



IWMI Research in Central Asia

- Integrated Water Resources Management
- Water Productivity Mapping
- "Bright Spots"
- Rural Livelihoods and Water Management
- Modeling Water and Food Security Options for the Future
- Ground Water Management
- Knowledge Sharing and Capacity Building



IWMI's Mission

Improving the management of land and water resources, for food, livelihoods and nature.

About IWMI

IWMI is an international non-profit scientific organization supported by the Consultative Group on International Agricultural Research (CGIAR). IWMI headquarters are in Sri Lanka and the institute has regional offices in Africa and Asia.

IWMI Research Themes

1. Basin Water Management
2. Land, Water and Livelihoods
3. Agriculture, Water and Cities
4. Water Management and Environment

IWMI's sub-regional office for Central Asia is located in Tashkent, Uzbekistan. This office coordinates and implements IWMI research projects in Central Asia. It is overseen by the Asia Office, located at IWMI Headquarters in Sri Lanka.

As part of the ongoing projects on water sector and agricultural reforms in Central Asia, IWMI is actively collaborating with the ADB to produce a series of manuals to train and guide water user associations in Central Asia. The manuals will provide guidance on the formation and development of water user associations, financial management, operations and maintenance (O&M) and WUA on-farm management.

Overview of Research in Central Asia.

In Central Asia, IWMI looks at improving the effectiveness of water resources management through the application of IWRM principles. We have successfully initiated the establishment of participatory irrigation management in the region. In addition, studies are in progress to fill knowledge gaps on rural livelihoods, which will help to identify interventions best suited to the needs of rural farmers. Central Asia is subject to severe land and water degradation. IWMI is leading an ADB funded project to enable farming communities in the Aral Sea Basin to reverse water and land degradation through "Bright Spots", where land degradation and low productivity have been successfully reversed through soil remediation technologies and best practices. In the Fergana Valley of the Syr Darya River basin, IWMI has initiated studies for groundwater management which will increase irrigation efficiency. The institute is carrying out research on water productivity mapping in this basin with a view to creating a tool set to assess water productivity of irrigated areas using remote sensing and GIS. One of our recent research initiatives, together with our local partners, is exploring future water and food security options for Uzbekistan using the PODIUM SIM model. Knowledge sharing and capacity building are also priorities in the current research program.



Photo Credit: Iskandar Abdullaev

IWMI has introduced modern water management knowledge and internationally tested and recognized IWRM practices to Central Asia..

Integrated Water Resources Management in the Fergana Valley

The Fergana Valley is shared by three central Asian countries, Kyrgyzstan, Tajikistan and Uzbekistan. The Fergana Valley Project is implemented by IWMI, in partnership with the Scientific Information Center of the Interstate Commission for Water Coordination, and the ministries of Agriculture and Water Resources of Kyrgyzstan, Tajikistan, and Uzbekistan. It addresses the potential for water saving practices, improving water productivity, water management reforms at several levels and institutional build-up of water users' associations. Through this project IWMI together with partners introduced modern water management knowledge and internationally tested and recognized approaches into the region. The overall aim is to improve the livelihoods of people through better water management with stakeholder participation.

The proposed IWRM framework prepared by IWMI and partners was adopted in May 2003 by the three countries and influenced Uzbekistan's water policy to the extent that the government formally decided to adopt river basin management as a framework for their water reforms. The Fergana Valley project is helping to contribute to more secure livelihoods, a more sustainable environment and social harmony, while supporting rural restructuring in Central Asia.

Knowledge Sharing in Research Pilot Project (KSRPP)

The "Bright Spots" Project is one of the 10 projects being pilot tested in KSRPP (Knowledge Sharing Initiative in Research Pilot Project). Since 2005 the project has been testing several approaches and using innovative ways to share knowledge among farmers, researchers and other stakeholders through the following activities:

- National Planning Meetings and Steering Committee Meetings held annually with the participation of all stakeholders;
- Field Day organized in Kazakhstan in July 2006 with the participation of local authorities, researchers, and farmers;
- Learning Alliance created in May 2006 in Gulistan to out-scale the bright spots practices to rehabilitate saline lands (around Licorice establishment technique);
- Providing hands-on training and farmer friendly guidebooks, manuals and technical brochures. A series of training sessions were conducted by ICARDA, IWMI and ICBA to assist local NARES, researchers and practitioners.
- Farmer Fair organized in August 2006 with the participation of around 200 local and International research organizations, and 400 local farmers for better knowledge sharing and dissemination.

When farmers are able to increase productivity by using adaptive cropping systems and better management practices, there will be less pressure to abandon land and expand into marginal areas, thereby reducing the risk of environmental degradation. Furthermore, farmer participatory involvement in the project through on-farm testing will result in increased adoption of improved cropping systems and management practices, leading to better production, enhanced income generation and secured livelihood.



Photo Credit: IWMI Central Asia

IWMI works with a range of stakeholders to study and understand the factors that shape rural livelihoods and the activities undertaken by rural communities to create income.

Rural Livelihoods and Water Management in the Ferghana Valley

This project builds on and supports the on-going Integrated Water Resources Management (IWRM-FV) Project in the Ferghana Valley. Transfer of responsibility for water management in Central Asia was initiated in the mid-1990s. The process developed at different paces in different locations with substantial inputs from donors and various levels of engagement of stakeholders. However, there is still an inadequate understanding of the assets that shape the livelihoods of rural farming households and the activities that they undertake to create an income. This information is critical to ensuring effective water management and reducing poverty. Although these factors are now well understood in the IWRM-FV project pilot canal areas, as work has been undertaken in those areas for over four years, they are not well understood throughout the Ferghana Valley, which encompasses three countries, seven provinces and various types of water users utilizing differing water supplies. This project will contribute to the filling of knowledge gaps by combining existing knowledge and ongoing work with a combination of rapid rural appraisal and participatory rural appraisal, to better understand (1) the livelihoods of farmers and other rural residents, (2) the relationship between these livelihoods and water resources and (3) how the livelihood strategies being employed interact with water resources and water management in the Ferghana Valley.

Reversing Water and Land Degradation through "Bright Spots"

The project initiated in 2005 addresses endemic rural poverty through improving food security at the household level and enhancing environmental security. This can be achieved through the development, promotion and adoption of strategies that enhance the productivity of irrigated farming systems in Kazakhstan, Turkmenistan and Uzbekistan. The overarching focus of the project is on the management and rehabilitation of salt affected irrigated agricultural lands with the objective of enhancing the agronomic performance of these systems. Specific project activities fall within three distinct but related components that include: 1) Identifying, evaluating and promoting local innovative practices and strategies that farmers have adopted to cope with prevailing biophysical and economic constraints. These are termed "Bright Spots"; 2) Selecting of salt-tolerant plant species and the assessing and developing innovative practices in managing or rehabilitating salt affected lands that includes the use of marginal irrigation waters; 3) Outcomes from the previous two components contribute to the third component that focuses on the dissemination of outcomes through knowledge sharing and capacity building amongst farmers and national partners.

International Partners/ Donors

- *Swiss Agency for Development and Cooperation (SDC)*
- *Asian Development Bank (ADB)*
- *ICARDA and other CG centers*
- *Global Water Partnership*

National Partners

- *Interstate Commission for Water Coordination (ICWC) in Central Asia*
- *Scientific Information Center of ICWC (SIC-ICWC)*
- *Ministries for Agriculture and/or Water Resources in Kyrgyzstan, Kazakhstan, Tajikistan, Turkmenistan and Uzbekistan*
- *National Agricultural Research Systems (NARES)*
- *Water organizations*
- *Universities*
- *NGOs*
- *Local communities*

Mapping Water Productivity in the Syr Darya River Basin

Mapping water productivity (WP) from field to river basin level is at the heart of IWMI's current research agenda. This project aims at producing a consistent set of water productivity maps (WPM) of irrigated command areas of the Ferghana Valley through which the Syr Darya river runs. This will be done through satellite sensor data. Increasing water productivity in the agricultural sector is central to making water available for multiple purposes. In 2005, IWMI began work on mapping water productivity in the Syr Darya basin which is shared by four countries in Central Asia—Uzbekistan, Kazakhstan, Kyrgyzstan and Tajikistan. Irrigation extractions from the Syr Darya river have contributed significantly to the problems of the Aral Sea into which the river runs. When irrigation demand is highest during the summer months, little water reaches the sea, resulting in environmental degradation. IWMI is assessing both water and land productivity at basin level for key crops and complementary livelihood strategies and environmental values, spatially disaggregated across the basin. Research analyzes the reasons for water productivity variations across the basin with a view to providing a framework for understanding productive land and water use.

Groundwater Development for Improved Irrigation Management in the Syr Darya Basin and Ferghana Valley

In July 2005, IWMI initiated studies on groundwater development in the Ferghana Valley for improved water management in the Syr Darya Basin. This project is funded by OPEC. Water intake for irrigation from the Syr Darya River in Ferghana Valley has created negative environmental impacts in the lower reaches. Groundwater development in the Ferghana Valley for irrigation is a feasible alternative for summer months when flows from the Syr Darya River are inadequate to meet crop water requirements. Groundwater in the Ferghana Valley has a relatively low salinity level and can be a good source of water for irrigation if managed in a sustainable way. Groundwater management can reduce the demand for irrigation from river water, help reduce drainage water outflow from the area and improve water quality. Modelling of groundwater pumping for irrigation will be carried out using MODFLOW.



Research analyzes the reasons for water productivity variations across the Syr Darya basin with a view to provide a framework for understanding productive land and water use.

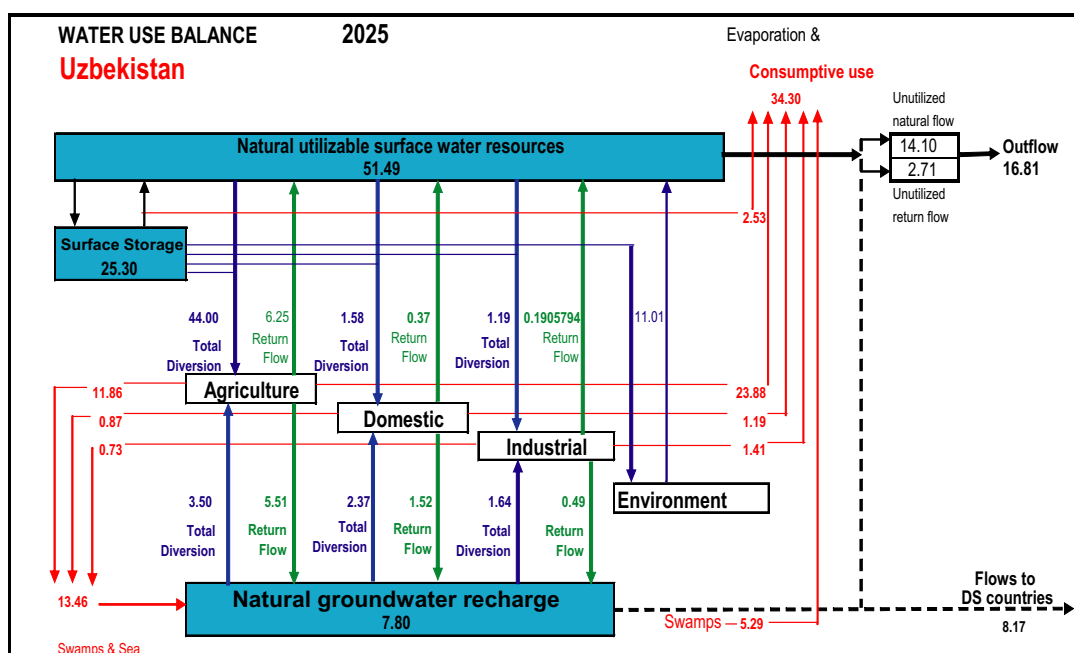
Capacity Building

IWMI believes that improving the skills and strengths of partners provides the direct link between the institute's research and its impact, or the uptake of research knowledge that can benefit rural communities and institutions in Central Asia. IWMI contributes to the training of NARES staff in project proposal writing, and works with national institutes and universities to develop young scientists. IWMI also assists in the development of training material for universities and conducts seminars and short courses as part of its capacity building program.

Since 2005 IWMI is supporting three MSc students from the EU TEMPUS project. These students are contributing to ongoing IWMI projects.

PODIUMSIm-Uzbekistan: Modeling Water and Food Security Options for the Future

PODIUMSIm is an IWMI-developed model designed to provide a user-friendly interface for policymakers, scientists and others to explore future scenarios and analyze the complex interplay of the variables that determine the supply and demand for water and food. The research undertaken aims at adapting this model to a country-specific context in Uzbekistan and investigating the food and water security options using the model as a tool. The Project seeks to establish the current status of agricultural food production versus water available in Uzbekistan and, using it as a baseline, investigate possible long-term scenarios from the "business as usual perspective" as well as what can be thought of as the best case scenarios for the next 20-30 years. The model has already been successfully applied to analyze and generate future scenarios in India and China.



Analyzing the Possible Impacts of Uzbekistan's World Trade Organization (WTO) Membership on Agricultural Water Use.

In this project three possible scenarios were generated to foresee possible implications on markets (internal and external), the environment and water resources resulting from Uzbekistan joining the World Trade Organization. Overall, in all three generated scenarios, given current water use patterns and multi-year average water availability, there is going to be a deficit of surface water flows ranging from 4 to 12.5 km³ subject to a particular scenario. Research points to three options available to handle this water deficit: (1) increasing use of groundwater resources, (2) improving overall efficiency of irrigation systems, and/or (3) taking more effective water conservation measures including the introduction of water service charges. However, if water scarcity is to be a factor for Uzbek cotton production, it is most likely to occur due to the tradeoffs existing in the region between downstream agriculture (Uzbekistan) and upstream energy production (Kyrgyzstan and Tajikistan), than between agriculture and the environment, at least in the foreseeable future.

Contact Information

Headquarters and Global Research Division

127, Sunil Mawatha, Pelawatte,
Battaramulla, Sri Lanka.

Mailing Address:

P. O. Box 2075, Colombo, Sri Lanka.
Telephone: +94-11 278774404, 2784080
Fax: +94-11 2786854
Email: iwmi@cgjar.org

IWMI Central Asia Office

Apartment No: 123,
Home No 6, Murtazaeva Street,
Tashkent 700000,
Uzbekistan.

Tel: + 998-71 1370445/1372173
Fax: + 998-71 1370317
e-mail : h.manthri@cgjar.org

IWMI Office for Asia

127, Sunil Mawatha, Pelawatte,
Battaramulla, Sri Lanka.

Mailing Address:

P. O. Box 2075, Colombo, Sri Lanka.
Telephone: +94-11 278774404, 2784080
Fax: +94-11 2786854
Email: p.mccornick@cgjar.org