replace the current maps with one having an appropriate scale and clearly indicating the project target sites;  
**New maps have been included as per the Expert Panel's recommendation.**
2. Further elaborate the stakeholders' analysis and add the related table of stakeholders (following the format recommended in the ITTO manual for project formulation) under the stakeholders' analysis;  
**The analysis has been enhanced and improved as per the Expert Panel's recommendation.**
3. Improve the format of the problem tree and related objective tree, in compliance with the requirements of the ITTO manual for project formulation, while ensuring their mutual consistency, in correlation with the improved problem analysis and related problem tree;  
**The problem and solutions trees have been redrafted as per the Expert Panel's recommendation.**
4. Improve the executing agency profile by following the format recommended in the ITTO manual for project formulation, while making sure to add the missing elements (infrastructure and budget for the previous three years);

5. Add a 1-page CV for each key permanent project personnel (project coordinator, Administrator and SFM expert), as annexes of the project proposal;  
**A CV of the potential project coordinator (to be covered by the Executing Agency) has been included.**
6. Amend the budgets in line with the above overall assessment **and** specific recommendations and also in the following way:
  - a) Correct the mistake in the calculation of the costs regarding the project coordinator,
  - b) Prepare and add the master budget table (following the format in the ITTO manual for project formulation) which should be the source of budgets by component (by source),
  - c) Recalculate the ITTO Programme Support Costs (sub-item 83) so as to conform with standard rate of **12%** of the total ITTO project costs (on budget items 10 to 82); and

**The recommendations have been addressed and all necessary adjustments have been made.**

7. Include an Annex that shows the overall assessment and specific recommendations of the 53<sup>rd</sup> Expert Panel and respective modifications in tabular form. Modifications should also be highlighted (**bold and underline**) in the text.  
**The recommendations have been addressed.**