



IWMI Research in West Africa

- ★ Integrated Water Resources Management (IWRM)
- ★ Technology Adoption and Dissemination
- ★ Policies and Institutional Capacity Building
- ★ Safe Use of Wastewater in (Peri-) Urban Agriculture
- ★ Malaria and other Health Issues Associated with Irrigation

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IWMI is a Future Harvest Center supported by the CGIAR

IWMI
International
Water Management
Institute



IWMI's Mission

IWMI is an international non-profit organization supported by the Consultative Group on International Agricultural Research (CGIAR) and about 30 donors.

IWMI's mission is:

Improving water and land management for food, livelihoods, and nature.

Overview of Projects and Activities

The West Africa Office of IWMI is located in Ghana and coordinates activities throughout the sub-region. The Council for Scientific and Industrial Research (CSIR) hosts IWMI's main office in Accra with a second office based at the Kwame Nkrumah University of Science and Technology (KNUST) in Kumasi. Both locations symbolize IWMI's emphasis on close collaboration with national partners, but also other *Future Harvest* (CGIAR) centres and a large number of advanced research institutions, mainly in Europe and USA.

Our sub-regional research portfolio has its focus on poverty reduction and food security through sustainable and efficient agricultural soil and water management. It is closely linked to NEPAD's CAADP with projects ranging from policy development and support to the analysis of technology adoption factors, basin scale modelling, the relationship between malaria and irrigation, the sustainable planning of small reservoirs, transboundary knowledge exchange, and health risks through wastewater irrigated vegetables.

IWMI regularly organizes roundtable discussions, training workshops and conferences. These range in size from village meetings to national stakeholder consultations or international symposia.

Integrated Water Resources Management

Integrated Water Resources Management (IWRM) at the scale of basins and sub-basins and the development of science-based Decision Support Systems have the potential to improve agricultural planning, land-use choices, and water allocation. In this research thrust, social, political, economic, hydrological, and environmental factors are taken into consideration as well as related institutional capacity building. The geographical focus of IWMI's Integrated Water Resources Management studies is on the Volta and Niger Basins.



The Volta Basin

The GLOWA-Volta project is being implemented by the Centre of Development Research (ZEF), Germany, in collaboration with IWMI. The GLOWA project aims at decision support systems for sustainable water use under changing land use, rainfall reliability and water demands in the Volta Basin (www.glowa-volta.de).

- The Small Reservoirs Project (SRP), which is funded by Germany through the CGIAR Challenge Program on Water & Food, aims at tools and procedures for planning and evaluating ensembles of small, multi-purpose reservoirs for the improvement of smallholder livelihoods and food security (www.smallreservoirs.org).
- Decision support for agricultural investment in the irrigation sector in the Niger and Volta basins. This project has its focus on performance indicators comparing formal and informal irrigation complemented by an inventory of institutions and databases in both basins.
- The Comprehensive Assessment Program aims at an analysis of the development of agriculture and water use in the Volta Basin based on an inventory of existing biophysical, socio-economic and institutional data.

IWMI West Africa leads, participates or supports six projects of the CGIAR Challenge Program on Water and Food in the Volta Basin
(www.waterforfood.org.)



Technology Adoption and Dissemination

IWMI projects on technology adoption and dissemination aim at understanding the factors supporting and constraining the adoption of low-cost technologies and best practices to develop decision support systems for their dissemination. Currently the focus is on:

- Rainwater harvesting, rangeland rehabilitation, and soil and water conservation - supported by the German Volkswagen Foundation



Small scale irrigation along the Volta River

- Water lifting devices (especially treadle and motor pumps) in relation to different pump marketing strategies

- Supporting options for rainwater harvesting for productive (domestic and agricultural) water uses in collaboration with Ghana's Savannah Agricultural Research Institute (SARI) in Northern Ghana (funded by the CGIAR Challenge Program on Water & Food)

Parts of these studies support the International Programme for Technology and Research in Irrigation and Drainage (IPTRID).

Policies and Institutional Capacity Building

Two projects started within this topic in 2005:

- At the request of the Ghanaian Ministry of Food and Agriculture, IWMI contributes to a project financed by FAO to develop a modern irrigation policy for Ghana which addresses, among others, the formal and informal irrigation sub-sectors, participatory irrigation management and irrigation privatisation.
- The City Farming for the Future (CFF) Program is funded by the Dutch Government and International Development Research Centre (IDRC) through the Foundation of Resource Centres on Urban Agriculture and Food Security (RUAF). The project builds on IWMI's experience as regional RUAF focal point for Anglophone West Africa. The main goal of the project is to assist city authorities of selected cities in the sub-region through Multi-Stakeholder Processes for Action Planning and Policy Formulation (MPAP) to recognize the benefits of urban agriculture in their policies and decisions, while addressing also its challenges (www.ruaf.org).

IWMI also contributed to the development of Ghana's **National Water Policy** and the Strategic Environmental Assessment of Ghana's **Environmental Sanitation Policy**.

Capacity Building Through University Partnerships

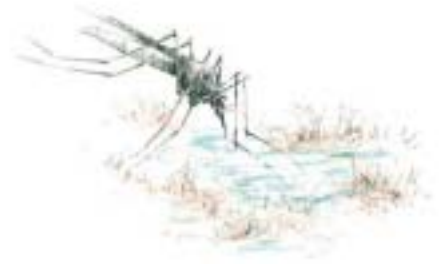
In all projects human capacity building plays a significant role. Research planning, data analysis, and interpretation are usually carried out in close collaboration with various local and international partners involving as many students as possible from universities in Ghana and abroad. In 2002-2004 about 130 students from BSc to MSc or PhD took part in our projects and contributed with their theses to the success of IWMI's research.

Malaria and other Health Issues Associated with Irrigation

There are different projects looking at health issues related to irrigation:

- Risk of bilharziasis, malaria, and bacterial contamination versus nutritional and economic benefits related to small reservoirs used in Northern Ghana and Burkina Faso for irrigation and other purposes.
- Investigations on whether GIS-based malaria risk mapping could be used as a tool for epidemic forecasting and for planning malaria control activities.
- Investigations on how irrigated urban agriculture affects the risk of malaria in West African cities in order to minimize risk factors.

These projects link to the “System-wide Initiative on Malaria and Agriculture (SIMA)” (www.iwmi.cgiar.org/sima).



Furrow irrigation of vegetables with polluted water in Kumasi

Safe Use of Wastewater in (Peri-) Urban Agriculture

Two closely linked projects of the CGIAR Challenge Program for Water and Food (www.waterforfood.org) aim at reducing health risks arising from irrigation with untreated water. At the request of local authorities, the projects target options for risk reduction on farms, in markets and households in line with the new wastewater irrigation guidelines recommended by WHO. The universities in Kumasi and Copenhagen lead these projects, which also link with the CG system-wide initiative on urban agriculture (Urban Harvest).

A sister project targets organic waste and faecal sludge (co-composting) to close the rural-urban nutrient cycle. The project aims at the development of recommendations on options for waste composting for different municipalities taking into account a detailed analysis of (i) waste supply, (ii) compost demand, (iii) institutional and legal issues, (iv) financial and economic analysis, and (v) different compost process options and scales, including co-composting of solid waste and human excreta and the direct use of excreta in farming. This has led to the construction of a pilot co-composting plant near Kumasi in collaboration with local authorities, the university in Kumasi and the Department of Water and Sanitation in Developing Countries (SANDEC) of the Swiss Federal Institute of Aquatic Science and Technology (EAWAG).

Selected Partners

In West Africa:

ECOWAS, ADB, CORAF, FAO, WARDA; IFPRI, ITC, CREPA, IAGU, etc.

In Ghana:

Council for Scientific and Industrial Research (CSIR), Water Research Institute (WRI), Water Resources Commission (WRC), Ghana Irrigation Development Agency (GIDA) – Ministry of Food and Agriculture (MoFA), University of Ghana, Kwame Nkrumah University of Science and Technology (KNUST), University for Development Studies (UDS), Kumasi Center for Collaborative Research (KCCR) in Tropical Medicine, Savannah Agricultural Research Institute (SARI) and e.g. the Municipalities of Accra and Kumasi.

In Europe:

University of Bonn/ZEF; IHE and IRC, Delft; Wageningen University; Humboldt University Berlin; Liverpool School of Tropical Medicine; SANDEC/EAWAG in Zurich, ETC in Leusden, University of Copenhagen, etc.



There are over 1,700 small reservoirs in Burkina Faso and Northern Ghana. Reservoirs are a good option for increasing micro irrigation in the Volta Basin.

The IWMI West Africa Office is hosting the Ghana Office of the **International Food Policy Research Institute** (IFPRI), the **GLOWA - Volta** office and the Volta Basin Secretariat of the **CGIAR Challenge Program for Water and Food**. It is also supporting offices of the **International Institute of Tropical Agriculture** (IITA-GTZ) and the **Ghana Water Partnership**.

For further information and updates please see:

www.iwmi.cgiar.org/west_africa/projects

IWMI Staff Based in Ghana (October 2005)

Research Team

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PhD Students

Mr. Noah Adamtey (Environmental Scientist)
Mr. Philip Amoah (Microbiologist)
Mr. George Danso (Agricultural Economist)
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Mr. William Ntow (Pesticide Specialist; staff member of WRI-CSIR)
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