Managing Water Resources in Arid and semi-Arid Regions of Latin America and the Caribbean

THE CONTEXT

Arid regions –including hyper arid, arid, semi-arid and sub-humid regions– cover more than 18% of the Earth's surface and are considered the most vulnerable areas regarding the water crisis, particularly in Latin America, Asia and Sub-Saharan Africa, where under developed countries are located. These regions face the greatest pressures in their limited freshwater resources and this is set to increase. In fact in the 1990s, 40% of the world's population suffered from serious water shortages and by 2025 two thirds of the population will face the threat of living under high water stress. Challenges facing water managers in arid regions include population growth, food security, salinity increases and pollution from various sources. Moreover, climate change is expected to increase water scarcity and the frequency of extreme conditions, potentially threatening poor countries with major setbacks due to more frequent hydrologic disasters, such as floods and droughts. In addition, the potential for conflict over water scarcity is higher in arid regions and there is a need to develop strategies to support peace and security.

In this context, managing water is one of the greatest and more urgent challenges and to do so, accurate assessment of the available and renewable water resources is essential. However, such an assessment is especially difficult in arid regions: the science base is limited, data are scarce and humid zone experience is inappropriate. Therefore, improved scientific understanding, co-operation and data sharing are fundamental to facilitate ways of better water governance and reach integrated management of water resources in arid and semi-arid regions.

MISSION STATEMENT

The project aims at improving the quality of life of local communities in arid and semi-arid environments in Latin America and the Caribbean, through a reduction in the vulnerability of water resources systems to global changes and an improvement in water governance based on sound scientific knowledge.

Objectives

- Increase water governance to attain integrated water resources management by supporting local and regional programs and supplying relevant scientific information to support decision making processes.

- Include climate information in water management by supporting local and regional projects aimed at generating and disseminating climate information systems for water management decision making.

- Support the use of modern techniques and methodologies to assess and improve water use efficiency by building technical, academic and professional capacities.

ACTIVITIES

- **Assessment of water productivity changes under different climate scenarios across several regions in the South Cone**

The objective of the project is to contribute to the development of production strategies that can increase water productivity considering the impacts of climate change and to raise awareness among the water user community through the dissemination of research results. To achieve this, workshops will be held to present the results in watersheds associated with the project, a seminar on changes in water productivity under climate scenarios will be organized in Uruguay, and climate information will be generated for its incorporation into water productivity assessment models in three pilot basins in Chile.

The project will be carried in partnership with the Cooperative Program for Technological Agri-business and Agri-industrial Development in the South Cone (PROCISUR), under its component Irrigation Regional Technology Platform (PTR).

- **Training Course on surface and groundwater in semiarid catchments (2013 – 2014)**

Training courses will be organized to reinforce professional and technical capacity building in the analysis of surface and underground water systems in semi-arid environments and basins, especially the relations and interactions between surface and ground water resources.

The first "Training Institute on Adaptive Management of Water Resources under Climate Change in Vulnerable River Basins" was held in La Serena, Chile, from 8-17 October, 2012. It explored the increasing pressure on water resources, especially in arid and semiarid regions, climate change, hydroclimatic variability, population growth, urbanization, rising demands for food, societal vulnerability and ecosystem water needs.

A similar course on groundwater management is foreseen for 2014.

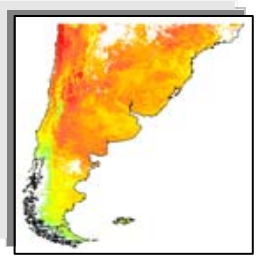
- **Latin American School of Soil Physics-ELAFIS (2012 – 2014)**

The Latin American School of Soil Physics-ELAFIS is organized by the University of Ghent, with support from the Universidad Central de Venezuela and the collaboration of the Water Center for Arid and Semi-Arid Zones in Latin America and the Caribbean (CAZALAC). The versions to be held in 2012 and 2014, in Colombia and Peru respectively, will focus on the need to train professionals and technicians participating in the Drought Mitigation Center for Latin America and the Caribbean.

More than sixty professionals and technicians in Latin America, some of them from the pilot study areas, will be trained in areas of soil physics and soil conservation and increased water availability. The objective is to strengthen drought research capacities regarding drought mitigation by applying improved adaptive soil management practices.

- **Drought Mitigation Center for Latin America and the Caribbean**

A Drought Mitigation Center for Latin America and the Caribbean will be created to give support to a network of drought specialists in the region towards the establishment of national systems for drought management. Participants of the Center will be involved in research, capacity building and project development and are expected from at least 90% of Latin America and the Caribbean countries. The Center will develop linkages with existing international efforts and encourage the interchange of researchers and students.

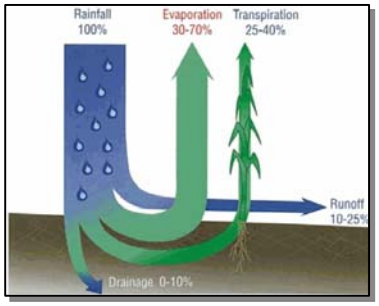


The Center will organize a conference regarding drought mitigation and adaptation in the context of climate variability and change, and will generate a Drought Monitor System for Latin America, a Drought Database for Latin America and a database of drought specialists, publications and projects in Latin America.

- **Hydro- climate variability and extreme events robust estimation methods**

The objective of the project is to consolidate a group of specialists in Latin America in order to promote the adoption of the Regional Frequency Analysis based on L-moments procedure as a standard method of hydrological frequency analysis by users in the institutional, public and private sectors in Latin America and the Caribbean.

- **Soil and Water Management of Deficit Irrigated Production Systems in the Bolivian Altiplano and Coswand Focus group**



The objective of the project is to apply the deficit irrigation and soil fertility and conservation in the Quinoa production systems in the Bolivian Altiplano and Andes. To achieve this, technical reports and manuals will be elaborated and the results of the research will be disseminated to local, national and international institutions.

EXPECTED RESULTS

- Water governance improved and building capacities strengthened to evaluate and adopt water efficient use methods and techniques.

- Inclusion of hydro-climate information systems in water management.

- Awareness raised among the water user community and knowledge increased on water use efficiency in basins.

Timelines

2012 - 2014

Partners

- EUROCLIMA – Latin America and European Union programme
- General Water Directorate – University of La Serena and University of Concepcion (Chile)
- Institute for Water Resources - United States Army Corp of Engineers (IWR – USACE)
- Inter-American Institute for Global Change Research (IAI)
- International Center for Integrated Water Resources Management (ICIWaRM – UNESCO, category II Center), United States of America
- International Research Institute for Climate and Society (IRI) – University of Columbia
- International Research Center on “El Niño” (CIIFEN)
- Irrigation Regional Technology Platform - Cooperative Program for Technological Agri-business and Agri-industrial Development in the South Cone (PTR – PROCISUR)
- Mexican Institute of Water Technology (IMTA)
- National Agricultural Research Institute of Uruguay (INIA)
- National Committees of International Hydrological Programme in the Latin America and the Caribbean Member States
- UNESCO Chair on Eremology – Ghent University (Belgium)
- Universidad Mayor San Andres (Bolivia)
- Universidad Autónoma de Baja California (Mexico)
- Universidad Central de Venezuela (UNELLEZ-VIPI, Venezuela)
- Universidad de Córdoba (Argentina)
- Universidad de Río Cuarto (Argentina)
- Universidad de Buenos Aires (Argentina)
- Universidad Nacional Mayor de San Simón (Peru)
- Universidad de Alagoas (Brazil)
- Universidad Nacional de Colombia (Colombia)
- United Nations Convention to Combat Desertification (UNCCD)
- Water Center for Latin America and the Caribbean (CAALCA)

Participating countries

Countries of Latin America and the Caribbean (LAC).

Coordination

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