

Water Sciences

The water sciences activities for the biennium 2010-2011 at the regional office are essentially based on the IHP VII and its cross-cutting and associated programs. The main theme of the seven phase of IHP (2008-2013) is “*water dependencies: systems under stress and societal responses*”. It covers the following themes:

- Adapting to the impacts of global changes on river basins and aquifer systems,
- Strengthening water governance for sustainability,
- Ecohydrology for sustainability,
- Water and life support systems,
- Water education for sustainable development.

For this biennium, activities at the regional office will focus on the Climate change impacts on the hydrological cycle, and consequent impacts on water resources, managing groundwater systems' response to global changes, managing water as a shared responsibility across geographical and social boundaries and research and assessment of urban groundwater vulnerability. The activities will contribute to the following cross-cutting and associated programs and will be implemented in partnership with IHP networks in Africa, regional institutions and universities:

- **FRIEND** (Flow Regimes from International Experimental Network Data): support to the existing two components in West and central Africa and Southern Africa and synergy with the Nile component. Support a feasibility study for the establishment of a new FRIEND component for the basin of Congo in Central Africa.
- **HELP** (Hydrology, Environment, Life and Policy): support for the establishment of a Regional Coordination Unit for the HELP Basins Network in Africa and promotion for the nomination of new HELP basins.
- **ISARM** (Internationally Shared Aquifer Resources Management): support to the ISARM networks in West, Southern and Eastern Africa for continued inventory and study on trans-boundary aquifers in Africa
- **GRAPHIC** (Groundwater Resources Assessment under the Pressure of Human activities and Climate Change): revitalization of the Africa GRAPHIC network launched during the Kampala International Conference on Climate and Groundwater in Africa and promotion of the Kampala Statement on Climate and Groundwater in Africa.
- **G-WADI** • contribution for the creation of a sub-Saharan component of G-WADI network for the sustainable management of water resources in arid and semi-arid areas in Africa with a focus on groundwater management.
- **PCCP** • (from potential conflict to cooperation potential): contribution for the adaptation within the context of West Africa and translation in French of training documents produced for southern Africa on sustainable and peaceful management of transboundary water systems. This will be followed by training for water managers and river basin organizations. A support will be also given for a PCCP case study in eastern or southern Africa.

- **IFI** (International Floods Initiative): promotion of the initiative through the project on floods management in west Africa;
- **IWRM** (Integrated Water Resources Management): promotion of a true IWRM integrating surface and groundwater, water quality and quantity, climate change and cultural dimension.

The main priorities will be:

Climate Change and Water Resources

Climate variability and change and other drivers such as population growth, land use land change and urbanization have and will continue to have an important impact on water resources in Africa. Due to many reasons, the level of our understanding of the impact of those drivers on the water resources in Africa in future is too limited. The activities to be undertaken will contribute to strengthen the scientific understanding of the impacts on water systems and to link the scientific results to assist African countries to develop sound policies for sustainable management of water resources. Regional approach will be of preference due to the trans-boundary character of climate and also to the trans-boundary character of the majority of hydro-systems in Africa. The activities will comprise capacity building of younger scientists on impact assessment methodologies, support to specific research on trans-boundary systems through the relevant networks including FRIEND, HELP, G-WADI, GRAPHIC and ISARM as well as testing and validating tools.

Water Governance of Trans-boundary Systems

The majority of water resources, both surface and groundwater in Africa, are shared among countries. Cooperation among countries sharing the water system is essential for a sustainable and peaceful management of the resources. The main focus will be on knowledge production, capacity building, case studies through PCCP initiative facilitating multi-level and interdisciplinary dialogues in order to foster peace cooperation and development related to the management of shared waters and the continued identification and study of shared aquifers through the ISARM networks in Africa,. The activities will also consist of the promotion and advocacy for a true IWRM integrating surface and groundwater, quality and quantity, cultural dimension and climate change. River Basin Organizations, Regional Economic Communities (RECs), GWP networks in Africa and AMCOW will be the main partners.

Managing Hydrological Extremes

Even though our understanding of climate change impact is limited, it is recognized that the frequency and intensity of hydrological (extremes droughts and floods) will unfortunately increase in many African sub-regions. Due to climate variability and other driving factors such as population growth,

urbanization, land use and land change, droughts and floods have become for many years now practically recurrent phenomena. The activities will focus on the promotion of the IFI initiative through the production, testing and validation of tools for the forecasting, monitoring and mapping of the extremes for a sustainable management of their impacts. Special partnership will be sought with the ICHARM center for the reinforcement of the capacity of regional centres on hydrometeorology in the different sub-regions.