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The social management of water

The Peruvian experience



IICA 

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Increasing pressures on freshwater pose global, regional and national challenges. In Peru, a country facing a potential water shortage, a project for the social management of water is beginning to show promising results.

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consequences for water resources. A lack of pollution-control measures¹ is degrading those resources even further, placing human health and aquatic systems at risk, reducing the amount of water effectively available and increasing competition over usable water.

The population of the world increased almost threefold during the twentieth century; water consumption increased sevenfold during the same period. It is estimated that one third of the world's population currently lives in countries facing moderate to serious water-related tensions. By 2025, this factor is expected to rise to two thirds.

One fifth of the world's population lacks access to safe potable water, and half lacks access to adequate sanitation. These difficulties are suffered primarily by the poorest sectors of the population in developing countries.

Forecasts indicate that, in the next 25 years, two to three billion more people will require food, causing a shortage of water for food production equal to or greater than the shortage of land. Serious conflicts are expected to arise between irrigation, other human uses of water and the ecosystem's use of the resource, since agricultural irrigation currently accounts for over 70% of water extraction.

These problems are made worse by deficient water management, the sectoral approaches that

1. The global problem of water

Global freshwater resources are coming under increased pressure. Population growth, increased economic activity and improved living standards are leading to conflicts and growing competition over limited freshwater resources. A combination of social inequity, economic marginalization and a lack of programs to fight poverty is also forcing those who live in extreme poverty to over-exploit land and forests, with negative

¹ Integrated Water Management-GWP-TAC N° 4.

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continue to prevail, and uncoordinated, fragmentary management and development of water resources, with no connection to users. The global problem is thus a result of inefficiency on the part of the authorities and growing competition over a limited resource.

Governments have responded by subscribing agreements at various global and Latin American fora. Four basic principles were established in Dublin, and later included in international agreements such as Agenda 21 (Chapter 18, on freshwater resources), adopted in 1992, during the United Nations Conference on Environment and Development in Rio de Janeiro; the Millennium Development Objectives; and the Kyoto accords.

The Dublin Principles

1. Freshwater is a finite and vulnerable resource, essential to sustain life, development and the environment.
2. Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.
3. Women play a central part in the provision, management, and safeguarding of water.
4. Water has an economic value in all its competing uses, and should be recognized as an economic good.

2. Water management in Latin America

South America is generally well-endowed with water resources. The region possesses approximately 28% of the world's renewable water resources, for a population equivalent to approximately 6% of the worldwide total. There are discrepancies, however. The region includes arid and semi-arid zones in Argentina, Bolivia, Brazil, Chile and Peru, which represent close to 23% of the overall surface of the region. Extreme seasonal variations are also common, and cause serious socio-economic and environmental damage (floods and droughts)².

It has been estimated that a per capita availability of 1,000 cubic meters of water per year constitutes the threshold below which chronic shortages would impede development and seriously affect human health (UN, 1994). Other authors place this "water stress" indicator at 1,700 cubic meters per capita, per year (Falkenmark & Widstrand, 1993).

When this indicator is studied in South America, Peru emerges as the only country where per capita availability is below this threshold, placing the country under water stress. Forecasts indicate that average availability in Peru by 2050 will be approximately 760 cubic meters, making it the only country in the region in true peril by international standards, according to the Falkenmark indicator.

Consequently, there is reason to believe a water crisis may be approaching the region. A variety of factors point in this direction:

- Management of water resources and the environment is sectoral³, and there is little interaction between sectors; decision making with regard to infrastructure and other water-related investments lacks a common focus.

² Water for the Twenty-First Century: From vision to action – South America, Global Water Partnership

³ The main user sectors are: irrigation-based agriculture; hydroelectric energy; water for domestic use; and water for industrial use.

Widespread pollution and degradation of water resources have resulted from generally inadequate legislation, regulations and enforcement, as well as a lack of investment in the treatment of liquid waste.

- There is a lack of stable, consistent policies for the management of water resources. The policies in place are those of current administrations, not the state. The consistency and sustainability required to plan and manage sustainable investments in the long term are lacking.
- Twenty percent of the population still lacks access to a potable water supply, and over 30% lacks sanitation; 60 to 100 million people lack access to basic services in rural and poor urban areas. This is a problem of crucial importance in Latin America.
- Widespread pollution and degradation of water resources have resulted from generally inadequate legislation, regulations and enforcement, as well as a lack of investment in the treatment of liquid waste.
- Water pollution constitutes a serious health risk for those who lack access to potable water; waterborne diseases create epidemics with serious socio-economic effects, and constitute one of the most serious problems facing the region.
- Investment in the maintenance and refurbishing of irrigation, potable-water and sewage infrastructure is insufficient. Water-use efficiency is low, and irrigation-based agriculture faces trade barriers established by potential importers to subsidize their markets. This has a negative impact on the income of the region's farmers,

Table: Water use by economic sector

Country	Annual water extraction by economic sector		
	Domestic %	Industrial %	Agricultural %
Argentina	9	18	73
Bolivia	10	5	85
Brazil	22	19	59
Chile	6	5	89
Colombia	41	16	43
Ecuador	7	3	90
Paraguay	15	7	78
Peru	19	9	72
Uruguay	6	3	91
Venezuela	43	11	46
Region	18	23	59

Source: World Research Institute. Agua para el siglo XXI. De la visión a la acción, Global Water Partnership, Buenos Aires, 2000.

limiting agricultural productivity and the use of water-saving technologies for irrigation. Projects have also been undertaken without contemplating maintenance costs, operational costs, sustainability or water-use efficiency.

- South America has great hydroelectric potential. While hydroelectric energy accounts for over 50% of all energy generated in nine South American countries, the region still holds significant untapped potential.
- Preparation for natural disasters and extreme events (floods and droughts) is inadequate. Standardized policies and methodologies to counter the effects of such emergencies have yet to be implemented.

Sixty percent of the population lives in watersheds surrounding rivers shared by two or more countries. This highlights the need to manage shared water resources, in order to ensure their harmonious and equitable use.

Water availability in Peru by geographical region

WATERSHED	SURFACE (1000 Km2)	POPULATION		WATER AVAILABILITY		INDEX M3/inhab-year
		(in thousands)	(%)	(MMC per year)	(%)	
Pacific	297,7	18 430	70	37 363	1,8	2 027
Atlantic	958,5	6 852	26	1 998 752	97,7	291 703
Lake Titicaca	47,0	1 047	04	10 172	0,5	9 715
TOTAL	1 285,2	26 392	100	2 046 287	100	77 534

Source: INRENA. 1995. Estudio de Reconocimiento del Uso del Recurso Hídrico por los Diferentes Sectores Productivos en el Perú. Lima.

- Indiscriminate logging, for agricultural or other purposes, poses a serious threat to fragile ecosystems. Several countries have yet to implement basic environmental impact assessment procedures.
- Sixty percent of the population lives in watersheds surrounding rivers shared by two or more countries. This highlights the need to manage shared water resources, in order to ensure their harmonious and equitable use.
- This burden will have to be shouldered by future generations. Many experts believe the degradation of the environment and water quality to be one of the greatest challenges facing South America.

The problems South America faces with regard to water resources cannot be solved by the water sector alone. Governments, businesses and users must become involved, in order to ensure that water is available to all; to produce food; to protect vital ecosystems; to develop strategies to address global climate change; to manage risks; to develop human capabilities; and to build the political will necessary to take coordinated, concerted action.

3. The outlook of water management in Peru

Peru is among those countries which will face a serious water-stress crisis in the next 25 years, as it tries to satisfy its vital and environmental needs. Demand for water currently outstrips supply in several areas of the country. The lack of water is intensifying, and assumes different forms depending on the characteristics of each region – the Pacific watershed, the Amazonian watershed and the Titicaca lake watershed.

National water consumption is made up of consumptive utilization, which reaches 20 072 MCM/year, and non-consumptive (or energy) utilization, which reaches 11139 MCM/year. Agriculture accounts for the largest share of consumptive utilization, at 80%; populational and industrial use accounts for 18%, and mining accounts for the remaining 2%.

The country possesses 6 411 000 hectares of land with irrigation potential. One million, seven hundred and twenty-nine hectares are currently irrigated (1994 Census). Irrigated land is divided into 690 000 agricultural units. The coast possesses 1 080 000 hectares of irrigated land, of which only 836 000 are utilized. Eighteen percent of irrigated



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land is in the Sierra region, and the remaining 5% is in the jungle. Average irrigation efficiency ranges from 35 to 40%.

Potable water and sewage services in urban areas are provided by 50 Sanitation Service Providers (EPSs) recognized by the National Superintendency of Sanitation Services (SUNASS). These entities cover 114 of the country's 194 provinces. One of the most important is SEDAPAL, which serves metropolitan Lima, where 86.9% of the population has access to potable water and 69.4% has access to sewage services. In rural areas, defined as areas with fewer than 2 000 inhabitants, sanitation services are provided by Administrative Boards, which cover part of their cost through a monthly contribution.

National potable water service coverage is 69%; sewage coverage is 52%.

Mining activity dates back to the earliest stages of Peruvian history; the country possesses significant mineral reserves. Mining investment has increased significantly since the 1980s. Water use for this activity is approximately 206.7 MCM per year, of which 73% is consumed in the Pacific watershed and 26% in the Atlantic; only 1% is consumed in the Titicaca watershed. The processing of minerals generates highly pollutant mineral-metallurgical liquid waste; water quality has gradually been altered as a result.

Water availability is becoming an increasingly important issue in the industrial sector; it is a decisive factor for activities which consume large quantities of water. In 1988, 92% of the sector's water needs were supplied by the Pacific watershed, with 1103 MCM per year; the Atlantic watershed supplied 7%, with 49 MCM, and the

Titicaca watershed supplied 1%, with 3 MCM. The following industries generate the largest volume of liquid waste: tanning, textiles, beverages (including beer), foodstuffs, paper and oil refineries.

Continental fishery and aquaculture are carried out in rivers and lakes, primarily in the Sierra and jungle regions. Trout farming in Sierra rivers and fishing of species such as Paiche in the jungle require clean water supplies, and hold economic potential for both regions.

In 2003, the country's electricity was generated by 423 power plants, of which 161 are hydroelectric (81% operating for the electricity market and 19% operating for their own needs) and 262 are thermoelectric (55% for the electricity market and 45% for their own needs). Hydroelectric energy reached 18 534 GW/h, which is equivalent to 81% of all electricity produced in the country.

Freshwater supply and demand clearly reflect a decrease in available stores, as well as increased irregularity. This trend can be attributed mainly to shrinking glaciers, deforestation (which accelerates the degradation of a watershed's ability to retain water), inadequate soil management (which aggravates erosion), and loss of plant cover. These factors are made worse by growing pollution, especially of rivers and other bodies of water.

Demand for freshwater is also diversifying, growing at ever-increasing rates and showing clear signs of overexploitation and watershed degradation. This trend is attributable mainly to a rising population and accelerating urbanization, an increase in the number of uses for potable water (agricultural production, industry, mining and the



energy sector), the stagnation of water-utilization technologies, and persistent use of inefficient utilization methods. In this context, an increasing number of users, with widely varying objectives, are demanding more and better opportunities to access and utilize a relatively fixed stock of natural resources.

This type of interaction between freshwater supply and demand is intensifying conflicts between water users. Its negative environmental effects often increase tension between users, and between users and the state, which offers low-quality services and a lukewarm approach to natural-resource issues, particularly water. Current regulations have little effect, and there is a lack of policies and strategies for the management of water resources.

Competition for water between the agricultural, urban, industrial, energy and mining sectors occurs in a context of often highly unequal relationships, in which the interests, rights, customs and management approaches of rural and poor urban organizations are treated with no respect or sense of equity.

Inadequate or unsustainable use of natural resources – particularly water – due to ignorance of proper management techniques, limitations derived from economic poverty, short-term private interests or failure to comply with regulations governing use, is having a negative impact on rural quality of life and income, as well as the environment in rural areas.

On the coast and in the Sierra, the use of water to drive production and ensure revenue is competing with rising urban demand for potable water, mining concessions, new irrigation projects and the demand for energy. This is, in fact, a conflict

between users and multiple uses of water, in which unequal interests and powers often collide, and solutions agreeable to all are very difficult to reach.

In the jungle and the Sierra, deforestation and extraction of natural resources are accelerating a rapid loss of forest cover, water quality and biodiversity. In the jungle, human settlement and petroleum and logging concessions are contributing to a lack of sustainability for rural and native families.

In the jungle and the Sierra, deforestation and extraction of natural resources are accelerating a rapid loss of forest cover, water quality and biodiversity.

This direct relationship between water availability, quality and environmental sustainability has a direct impact on rural and urban poverty; it affects family finances, food security, health, human rights and citizen participation. The situation is even more serious for women, given the lack of gender equity found in both external approaches, policies and interventions and the dynamics of social and local management.

The environment is also a water “user”, with needs that must be satisfied and “rights” that must be respected. Environmental quality and sustainability, biodiversity and the mitigation of desertification processes depend to a large extent on the availability and quality of freshwater in watersheds, for the conservation of nature itself, as well as for sustainable agriculture. The water cycle in most watersheds has deteriorated, and the environment has deteriorated as a result. Water pollution, floods and other water-related disasters have directly affected every aspect of the country’s life

Women in Peru play a prominent role in irrigation and domestic use of water. As actors and users of water, however, they participate only in the execution of projects; they are not part of any institutional dialogue.

and economy. The country's poor have been affected most frequently and most severely by these disasters; among the poor, men and women are affected differently, with women often bearing the brunt of disasters.

The excessive burden of work and responsibility borne by women, their feeble participation in decision-making processes involving access to, distribution and management of natural resources, and their limited access to opportunities for learning and personal development are a serious barrier to development with gender equity. Despite these obstacles, women possess a store of accumulated knowledge and skills pertaining to management of the environment and utilization of biodiversity. The prominent role played by women in irrigation and domestic use of water in Peru is one of the country's stand-out features. As actors and users of water, however, women participate only in the execution of projects; they are not part of any institutional dialogue. Men, on the contrary, are both executors and interlocutors.

Most institutions and projects lack analytical and operational instruments capable of addressing gender equity. Most of the development initiatives that have included a gender-equity approach lack systematization. Learning in this field is difficult, given the scarcity and scattered nature of systematized experiences.

Large-scale sociopolitical changes have had a negative impact on local management of water and the environment. Land reform profoundly changed the form and content of access to and distribution of natural resources. Premature counter-reforms led to the chaotic partitioning of large productive units, complicating access to and distribution of resources – particularly water – even further. These developments, as well as a lack of balance between supply and demand of water for multiple uses, are reflected in the organizational capabilities of rural users, as well as their low capacity for collective action regarding local water distribution, use and irrigation infrastructure maintenance problems. There are, of course,



exceptions, and initiatives to promote social management of micro-watersheds have recently been undertaken in some parts of the country.

The state institutions responsible for managing natural resources, particularly water, also face growing problems, such as:

- Uncoordinated provision of information, research, extension, technical assistance, sanitation and land titling services, among others.
- Overlapping functions and weak coordination mechanisms between line management units, decentralized state agencies and Ministry of Agriculture (MINAG) projects.
- Absence of a land and watershed planning agency.
- Weak formulation and execution of specific policies.
- Failure to fully exploit local, public and private watershed management initiatives and experiences.
- Lack of coordination with local water actors and users; little knowledge and understanding of the realities, problems and local initiatives of civil society.
- Scattered jurisdictions and regulations, and lack of coordination in the public sector between the entities responsible for water management (the ministries of Agriculture, Energy and Mines, Health, Industry and the Environment, among others).

In April 2001, the central government, acting on the authority of Law No. 27427, authorized MINAG to initiate an Institutional Organization Restructuring process, which resulted in the approval of its new Organizational and Functional Statute. One prominent feature of this statute is the priority given to watershed and commodity chain management approaches, with the objective of improving their operational efficiency and

bringing about the organized involvement of local actors and users of natural resources.

The institutional objectives of MINAG include “strengthening producers’ organizations and promoting their integration through watershed and production chain management approaches”, and “helping to link small-scale agriculture with the market economy, through the establishment of policies for the proper use of natural resources”. This includes promoting the formulation of proposals for agricultural integration mechanisms vis-à-vis watersheds and watershed management, as well as strengthening watershed authorities.

When considering the limitations facing the public agricultural sector, it should be noted that the sector’s existing capacity, economic resources and human professional capital are inadequate to properly meet these objectives.

The state institutions responsible for managing natural resources, particularly water, also face growing problems.

As part of the country’s decentralization process, the roles and functions of its Regional Agricultural Offices will be adjusted to fit their integration into regional governments, as well as the possible promotion of Watershed Councils and MINAG Regional Coordinating Units. This restructuring process is awaiting approval by the national legislature.

The legislature is also debating a Water Bill, which would include the following provisions:

- Establishment of a single National Water Authority – the National Water Institute – to regulate the quantity, quality and availability of water. This entity would be responsible for

granting water rights, and would follow the policy guidelines established by a National Water Council. The Council would preside over a multisectoral system with public and private sector participation.

- The creation of Watershed Councils, and the participation of regional authorities and governments in water management.
- “Use” would be distinguished from “utilization”, and a new system of water rights would be created to ensure greater legal certainty for the economic agents using the resource.
- Special priority would be given to the protection of water, especially at its natural sources.
- Adoption of a sectoral approach to the management of water rates, as well as criteria to ensure that funds are distributed equitably among institutions.
- The formulation of Water Plans for each watershed and for the country as a whole, in order to properly plan water supply and demand.

The content of the bill has been discussed at 14 public hearings. The debate surrounding the project focuses on four key issues:

Water rights and water rates

- Concessions and privatization fears
- The creation of a water market
- The distinction between use and utilization
- Rights, and the legal safeguards protecting them
- The right to follow local customs, especially in the Sierra and jungle regions

Institutional framework for national water management

- Decentralized participation in decision making

Local institutions and participation

- The need for more thorough, wider-ranging consultations with civil society

The GSAAC Program focuses on the development of social capital in the country's micro-watersheds and regions, through training activities, exchanges of learning experiences, and organizational and inter-institutional strengthening efforts.

Water and the environment

- The possible weakness of environmental impact monitoring

Given the complexity of the situation, these restructuring, decentralization and legislative processes require changes in the system used to manage water resources and the environment in watersheds, as well as new knowledge, capacity and institutional attitudes at the sectoral level. New relationship-building mechanisms are also needed, as are new forms of organization and action capable of overcoming institutional weaknesses and the lack of specialized, interdisciplinary professional capabilities. This process of innovation and professionalization will take time, and will require specific capacity-building and institutional development strategies at the national, regional and local levels.

4. The GSAAC Program and its contribution to comprehensive water management in Peru

The Inter-institutional Program for the Social Management of Water and the Environment in Watersheds began its operations in Peru in 2003. The Program started with a preparatory phase, followed by two consecutive years of execution. Its focus has been the development of social capital in the country's micro-watersheds and regions, through training activities, exchanges of learning experiences, and organizational and inter-institutional strengthening efforts. The Program is funded by the Royal Embassy of the Netherlands, and sponsored by the Inter-American Institute for Cooperation on Agriculture (IICA).

The concept of social management of water and the environment in watersheds (GSAAC concept) has had a highly positive impact on inter-institutional coordination vis-à-vis micro-watersheds, and has helped to coordinate local, regional and national activities. It has also had a policy impact, and raised

awareness on behalf of sustainable human development as an alternative in the struggle to eradicate poverty. The concept has focused on micro-watersheds, beginning at the local level and working its way up to the national water authorities.

Efforts to strengthen the social management of water and the environment in watersheds have been undertaken in 17 micro-watersheds, in eight regions: Piura, Lambayeque, Cajamarca, Ayacucho, Apurímac, Cusco, Puno and San Martín. "Showcase" projects capable of displaying tangible results worth replicating, thanks to their substantial impact on watershed management capacity, have been developed. The Program has also achieved coordination between the public sector, the private sector and organizations representing different users of water, in order to ensure proper management of water and environmental resources in each micro-watershed and region.

Strengthening the social management of water and the environment makes it possible to promote intercultural dialogue, develop strategies to strengthen gender equity vis-à-vis access to natural resources, learning, human development and citizen participation, and make more equitable use of the assistance provided by institutions and projects at the local level.

Some of the key areas of the Program have been listed below, as an example of the progress achieved over the last two years.

a. Application of the GSAAC concept

Seventeen Micro-watershed Management Committees have been organized in as many areas, with the sponsorship and support of several private entities (NGOs) that possess a strong regional presence.

These committees have adopted the GSAAC concept, applying it to their activities and working to replicate its results in their respective fields. Its results have also been reproduced by provincial



and local governments that have served as Program partners⁴, and by other entities as well, including special projects, universities and NGOs. National entities and cooperation agencies working with issues different from those of the GSAAC Program⁵ have also employed the concept, and included it in their activities.⁶

b. Political impact of the GSAAC concept

The GSAAC Program assisted the National Water Commission (CONAGUAS) in the development of a methodology to deal with the public hearings on the Water Bill, provided staff from partner entities to act as facilitators, and helped to cover the cost of the hearings. The Program also succeeded in bringing different entities together, through inter-institutional coordination, to facilitate the involvement of Andean and Amazonian communities, and to systematize and monitor citizen input regarding the Water Bill.

At the regional level, Natural Resource Management Units and coordination between institutions have served as a platform for policy proposals to improve the management of water and the environment. They have also provided support for land-planning projects (Piura, Cajamarca), river cleanup (Cusco, Piura, Abancay), the establishment of reserves to preserve water sources (San Martín), and the development of municipal ordinances to improve water use and waste management (Ayacucho, San Martín, Apurímac).

Regional platforms such as IRAGER, IMAR COSTA NORTE and YAKUNCHIK have been strength-

ened, and the creation of regional technical groups for water (GTRAs, in Cajamarca and Lambayeque), led by CONAM⁷ Regional Environmental Commissions (CARs), has been encouraged, in order to develop assessments and proposals for the improvement of water and environmental management in each province, from a watershed perspective.

Women's organizations have also been strengthened, and the Environmental Agenda has had a political impact in municipalities. This has been the case in Morropón (Piura), with AMPRODESD-CH⁸, and in Abancay, with the Women's Ecological Association.

c. Inter-institutional synergy

Joint and supplementary actions undertaken with partner organizations include land-planning initiatives with a watershed approach in the districts of San Marcos, San Pablo-Cajamarca and Morropón (Piura), with the GTZ-Andean Watersheds Project; environmental service payment studies in Jequetepeque-Cajamarca and San Martín; support for the Jequetepeque development coordinating entity in Cajamarca; and a conference for journalists on environmental and water issues.

Other collaborative efforts include the Amunas Maintenance Project and its counterpart in Huaura, with FONDAM⁹; courses to promote the GSAAC concept in Piura, Cajamarca, Ayacucho and Chiclayo, with SNV¹⁰; assistance in the training of technical personnel on content and methodology with INRENA; assistance for teachers and advisory support on methodology and content with UNIR UNALM; inter-institutional coordination with CARs in Cajamarca, Lambayeque, San

⁴ CEDEPAS –Ecumenical Social Advocacy and Action Center, IMAR COSTA NORTE –North Coast Institute for the Management of Irrigation Water, CENTRO IDEAS – Center for Research, Development and Social Education, IRAGER Regional Institute for the Management of Water Resources, CEDISA – Amazonian Sustainable Development Center

⁵ Tierra y Mar Institute, La Molina Agricultural University UNIR Project, MARENAS Special Project

⁶ INRENA National Institute for Natural Resources, GTZ -Germany, PDRS-Sustainable Rural Development Project; and EPSASA –Ayacucho Water and Sanitation Service Provider

⁷ CONAM – National Council on the Environment

⁸ AMPRODESCH – Association of Women for the Sustainable Development of Chulucanas

Strengthening the social management of water and the environment makes it possible to promote intercultural dialogue and develop strategies to strengthen gender equity.

Martín and Cusco; and the projects carried out by PROCLIM¹¹ on climate change and river cleanup in Piura and Cusco, with CONAM. The Program has also joined forces and interests with IPROGA,¹² hosting events such as the National Platform Encounter and the National Meeting for Training and Consultation on Conflicts and Support for CONAGUAS.

Other important actions have been undertaken with the businesses and agencies that deal with potable water and sanitation in the country's eight regions. Coordination with projects such as PROPILAS and SAMBASUR is moving forward.

d. Application of participatory methodologies to watersheds

Assessments and participatory planning efforts have been undertaken with Management Committees, GIAs¹³, GTRAs, the Jequetepeque Watershed development coordinating entity, agencies belonging to the Ministry of Agriculture (Piura), and the Natural Resource Management Units of the country's regional governments, which have adopted these planning methods.

These activities – particularly the training events, which include courses, workshops, internships and exchanges – are participatory in nature, and require inter-institutional coordination within and among regions.

Practice-oriented learning, which builds on the life experience of the participants themselves, is encouraged. A methodology and conceptual framework has been developed to implement this approach using commonly accessible techniques,

⁹ FONDAM - Fund of the Americas

¹⁰ SNV – Netherlands Development Organization

¹¹ PROCLIM – Climate Change Project

¹² IPROGA – Institute for Water Management

¹³ GIA – Water Advocacy Group

tools and materials. Inter-learning is the method generally used to develop social capital.

e. Adoption of a gender-equity and intercultural approach

Draft guidelines and sensitization proposals have been developed to include gender equity and the intercultural approach as cross-cutting issues in the activities of every institution working with the Program. These activities include planning workshops, courses for facilitators, coordination meetings, institutional awareness-raising initiatives and exchanges and encounters between women's organizations from different regions. This has strengthened gender policy in user organizations and institutions.

f. GSAAC facilitators promote awareness of the issues

Thanks to various facilitator-training activities, interdisciplinary teams have been formed in each region to support GSAAC processes in the country's micro-watersheds and regions.

g. Systematization of lessons learned and dissemination of materials on efficient water use

Successful initiatives on efficient water use (sprinkler irrigation, proper plot irrigation) have been carried out, and efficient ancestral technologies (Amunas) have been recovered and systematized. Documents and information on the social management of water and the environment in water-



GSAAC facilitators possess the following attributes:

1. At least three years of experience in training, facilitation and social advocacy.
2. Knowledge and mastery of the concept and substance of the social management of water and the environment in watersheds.
3. An understanding of the foundation and components of the GSAAC Program.
4. An understanding and mastery of participatory methods, gender equity and the intercultural approach, territorial development and sustainable human development.
5. Experience in the strengthening of grassroots organizations and institutional development (understanding of and support for platforms or coordinators and development committees).
6. Knowledge of methods and tools for facilitation, conflict management and consensus building.
7. An analytical understanding of the way in which different uses of water develop, and of the interests involved in water management.
8. A general understanding of the legal framework surrounding water.
9. The ability to lead meetings and events, organize activities, lead groups, storyboard materials and ideas and manage action units.
10. A sense of solidarity; an awareness of their role as facilitators; team spirit; commitment to their field.

sheds, risks and weaknesses, land planning, management of biodiversity and related topics are disseminated on a continuous basis through an electronic network, a website, a virtual library and training and awareness-raising activities. Documents, videos and other materials are also available to disseminate innovations, experiences and lessons learned.

Over the past two years, the Program has sponsored the publication of ten books on issues pertaining to the social management of water and the environment in watersheds. Eight regional libraries have been established and stocked with classified, specialized materials that provide updated, systematic information and concepts for use in the field.

5. Challenges facing governments and government leaders in the development and promotion of a new approach to water management

The social management of water and the environment in watersheds is an innovative concept and approach, and a highly useful tool for governments, public and private institutions and international cooperation agencies facing challenges in this field.

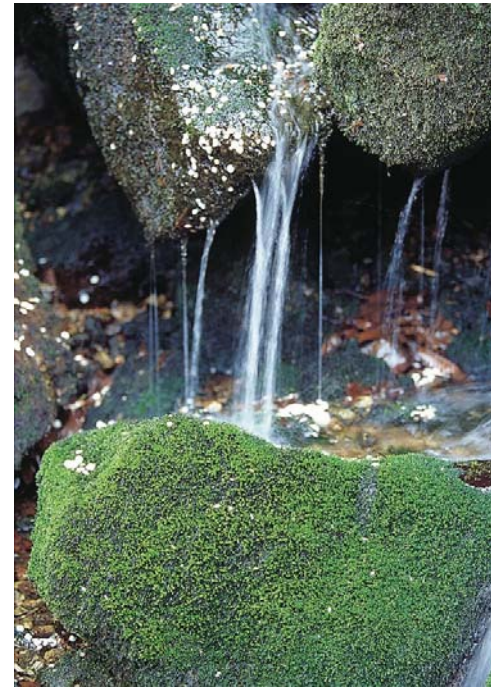
The practical experience and innovations of the GSAAC/IICA/Netherlands

Water availability is becoming an increasingly important issue in the industrial sector; it is a decisive factor for activities which consume large quantities of water.

Program have drawn attention to a number of challenges requiring innovative water management. They can be summarized as follows:

- Development of a concept and comprehensive vision of water management, from a national, regional, public-private and multicultural perspective, to include neglected sectors and cultures; strengthening of social and local management of watersheds, sub-watersheds and micro-watersheds; participatory management of watersheds by users' organizations, institutions and stakeholders, working with local and municipal governments and associations.
- Legal reforms and changes in the institutional framework of water; acknowledgment and inclusion of local norms and customs regarding water use and rights.
- Development and implementation of an intercultural and gender-equity policy for the management of water, the environment and watersheds.
- Development and application of multidimensional approaches to the value of water which combine economic, social, environmental and cultural aspects; testing of different environmental service payment systems and mechanisms.
- Development and implementation of an aggressive policy and programs to recover degraded watershed catchment areas suffering from "deglaciation", in order to extract and conserve water and replenish aquifers.
- Creation of "competitive water funds" for innovative projects and initiatives; experimental implementation of new laws and policies in pilot watersheds.
- Implementation of projects designed to help women's organizations create a new "water culture", with the participation of children and youth.
- Inclusion of the mining industry, hydroelectric companies, cities and strategic industries as "associate actors" in each watershed, to ensure their involvement in the management, extraction and conservation of water in watershed catchment areas.
- Application and enforcement by the public sector and institutions such as the office of the comptroller and the Ombudsman of an environmental, water and mining code, with local participation.
- Support for programs to train advocates and facilitators of change in the comprehensive management of water, as well as programs to train personnel and decision makers.
- Support for institutional reengineering in the entities responsible for using and managing water, and establishment of multisectoral links.
- Creation of a Water Institute to encourage public and private research in the field; support for the study, monitoring and assessment of the following issues: water management dynamics; water sources and points of access; different uses of water and their impact; stakeholders and conflicts, and their history and resolution.
- Implementation of policies and new financing and self-financing mechanisms for the comprehensive management of water in watersheds and micro-watersheds.
- Implementation of a nationwide, decentralized water pollution monitoring system, which would conduct audits.
- Support for environmental education, as well as the promotion and application of a water culture.

- Support for the creation of entities, institutions and companies to provide technical assistance and advisory support for the comprehensive management of water.
- Implementation of water conventions, agreements and codes, as well as the Millennium Goals involving water, the environment, food security, health, children and poverty.
- Establishment of Management Committees for micro-watersheds, sub-watersheds and inter-institutional platforms at the regional and supra-regional levels.
- Establishment of local and regional Information and Knowledge Centers on water and water management in watersheds.
- Implementation of a decentralized advisory and support system for water management innovation and development.
- Channeling of efforts and stimulation of inter-institutional synergy in projects and investments in sustainable human development in watersheds.
- Development of a national and regional water independence policy, as well as a national and regional strategy for the comprehensive management of water resources.
- Comprehensive and participatory management of water in binational watersheds.
- Development of a food security policy that includes water management in watersheds.
- Urgent implementation of a strategy addressing water, health and children (in rural and poor urban areas).



Demand for freshwater is also diversifying, growing at ever-increasing rates and showing clear signs of overexploitation and watershed degradation.