Capacity building and human resources development for broader implementation of IWRM in Central Asia

Prof. V.A. Dukhovny
Director, SIC ICWC

Geneva, 2-4 July 2012
WHAT ARE THE FUNDAMENTALS OF IWRM that we are implementing?

Water resources management is implemented within the hydrological units;

Management takes into consideration use of all kinds of water resources (surface water, ground water, and return water);

Close co-ordination of all kinds of water users and organizations;

Public participation not only in the water management process, but also in financing, planning, and developing water infrastructure;

Setting the priorities of eco-systems’ water requirements;

Water saving and control of unproductive water losses;

Information exchange, openness and transparency of the water resources management system;

Economic and financial sustainability of water management organizations.
Transboundary water cooperation in Aral Sea basin

RESULTS OF IWRM FERGHANA

- 250 mln. m³ WATER SAVING PER YEAR
- 7000 PERSONS TRAINING
- LEVEL OF UNDERSTANDING MORE THAN 15 THOUSAND PERSONS
- PRODUCTIVITY OF LANDS INCREASED ON 116-127%
Our view

IWRM

• Multilevel system of Water Management, supported by proper system of GOVERNANCE;

• Complex of institutional, legal and technical measures;

• Combination of government line of actions with strong public initiatives;

• Integration of land and water.
First block: “River Basin Management” on the basis of IWRM-FV Project

Second block: “Demand management” on the basis of WPI-PL project

ACS of Syrdarya river canal within the FV

ACS of Canals

CARWIB – information providing and water consumption forecast

Knowledge innovation implementation for

Training

Tributaries

River Canal

Canals

CDS

WUA

Farm

Irrigated field

Social mobilization
Agricultural and water sector organizations
Local authority
Water consumer organizations
Financing institutions
Research and development organizations
Environmental organizations
Our goal – to transform IWRM in single way for survival of Central Asia region in condition of growing water scarcity
Task № 1

Testing all tools of water delivery and water allocations on broad scale:
- MIS Canal systems;
- Daily planning WUAs;
- Hydromodule zoning;
- Water measuring;
- Water accountability;
- Creation of set software for WUAs.
Task № 2

Preparation and preliminary negotiation of improvement institutional structure of Water Management
Task № 3

Financing and testing complex of financial-economic strategy of IWRM on the example of Kuva rayon, Akbarabad WUA
Task № 4

All regulations, guidance, rules, instructions prepared, agreed and ready to up scaling
Potential users:
- IFAS, ICWC, ICSID (+ executive bodies)
- Central Asian research and design agencies involved in water sector
- Water (basin and system) management organizations in CARs
- Institutions for higher education in CARs (hydroengineering, agricultural, hydrological and other directions)
- Ministries of Emergency Situations of CARs
- Agencies dealing with monitoring of management and quality and quantity of water resources in CARs (meteorological, hydrometrical, hydrogeology-reclamation services, institutions of State Committee for Nature Conservation, etc.)
- Agencies dealing with the operation of national and unified Central Asian power supply systems
- Non-governmental, private organizations
- International agencies and donors
- Mass media

www.cawater-info.net
Knowledge generation

Knowledge processing, Extension methodology

Knowledge dissemination/multiplication

Knowledge implementers

Research

Information Centers

Disseminators

Farmers
Water measuring
## Indicators of agricultural production improvement in the IWRM-Fergana Project

<table>
<thead>
<tr>
<th>Indicator of improvement</th>
<th>Tajikistan</th>
<th>Uzbekistan</th>
<th>Kyrgyzstan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton</td>
<td>33%</td>
<td>34%</td>
<td>17%</td>
</tr>
<tr>
<td>Reduced water delivery</td>
<td>18%</td>
<td>21%</td>
<td>25%</td>
</tr>
<tr>
<td>Increased crop yields</td>
<td>62%</td>
<td>69%</td>
<td>52%</td>
</tr>
<tr>
<td>Improved productivity</td>
<td>62%</td>
<td>69%</td>
<td>52%</td>
</tr>
</tbody>
</table>
# Impact of climatic factors

<table>
<thead>
<tr>
<th>Climatic parameters</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air temperature</strong></td>
<td></td>
</tr>
<tr>
<td>The growing season extends</td>
<td>+</td>
</tr>
<tr>
<td>Sowing dates - earlier sowing</td>
<td>+</td>
</tr>
<tr>
<td>Conditions suitable for germination,</td>
<td></td>
</tr>
<tr>
<td>phenological phases and growth</td>
<td>±</td>
</tr>
<tr>
<td>Extremely high temperatures stop</td>
<td>-</td>
</tr>
<tr>
<td>physiological processes in plants</td>
<td></td>
</tr>
<tr>
<td><strong>Air humidity</strong></td>
<td></td>
</tr>
<tr>
<td>Intensive evaporation</td>
<td>-</td>
</tr>
<tr>
<td>Creates conditions for heat-and-moisture exchange essential for every specific crop</td>
<td>+</td>
</tr>
<tr>
<td><strong>Precipitation</strong></td>
<td></td>
</tr>
<tr>
<td>Soil moisture and humidity create</td>
<td>+</td>
</tr>
<tr>
<td>natural moistening, conditions for</td>
<td></td>
</tr>
<tr>
<td>growth</td>
<td>-</td>
</tr>
<tr>
<td>Storm precipitation can impede</td>
<td>-</td>
</tr>
<tr>
<td>germination and carrying out</td>
<td></td>
</tr>
<tr>
<td>agricultural activities</td>
<td></td>
</tr>
<tr>
<td>**Temperature, humidity and</td>
<td></td>
</tr>
<tr>
<td>precipitation**</td>
<td></td>
</tr>
<tr>
<td>Generally form plant evapotranspiration</td>
<td>+</td>
</tr>
<tr>
<td>Change salinization processes</td>
<td></td>
</tr>
<tr>
<td><strong>CO₂ concentration</strong></td>
<td></td>
</tr>
<tr>
<td>Determine rate of photosynthesis,</td>
<td>+</td>
</tr>
<tr>
<td>respiration</td>
<td></td>
</tr>
<tr>
<td>Form biomass and productivity of</td>
<td></td>
</tr>
<tr>
<td>crops</td>
<td>-</td>
</tr>
</tbody>
</table>
Formation of azotobacter nodules on green gram roots
Farmer training in adapting to climate change

Training Seminar
Principal directions of adaptation

1. More precision long term forecast of water availability.
2. More accurate forecast of climatic and hydrological conditions.
3. Ability to get permanently climatic information.
5. Water saving and implementation of IWRM.
6. Training for adaptation.
7. Increase second crop growing.
8. Water resistant crops.
9. Control of losses in rivers.
The main focus of the proposed programme

Capacity building and human resources development for broader implementation of IWRM in Central Asia (training, social mobilization, etc.)

To address principal challenges, it is necessary to:
1. Establish a strong system of innovation implementation and dissemination of experience on IWRM.
2. Promote innovations into water delivery services - to create stability and efficient water supply, including: a) build up strong interrelations between water hierarchy levels by economic, legal and managerial tools b) Water-Food-Energy nexus.
3. Promote innovations into more effective water use, including: a) broad implementation of water saving and reduce average water delivery per hectare on 20-30% by 2030, b) increase water productivity on 50% by 2030, c) cultivation of drought resistant crops.
4. Increase women involvement in water management and governance.
5. Pilot testing of IWRM in specific zones: a) in upper watershed, b) in lowlands of Amudarya and Syrdarya rivers.
Resource needs

- Support training and information activity SIC ICWC (together with other structures)
- Establishment for one zonal knowledge generation center in each from 5 states of Central Asia
Thank you very much!