

Upstreaming alternatives

Integrated management of the Cotahuasi sub-basin and the Ocoña river basin

- Integrated management of a river basin
- Strengthening of local water management structures
- Product diversification and reviving traditional practices

The 'inspiring environmental initiative' presented here is part of the **Encyclopedia of Sustainability** (theme integrated river basin management), a project of Both ENDS.

What?

Introduction

The Ocoña basin is located in the Northeast of the Arequipa Region (Perú). It is the second most important river basin of the Peruvian coast due to its water discharge during the dry season, and to the size of the humid area it possesses (the expanse of the basin, snowed covered-peaks, and lagoons). The Ocoña basin is composed of 3 Sub-basins: Marán, Cotahuasi and Armas, of which the most important is the Cotahuasi. The sub-basin coincides with the geographical limits of the province of La Unión.

The province of La Unión is one of the spots of extreme poverty in Perú. Since 1996, the inhabitants of La Unión have been implementing activities aimed at finding alternatives with which to combat this situation. The goal is to reverse the loss in viability of local economic activities and combat the process of accelerated emigration.

AEDES' work at the Cotahuasi sub-basin area began with the idea of up scaling or replicating the actions taken at the macro level of the Ocoña basin. For example, AEDES, the Water Consumers' Board and the organized community is lobbying to have the Cotahuasi sub-basin declared a Protected Natural Area (PNA) under the category of "landscape reserve", which permits the use of natural resources subject to certain guidelines. In parallel, the Water Consumers' Board carries out an integrated management of the Ocoña basin; this means that they are currently harvesting and managing water in a

manner that would be compatible with the nature of being a buffer zone surrounding the PNA, when this categorization is granted.

Integrated river basin management consists of the sustainable use of natural resources with the aim of improving the local population's quality of life, without compromising the availability of those resources for future generations. In general terms, the strategy followed in the Cotahuasi has involved:

- Strengthening the existing water management structures as part of the sum of all natural resources.
- Revaluating and reconvertng traditional productive activities that conserve natural resources, while introducing new productive opportunities that preserve the environment.
- Lobbying and advocacy towards the authorities and government to develop policies that will contribute towards the conservation and integrated management of natural resources having an influence on water.

This document describes the experiences of the Water Consumers' Board of La Unión-Cotahuasi, of the Platform of Water Consumers' Boards of the Cotahuasi River, and of AEDES, related to water management activities in the Cotahuasi sub-basin and the Ocoña basin.

Brief history

1902 The "Water Law" comes into force and ratifies the water rights corresponding to the use of water already in place for 20 years or more. The '*haciendas*¹ have access to large

¹ Large farms and/or plantations where the owner employs farm hands to work the land.

- quantities of water, while communities can only access limited amounts (experiencing intervals of 100 days or more between irrigations periods).
- 1969 The General Water Act 17752 comes into force and declares that water is State property. Water is redistributed among haciendas and rural communities according to the surface area of the land holdings. A technician hired by the State is in charge of water distribution.
- 1979 The Water Consumers' Board of La Unión-Cotahuasi is recognized as being the representative of all water consumers within the Cotahuasi Sub-basin, and the coordinating body for the Irrigation Commissions.
- 1993 AEDES is founded in Arequipa. As of 1995 it begins to support the economic and social reconstruction of La Unión Province, an area of extreme poverty highly affected by violence during the 'Shining Path' period.
- 1996 Work on organic production and the planting of new crops in furrows begins. Production for the international market has motivated the population to improve the use of water in order to increase production levels. The first Local Agenda 21 for La Unión is devised.
- 1997 The "1st Meeting of Irrigation Commissions of La Unión-Cotahuasi" takes place. These are held annually; provide training for board members of the Irrigation Commissions with a view to improving their management of water resources and strengthening the performance of their organizations.
- 2002 Drafting of Local Agenda 21 (2002-2021), under the title "Integrated Ecosystems Management in the Cotahuasi Basin".
- 2003 The 1st and 2nd Meeting of the Water Consumers' Board of the Ocoña River Basin takes place. The leaders of the Water Consumers' Boards and Irrigation Commissions from other sub-basins participate with the objective of creating a platform for the management of the Ocoña river basin, and to strengthen their management capacities.
- 2003 The 6th Meeting of Irrigation Commissions of La Unión-Cotahuasi takes place, with the goal of strengthening technical and

organizational aspects of water management.

Historically the distribution of, and access to water has been unequal in the province of La Unión. The haciendas obtained great quantities of water for their agricultural production; frequently leaving small farmers without enough water for their household and production needs.

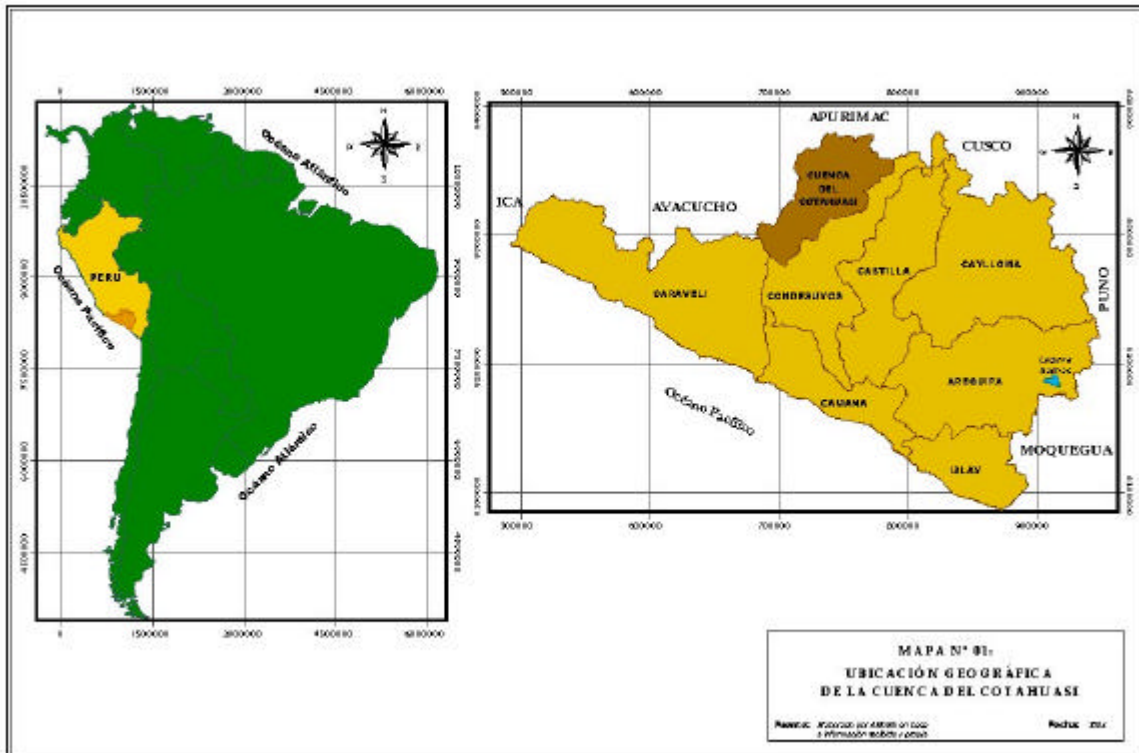
In 1969, with the launch of the Agrarian Reform Program and the New Water Act, a distinction between territorial property and ownership of the natural resources within the soil was established. Territorial property can be private, while natural resources –i.e. water- belong to the State. It was at this point that irrigation commissions and consumers' boards were established to administrate this national resource.



A view of the Cotahuasi river photo: AEDES

In 1979, 15 Consumers' Boards were legally recognized in the Department of Arequipa; among them was the Consumers' Board of La Unión-Cotahuasi. The Water Consumers' Boards are organisations that play an important role as they represent all water consumers in a river basin. In these fora, decisions about water use and management are taken, and advice on how to improve water usage is given to the Irrigation Commissions.

Despite being officially recognised by the authorities, Water Consumers' Boards, particularly those in the Andean highlands, receive little technical support. The years of violence destroyed many forms of organisation among rural communities, and contributed to increasing the poverty and the isolation of communities in areas of already extreme poverty. The irrigation organisations were some of the few organisations that survived during the times of violence.



Map of Peru and region of Arequipa, indicating Cotahuasi river basin, Cotahuasi river basin, in Arequipa region

As peace was reestablished in La Unión in 1996, these organisations worked with the Municipalities, to set up the District and Provincial Negotiation Tables. Together they have taken on the challenge of generating better living conditions for the inhabitants. The objective of these fora is to plan and implement activities that work towards an integrated management of the Cotahuasi sub-basin, with the active participation of the organised community.

Socio-economic and ecological context

The Ocoña river basin and the Cotahuasi sub-basin are located in Arequipa, in the Southwest of Peru. The Ocoña river basin has a population of approximately 70,000 inhabitants. The high areas of the river basin, among them the Cotahuasi sub-basin, contain one of the most persistent patches of poverty in the South of Perú, and have the lowest life expectancy levels in the country.

Due to the violence during the end of the 80's and beginning of the 90's, the Cotahuasi sub-basin became further isolated. This contributed to the preservation of certain traditional agricultural practices, which have lesser negative impacts on natural resources.

However, the isolation and violence aggravated the levels of poverty, leaving a deep mark in the population and causing the destruction of the local social fabric.

The majority of the population depends on agriculture for income and sustenance, which in turn depends on irrigation for nine months of the year. This dependency means that the need to increase water production is an essential factor in any river basin management strategy for the area.

Up-stream areas enjoy large volumes of water. However, as this water runs downstream and into canyons, access to it becomes difficult. Hence, irrigation becomes almost impossible in the middle section of the sub-basin, where organic agriculture has been identified. Rainwater is lost and only the water from melting snow and underground springs can be used. These water sources cannot cover the demand required by agriculture.

The problem of water availability for irrigation increases due to (i) bad water management at plot level and (ii) the irrigation systems used. The hydraulic infrastructure consists mainly of artisanal drains with no applications for measuring water flows or distributing water which makes water distribution inefficient. It has been estimated that the available flow for irrigation is of 4m³/s for an area of 5,000 Ha. This means that water

availability is of only 0.8l/s/Ha, even though the average required by plants is of 1.0l/s/Ha. The result of this water deficit is that in some cases plants can only be irrigated every 60 days.

Due to its varied topography, the Ocoña river basin (15,600 km²), which ranges from snowy heights to beaches on the Pacific Ocean, has a very varied climate with widely ranging temperatures and rainfall levels, which lead to great biological diversity. This makes engaging in a great diversity of agricultural activities possible: rice growing in the low areas, cattle rearing for milk production at moderate heights, and rearing of Andean camels ("*llamas*" and "*alpacas*") in the highlands. There are a large number of lagoons in the high areas that feed into the main rivers, like the Cotahuasi and the Marán.

In recent times, climate change has had a strong impact on the area. The number of peaks with permanent snow cover is decreasing, the rainy season is less certain, the water volume of rivers and creeks is decreasing, and desertification is rising.

Organisations

AEDES (in English: Specialized Association for Sustainable Development) is a non-governmental organisation, which has been working to promote sustainable development for the past ten years. AEDES' activities are implemented at three levels:

Local Level: in the Ocoña river basin and particularly in the Cotahuasi sub-basin;

Regional level: as part of the environmental NGO's collective, which it represented for two years (2002-2003) in the Arequipa Regional Environmental Commission (a specialised government organ that promotes sustainable management of the environment in different regions); and;

National level: as a member of the specialised commissions working on issues related to international environmental conventions and the responsibilities derived from them.

AEDES' activities are focused on building the capacities of, and providing technical advice to organised local communities and local governments on the issues of sustainable development and environmental management, ecological agriculture for export markets, the processing of organic Andean products and the use of communication technology for producers to access new market opportunities. All of these aspects are considered important for strengthening the quality of life of the population as a whole.

Water Consumers' Board of La Unión-Cotahuasi

The Water Consumers' Board of La Unión-Cotahuasi represents all registered water consumers, who exert their right to access water in it. The Board organises the consumers in Irrigation Commissions and Committees. It provides advice to the consumers so that they can manage the water in their irrigation systems responsibly and with transparency. In the meetings of the Irrigation Commissions, capacity building is provided for those with positions of responsibility on issues related to efficient water use and management of the irrigation organisations.

Water Consumers' Board of Ocoña

The Water Consumers' Board of Ocoña operated informally since the 70's, and was formally registered in 1980. It represents consumers and irrigators from the whole river basin and has the responsibility to efficiently manage water in the region.

Challenges

- Achieve the integrated management of water and other natural resources in their totality.
- Ensure the presence of enough water to cover the present and future productive needs
- Reconstruct the social fabric destroyed as a result of the years of violence and poverty.
- Improve communication between the communities and boards of the different sub-basins.
- Strengthen the organisational structures that manage water so that they can provide technical support at plot level, and voice local concerns so these can be taken into account in decision-making fora.

How?

Strategies

Sustainable water management is not an objective in itself, but is part of the overall objective of poverty alleviation. Water is an essential resource for agricultural production and sustenance. It is important therefore to: a) ensure its efficient use by all producers; and, b) ensure sustainable water management both in the up-stream areas, as well as down-stream.

It is with this perspective in mind that AEDES seeks to support organic agricultural production at micro and sub-basin levels; management of water, soil and forestry resources; and the construction of participative processes and institutions related to the different activities and factors that can contribute to development within the province. The management of the basin is a part of this effort.

AEDES is working with the Irrigation Committees to constitute negotiation spaces at the micro-basin level. These can operate independently from one another as the micro-basins that coincide with the tributaries to the Cotahuasi River (i.e. Huacaccara), do not relate to each other. Within the District Negotiation Tables, which generally coincide with the micro-basins, the idea is that coordinators of each Committee act as the central representation for each District in the same way that the Board does at provincial level. In this way management proposals will be presented by each micro-basin area and not just from one Commission.

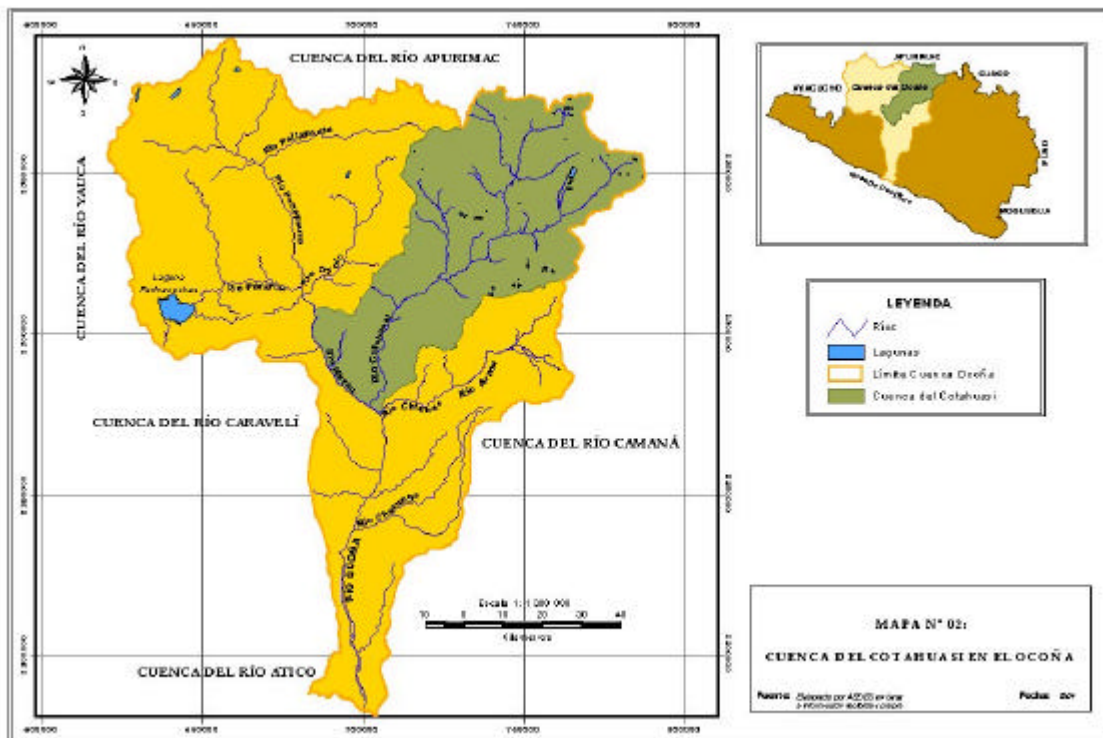
AEDES tries to support efficient water use by each Committee. It provides technological support for improving irrigation, ensuring a better use of water at plot level and the use of furrows, for example.

At provincial level the Committees meet in a Consumers' Board. These boards formulate the position of the consumers on water usage in the sub-basin; propose criteria and develop proposals for presenting to decision makers in the Ocoña. Politicians working on issues related to water management participate in discussions at the Provincial Negotiation Tables.

Currently AEDES is also supporting water consumers' organisations in other provinces. Its intention is to form an up-stream stakeholders' block to propose policies of reforestation and environmental services.

In Cotahuasi-La Unión, AEDES is trying to strengthen participation by all stakeholders. Besides the Board and the Committees, these stakeholders include women's groups and fertilizer producers' groups, among others. Therefore the work of AEDES is not only related to water. In order to achieve good water management it is crucial to work with all the stakeholders who use and whose activities influence water availability.

Fostering links between groups contributes to the reconstruction of the social fabric, which had deteriorated during the years of violence. Exchanging experiences and working together has allowed the irrigation committees and the Water Consumers' Board



Cotahuasi river basin within the Ocoña river basin

to be brought back to life. It has also re-established levels of trust among different stakeholders and representatives of different communities.

One of the most important strategies of the Committee is to lobby for recognition of the sub-basin as a Protected Natural Area (PNA). This would allow local producers to continue with their eco-businesses, would be a tool to ensure that industrial mining and "industrial" tourism operate in a manner that is compatible with the sustainable use of natural resources. Within the framework of a PNA, efforts will be made to ensure that mining activities are less harmful to biodiversity and to natural resources in general. Moreover, any tourism that is developed would have to be socially conscious and actively involve the local communities, respecting their culture and the sustainable management of their resources and enabling the local population direct access to the benefits generated.

Achievements

- The richness of the Andean culture and of the natural resources of the river basin are being preserved through the promotion and implementation of eco-businesses : organic agriculture, and eco-tourism plans.
- Substantial improvement in water management at plot level.
- Increase in quality and quantity of agricultural production.
- Technical training processes to strengthen the internal operation of the Water Consumers' Boards and the Irrigation Commissions have been set up.
- Alliances with other stakeholders have been formed regarding the management of water and other natural resources (e.g. IRPOGA, CONAM).
- The revaluing of knowledge and practices from Andean culture and the strengthening of local participation is having a positive effect on the reconstruction of the social fabric and on the self-confidence of the local population.
- The leadership of the irrigation organisations is articulated at local and regional level at the Provincial Negotiation Tables.

Potential for you

What is new in this initiative?

A key element of this process has been to see water as being intimately linked to the other natural resources of the area. A second crucial aspect has been to establish a clear relationship between these natural resources and the livelihood of the local population.

When trying to maximize the local potential, this must be to the benefit of both the small farmers and the ecosystem.

In the river basin management process, AEDES supports the local population in strengthening its organisational structures, in order to ensure a more integrated development process led by the organisations themselves.

An attempt is made to work closely with public and private organisations so as to take advantage of what they can offer and integrate them into the work already being carried out in the sub-basin, in order to achieve greater sustainability. Thus, the work of all local stakeholders is brought together in an effort to achieve the integrated management of water and other natural resources.

What is needed?

The will of all the local stakeholders to work together in order to improve the population's quality of life, is essential. Another pre-requisite is the capacity to observe the potential of the area and to motivate the population to take advantage of it. For this to be successful, it is crucial to have the capacity to establish good relationships with different organisations and institutions that work in the area.

The revaluing of traditional knowledge and the training in complementary techniques are also necessary. These offer the small farmers better production and income levels, without negatively impacting the environment.

A multidisciplinary team is necessary. This team must be capable of working in a participatory manner, stimulating community participation (preferably of both sexes), and being able to work in the local language.

An active and participatory dialogue with local leaders must be established. They must be able to implement modifications in production and/or diversify to other profitable market crops. These leaders can be an example for the other producers.

It is also necessary to work at different levels: communities, districts, sub-basin, and river basin. In addition, the generation of alliances with local public and private

institutions is necessary to create sales and export chains for organic products.

Where to start?

Essential documents

Municipalities General Act
Regionalization Act
Local Agenda 21

Essential contacts

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Water Consumers' Board of La Unión-Cotahuasi

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