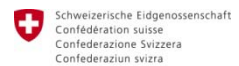


INVESTMENTS IN WATERSHED SERVICES FOR THE CAÑETE WATERSHED, DEPARTMENT OF LIMA, PERU

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With Support from:



Swiss Agency for Development
and Cooperation SDC

About Peru's Incubadora de Mecanismos de Retribución por Servicios Ecosistémicos (Ecosystem Services Incubator)

Recognizing the need to provide national leadership, capacity-building, and coordination to the many local and regional mechanisms facilitating investments in ecosystem services throughout Peru, the Ministry of Environment of Peru (MINAM) partnered with Forest Trends to establish the Peru Ecosystem Services Incubator in 2012. The Incubator aims to enhance investments in nature by society through providing technical, financial, and economic expertise; building capacity; and contributing to the development of national policy. To do this, the Incubator works with a range of non-governmental organizations, development agencies, national authorities, and local and regional governments throughout the country who have worked for years to advance investments in ecosystems. Guided by the national prioritization of improving integrated water management, investment mechanisms linked to watershed services are the first focus of the Incubator.

The following institutions play critical roles in the design and implementation of the Incubator:

Ministry of Environment of Peru (MINAM)

MINAM's mission is to preserve the quality of the environment and ensure that present and future generations will be able to enjoy their right to a healthy environment for the development of life. As the host and leader of the Incubator, MINAM is responsible for the planning, execution, tracking, and monitoring of activities in the technical, economic, and financial arenas.

Forest Trends and EcoDecisión

Forest Trends works to maintain, restore, and enhance forests and connected natural ecosystems, which provide life-sustaining processes, by promoting incentives stemming from a broad range of ecosystem services and products. Forest Trends is a founding partner of the Incubator and serves as a technical, economic, and financial advisor. Forest Trends fulfills this role in a strategic alliance with EcoDecisión, a social enterprise specializing in ecosystem services and funding for nature conservation.

Consortium for the Sustainable Development of the Andean Ecoregion (CONDESAN)

CONDESAN is a nonprofit organization aimed at strengthening rational and sustainable management of natural resources and promoting productive and institutional innovations that overcome poverty, exclusion, and inequality. CONDESAN provides technical, economic, and financial advice and provides support to enable the implementation, monitoring, and evaluation of the Incubator's activities.

Swiss Agency for Development and Cooperation (SDC)

An organization that invests in the fight against poverty in developing countries, SDC has contributed significantly to economic integration and poverty reduction in Peru by working with the Peruvian government, civil society organizations, and the private sector. As part of its efforts to provide greater access to basic water and sanitation services, SDC is providing significant support for the Incubator's activities, through a global project with Forest Trends aimed at scaling up investments in watershed services to address the global water crisis.

The following institutions are key partners in the design and implementation of the Cañete project: **World Wildlife Fund (WWF), CARE-Peru, the International Centre for Tropical Agriculture (CIAT), the Environmental Defense Society of Peru (SPDA), and Conservation International (CI).**

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1. Project Characteristics

The Cañete watershed, located on the central coast of Peru, is of strategic importance for nationwide agricultural production and economic development and has been selected as a pilot project to exemplify good administration of water resources based on Investment in Watershed Services (IWS). This project emphasizes the links between existing healthy ecosystems of the upper watershed that are conserved by local farming communities and the North Yauyos Lakes Landscape Reserve (a nationally recognized protected area) with the urban centers and economic activities across a broad coastal region that depend on the water services that provide adequate supply of good quality water. A reward scheme for environmental services is considered the most appropriate benefit-sharing mechanism for this watershed where the downstream users have economic advantage over the upstream inhabitants and therefore have financial leverage in negotiations. Such is the case in the Cañete basin, which has experienced significant migration from the upper slopes to the lower valley by young people seeking agricultural jobs (CONDESAN 2012). Water is used for agriculture, mining, domestic use, tourism and production of hydroelectricity.

Project at a Glance

Location	Cañete watershed, Department of Lima, Peru
Project type	Watershed services: provision of an adequate quantity of water supply of good quality throughout the year, conserve natural ecosystems on watershed.
Size of watershed & project area	<ul style="list-style-type: none"> • <u>Cañete watershed</u>: 6192 km² • <u>Project area</u>: the entire watershed
Key institutional partners	Peru's Ministry of the Environment (MINAM), World Wildlife Fund (WWF), CARE-Peru, International Centre for Tropical Agriculture (CIAT), Environmental Defense Society of Peru (SPDA) and Conservation International (CI)
Water users	The principal demand in the Cañete valley is for irrigation but also production of hydroelectricity, domestic use by urban population and tourism.
Watershed service providers	Mid- and upper-watershed stakeholders (Yauyos Province).
Project status	Pending approval of funding, to begin implementation in 2013
Project funding & payment mechanism	Potential funding: IFAD/GEF project to engage private investors, particularly hydroelectric
Level of investment	None, to date
Scalability	Not yet applicable

Project History and Key Developing Institutions

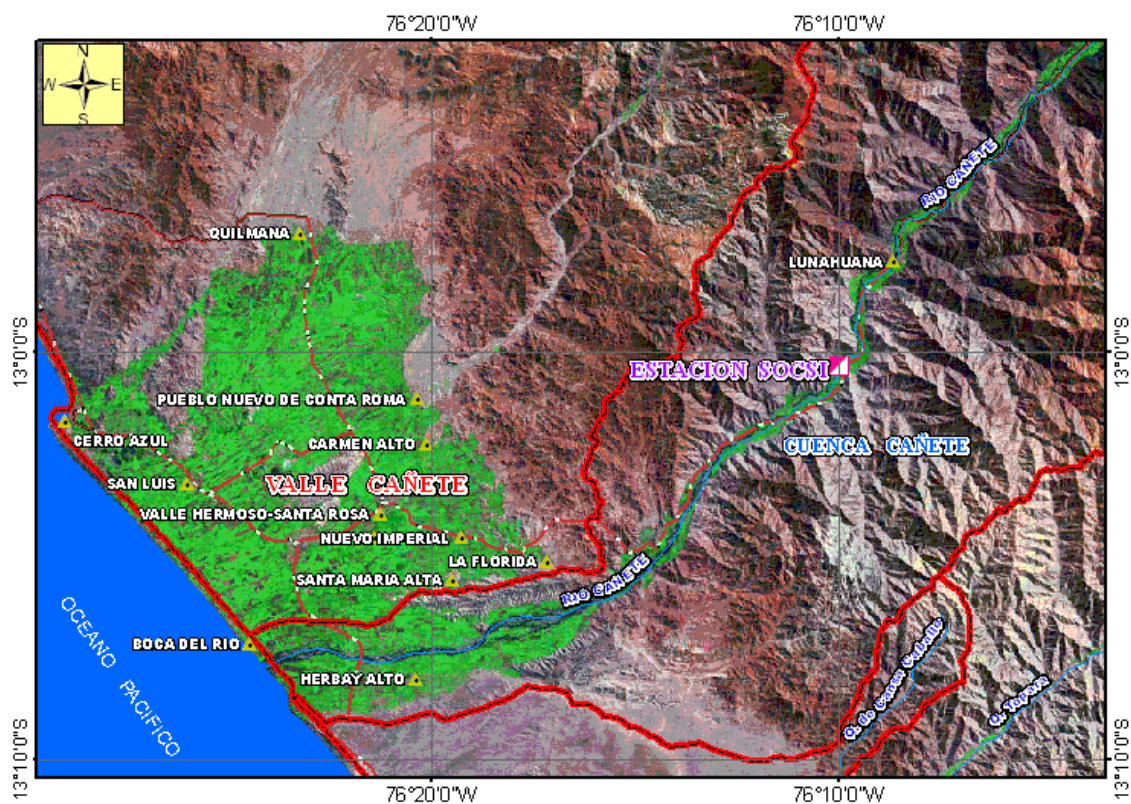
The Cañete is considered a priority watershed for protection by Peru's Ministry of Environment (MINAM) due to its natural environment and the hydrologic services that it provides. Financial support for preliminary diagnostic studies was provided by the World Wildlife Fund (WWF) and a grant from the Challenge Program for Water & Food (CPWF) to obtain information about the watershed, including hydrologic modeling (CIAT 2011) and socio-economic studies. One of the diagnostic results of these studies is that 95% of the rural population on the upper watershed depends on farming and cattle ranching for income (SPDA 2012). Furthermore, the North Yauyos Lakes Landscape Reserve covers a large part of the upper watershed and is managed under a Master Plan that was formalized in 2006 and which needs to be updated to reflect current land and natural resource use. In 2012, the Peruvian Society for Environmental Rights (SPDA) was contracted

by Conservation International (CI) to identify knowledge gaps and provide an analysis of the legal hurdles to implementation of a public-private fund to support investment in the upper Cañete watershed; this resulted in a document that discusses the feasibility of “payment for hydrological services” from a legal standpoint and the plausible options for channeling funds.¹

The Incubator has not yet been directly involved in supporting IWS actions on the Cañete watershed and is waiting for the outcome of pending negotiations for an IFAD-GEF (International Fund for Agricultural Development/Global Environment Fund) project and approval from the Swiss government.

Project Location and Description of the Problem

The Cañete watershed is located in the Department of Lima in central Peru. Its origin is at 4600 m elevation, at Ticlla in the Yauyos Province, from where it descends 220 km to the Pacific Ocean in the Cañete Province, 153 km south of Lima. The abundance of snow-capped peaks and high elevation lakes that form the Cañete watershed make it one of the most stable and important water sources in the country. The area of the watershed is 6,192 km² with the project area encompassing the entire watershed (Map 1).



Source: National Water Authority (ANA)

Map 1. The Cañete Watershed that Extends East to West from the Andes to the Pacific, through the Cañete Valley that is the Center of Agricultural Activities in the Department of Lima

Annual precipitation along the length of the watershed is highly variable: the lower portion receives only 7 mm of rain while the upper area receives about 960 mm. Most water - about 60.3% of the flow² - enters the drainage from this upper portion of the watershed encompassing about 110,080 ha, and therefore is the

¹ SPDA. 2012. Informe final: Viabilidad legal del esquema PSEH Cañete, lineamientos generales para PSEH y propuestas legales para canalización de fondos.

² This flow data was acquired through simulations (Otárola 2011).

highest priority for its conservation. This area includes the districts of Huancaya, Tomas, Vitis, Miraflores, Alis, Laraos, Tanta, Carania, Yauyos, and Huantan (Otárola 2011).

In the upper watershed, anthropogenic activities have generated the following environmental problems:

- a) deforestation of montane forests, primarily for collection of firewood and also logging selected commercial species;
- b) abandonment of destabilized cultivation terraces that has resulted in soil erosion;
- c) over-grazing in high Andean grasslands leading to the deterioration of natural springs and wetlands due to soil compaction;
- d) burning high Andean grasslands that degrades soils; and
- e) inefficient irrigation techniques that cause erosion (CONDESAN 2012).

The El Platanal hydro project is reinforcement for the water supply from the Cañete watershed. It includes seasonal water regulation by the construction of a dam at the Paucarcocha lake located at 4220 m. It is expected that the Paucarcocha reservoir will allow for storage of up to 70 million m³ of water during rainy season that can then be discharged slowly during dry months to increase year-long water availability (CELEPSA)³. The level of sedimentation in the watershed is considered moderate (Otárola 2011).

Water Users

Most people in the heavily populated Cañete watershed are concentrated in the lower part of the basin where immigration from rural areas is high and the population is young (62% is <14 years of age) (Otárola & Palacios 2010). The watershed provides water for domestic consumption and farming. Other important water users on the watershed are:

- El Platanal Electric Company (CELEPSA) for non-consumptive water use for hydroelectric energy production;
- Cañete Municipal Water and Sewage Company (EMAPA Cañete) for domestic water use;
- Irrigation Boards for agriculture (small, medium and large-scale farming); and
- Tourist industry for non-consumptive use in the upper watershed where the scenic beauty of waterfalls is a major attraction.

Present Water Supply and Demand

The flow rate of the Cañete River is approximately 12.5 m³/s and 75% of the water is used for irrigation and other agricultural activities in the Cañete River valley (Otárola 2011). Historically, the average annual flow rate in the watershed is 55.8 m³/s (Otárola 2011), indicating that present rates of flow are significantly lower than in the past.

2. The Watershed Service

A reward scheme for hydrological services will be best carried out in conjunction with water management efforts that include the restoration of the ecological conditions associated with the watershed and a reward or payments for water services. To that end, a committee for integrated water management was formed and is comprised of local authorities and institutions from the lower, middle and upper watershed regions.

Watershed Service Providers

The watershed service providers are the communities located on the mid and upper portions of the Cañete watershed (Yauyos Province) where the human population is both dispersed and relatively older (62% is between 15-64 years of age) (Otárola & Palacios 2010). Additionally, the North Yauyos Lakes Reserve is

³ <http://www.celepsa.com/proyectos.php?area=&idPage=65>

expected to conserve wetlands, relict patches of forest, and Andean grasslands covering about 16,700 ha⁴, some of which are outside of the Cañete watershed.

Processes for Consultation and Participation

Two participatory workshops in the upper and middle watershed were held in 2010 to obtain first-hand information about potential economic activities of interest to local stakeholders (Otárola et al. 2011). In general, however, opportunities for meetings among diverse stakeholders (e.g. the local Water Authority, businesses that provide drinking water, irrigation boards and other user groups, the Valle Grande Institute (an NGO) and the Cañete Municipality) have been lacking and creating such opportunities are an essential next step towards the establishment of a water fund.

3. Identification and Engagement of Investors

Potential investors in an IWS scheme include the following public and private institutions and businesses:

- EMAPA Cañete (public-private entity);
- CELEPSA;
- Irrigation Boards around the cities and towns of Cañete and Imperial; and
- Tourist agencies and businesses, especially those specialized in adventure sports such as white-water river rafting on the Cañete River.

Although the financial structure of the proposed IFAD/GEF project has not been released, one of its objectives is to access financial resources from hydroelectric interests. Other important potential investors are farming businesses and other agriculture-related industry as well as tourism operations, specifically those that rely on the attraction of white-water rafting and other adventure sports in the Lunahuaná district of the lower Cañete.

Current Investment

To date, no investment has been made in a water fund. CELEPSA has provided some small funding on a voluntary basis as demonstration of social responsibility; those funds have been directed to nearby communities for small projects.

Institutional Structure and Use of Proceeds

The financial structure is developed such that the water users participate by making regular payments in exchange for good administration of their water and conservation of the source of that resource. This affects both water availability today (quality, quantity, opportunity) and includes greater security for water availability in the future. The use of funds will be towards creating favorable conditions for investment and technological innovation and an increase in local and regional production activities. As a result, water users will have a greater will and capacity to finance the sustainable administration of the water resource.

4. Project Preparation and Monitoring

A suite of project synopses were prepared based on preliminary environmental and cultural information and consultation with key stakeholders on the Cañete watershed. These included business proposals to produce alfalfa pellets for forage, alpaca meat for domestic markets, trout for export, and quinoa, amaranth and other native crops for export markets (Laines Pacheco 2010a, b,c,d,e). Additionally, Otárola et al. (2011) developed other ideas for activities related to ecosystem restoration, conservation of natural resources, improved technologies, waste management, and organizational development. These are:

⁴ Master Plan of the North Yauyos Lakes Reserve, INRENA, 2006, cited in SPDA 2012.

- Strengthening and development of stewardship activities in strategic areas in local organizations and the North Yauyos Lakes Reserve;
- Reforestation and afforestation in the upper Cañete watershed;
- Improvement in irrigation efficiency in farming communities of the mid and upper watershed;
- Strengthen capacities and validation of proposed zoning plan for the North Yauyos Lakes Reserve based on hydrological criteria;
- Recovery and conservation of cultivation terraces in the middle and upper Cañete watershed;
- Sustainable management of cattle pastures in the upper Cañete watershed;
- Immediate measures towards adaptation to climate change in the Cañete watershed;
- Improvement of the sewage system and water management in the upper Cañete watershed;
- Improvement in water supply to the town of Huancaya;
- Installation of a solid waste management system in the provincial capital of Yauyos;
- Strengthening capacity to manage crops of Andean tubers;
- Strengthening and development of capacity for environmental administration in the watershed; and
- Sustainable management and administration of high Andean lake ecosystems in the Cañete watershed.

Project Monitoring

Participatory monitoring of project activities is contemplated. Peru’s National Park Service (SERNANP) could provide the institutional base for monitoring and involve its park guards and the Administrative Committee of the North Yauyos Lakes Reserve and include participation by Irrigation Boards and other water users (SPDA 2012).

5. Next Steps for Defining the IWS Scenario

The IWS scenario can be divided in four sections: institutional, hydrological, social and economic but each is at different stages of design and implementation. The **Incubator** aims to ensure that all projects address each of these four different facets of project development. The next steps to define the IWS scenario is provided in the following list:

- Items are in process or have been completed
- Items are required as next steps in the process

Phase 1:

- Characterization of watershed stakeholders and services;
- Hydrological models and monitoring;
- Identification of priority areas for conservation.

Phase 2:

- Project design and development of sustainable income-generating activities;
- Effective interactions among stakeholders;
- Study of “willingness-to-pay” of diverse water user groups.

Phase 3:

- Design of the financing scheme;
- Implementation of project activities.

It is essential to recognize the critical roles of governments, businesses and civil society organizations to engage watershed communities in compensation and incentive based programs to support watershed stewardship and strengthen local governance. On the Cañete watershed, the National Park Service of Peru is also an important stakeholder due to the influence of the North Yauyos Lakes Reserve on the upper region of the watershed.

Though some meetings about compensation for watershed protection have transpired, truly effective communication among diverse stakeholders in IWS has yet to occur and therefore funds have not yet been accessed to improve watershed services. The formulation of the proposed IFAD/GEF project is an important next step towards the creation of the water fund to protect, restore and manage environmental processes and key sites on the Cañete watershed to improve the quality and quantity of water available to downstream users.

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