Future of Aral Sea Basin

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Director, Scientific-Information Center of the Interstate Commission for Water Coordination in Central Asia (SIC ICWC)
19 June 2019
ICWC origin

Key milestones:

• **October 10-12, 1991 | Tashkent** | Statement by the water ministers of five independent Central Asian Republics (CARs)

• **February 18, 1992 | Almaty** | Agreement to establish Interstate Commission for Water Coordination on problems of regulation, rational use and protection of water resources from interstate sources

• **March 26, 1993 | Kzyl-Orda** | Presidents of the CARs confirmed 1992 Almaty Agreement

• **April 9, 1999 | Ashgabad** | Agreement “On status of International Fund for saving the Aral Sea and its organizations”.
STRUCTURE
of Interstate Coordination Water Commission
of Central Asian states

FOUNDERS OF ICWC

Ministry of Agriculture of the Republic of Kazakhstan
Committee for Water Resources

Ministry of Agriculture and Land Reclamation of the Kyrgyz Republic
Department of Water Management and Land Reclamation

Ministry of Energy and Water Resources of the Republic of Tajikistan

Ministry of Water Resources of Turkmenistan
Water Resources Department

Ministry of Agriculture and Water Resources of the Republic of Uzbekistan

ICWC
Secretariat

Scientific Information Center (SIC ICWC)

BWO “Syrdarya”

BWO “Amudarya”

Coordination Metrological Center (CMC ICWC)

ICWC Training Centre

Kazakh Branch

Kyrgyz Branch

Tajik Branch
# The Basic Indicators of Water and Land Resources Development in the Aral Sea Basin

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<td></td>
<td></td>
<td></td>
<td></td>
<td>Optimistic</td>
</tr>
<tr>
<td>Population</td>
<td>million</td>
<td>14.4</td>
<td>26.8</td>
<td>33.6</td>
<td>48.5</td>
<td>53.33</td>
<td>60.0</td>
</tr>
<tr>
<td>Irrigated area</td>
<td>thousand hectares</td>
<td>4510</td>
<td>6920</td>
<td>7600</td>
<td>8201</td>
<td>8090</td>
<td>9330</td>
</tr>
<tr>
<td>Irrigated area per capita</td>
<td>ha/capita</td>
<td>0.32</td>
<td>0.26</td>
<td>0.23</td>
<td>0.17</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>Total water withdrawal</td>
<td>km³/year</td>
<td>60.61</td>
<td>120.69</td>
<td>116.27</td>
<td>109.5</td>
<td>103.2</td>
<td>104.5</td>
</tr>
<tr>
<td>Including for irrigation</td>
<td>km³/year</td>
<td>56.15</td>
<td>106.79</td>
<td>106.4</td>
<td>91.6</td>
<td>95.3</td>
<td>86.8</td>
</tr>
<tr>
<td>Specific withdrawal per 1 hectare</td>
<td>m³/ha</td>
<td>12450</td>
<td>15430</td>
<td>14000</td>
<td>11171</td>
<td>11900</td>
<td>9300</td>
</tr>
<tr>
<td>Specific withdrawal per capita</td>
<td>m³/capita</td>
<td>4270</td>
<td>4500</td>
<td>3460</td>
<td>2259</td>
<td>1935</td>
<td>1741</td>
</tr>
<tr>
<td>GNP</td>
<td>bln.USD</td>
<td>16.1</td>
<td>48.1</td>
<td>74.0</td>
<td>76.7</td>
<td>85.0</td>
<td>129</td>
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</tbody>
</table>
### Comparison of water situation in Central Asia

<table>
<thead>
<tr>
<th>States</th>
<th>Area, th.km²</th>
<th>Population, mln.pers</th>
<th>GNP per capita, USD</th>
<th>Water resources, m³/capita</th>
<th>Irrigated area, ha/capita</th>
<th>Power production, kWt/h/capita</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>own</td>
<td>used</td>
<td></td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>2724,9</td>
<td>17,42</td>
<td>12626,3</td>
<td>3694</td>
<td>1214</td>
<td>0.097</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>199,9</td>
<td>5,89</td>
<td>1258,1</td>
<td>8307</td>
<td>1414</td>
<td>0.17</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>143,1</td>
<td>8,32</td>
<td>1110,6</td>
<td>7627</td>
<td>1405</td>
<td>0.09</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>491,21</td>
<td>6,15</td>
<td>7793,5</td>
<td>229</td>
<td>4411</td>
<td>0.255</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>448,97</td>
<td>31,02</td>
<td>2020,9</td>
<td>527</td>
<td>1565</td>
<td>0.14</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>652,2</td>
<td>31,28</td>
<td>666,2</td>
<td>1507</td>
<td>648</td>
<td>0.052</td>
</tr>
</tbody>
</table>
How the situation in the region will evolve in the future?

The UN GA’s Resolution of 22 June 2018 gives clear answer: Strengthening regional and international cooperation to ensure peace, stability and sustainable development in the Central Asian Region.
Way out – understanding and implementing a set of joint actions between the Central Asian countries

«Our future is in our hands»

Sh.M. Mirziyoyev
Forecast of the future in form of two counter trends: growing demands and decreasing resources

Comparison of water demand and water availability in the Aral Sea Basin, Mm3

- Green line: Water availability trends
- Green dashes: Water availability trends with account of climate change
- Blue dashes: Water requirements with account of population growth
- Blue line: Water requirements with account of population growth and Afghanistan's demand
Data, information & knowledge management

Databases & regional info systems
✓ Practical tool to assess water situation using the data on water availability, distribution, reservoir operation, losses, environmental flows, etc.

Knowledge base
✓ 14 thematic knowledge bases
✓ Knowledge tools: reference database, glossaries, e-library, reviews & training materials
✓ Rubricator with 15 sections

Analytical models
✓ Aral Sea Basin Management Model (ASBmm)
✓ Scenarios of water-related situation in Amudarya & Syrdarya

Publications
✓ Distribution to government officials, policy makers, development partners, and scholars within Central Asia and beyond;
✓ More than 900 books & brochures in more than 400000 copies
Four directions for strengthening ICWC activities approved by Commission in 2014

1. Water saving

2. IWRM as tools for green growth and climate change adaptation

3. Improving accuracy of water accounting/measurement

4. Capacity development
Search for trade-offs and creative solutions

• Strengthen cooperation and mutual obligations with respect to joint management, development and construction to guarantee water for country and environmental needs;
• Remove all obstacles on the way to joint and trustful water use – balance of interests of all the countries;
• Reach high level of water productivity;
• Ensure equal and equitable participation in integrated water resources management (IWRM).
What it takes?

- Rational water use program
- System of open access, accurate and timely information
- Regular dialogue in the course of management, development of joint rules for water use and management
- Enhanced scientific and analytical basis
- Regional water sector vocational training and future water leader program.
Diagnosis – where cooperation stagnates?

• Involvement in ICWC of other water use sectors;

• Strong control over observance of water use limits, especially for downstream;

• Equal representation and proportional shares of financing;

• Thorough and regular control over runoff and water delivery – no tricks with water are possible.
Adaptation measures

• Implementation of IWRM in the basin
• Reassessing water demands of irrigated land, taking into account the advantages of temperature growth (Dr. Stulina’s research findings)
• Implementation of SCADA system
• Shift in regimes of flow regulation from priority hydropower production to combined hydropower and irrigation regime
Comparison of crop yield dynamics in the Fergana Valley

<table>
<thead>
<tr>
<th>Indicator value</th>
<th>2002-2009 (on average)</th>
<th>at the end of the period analyzed (2010)</th>
<th>at the beginning of the period analyzed (2001)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andijan/Uzbekistan</td>
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<tr>
<td>Namangan/Uzbekistan</td>
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<tr>
<td>Fergana/Uzbekistan</td>
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<tr>
<td>Djalalabad/Kyrgyzstan</td>
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<td>Sogd/Tajikistan</td>
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<tr>
<td>Osh/Kyrgyzstan</td>
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</table>
Water saving is the key

- Crop selection
- Make most of available irrigated land
- Revision of hydro-module zoning and irrigation regimes
- Reduction of non-productive loses on the basis of programming
- Decrease areas of saline lands & reduce water for leaching
- Smart use of irrigation techniques, including drip irrigation
- Improve water accounting
- Use waste and mineralized waters
- Use crops requiring less water
Role of donors

• Address the countries’ needs – orientation to specific practical solutions.
• Better coordination – overcome duplication and pursuing of their own interests.
• Greater focus on professional development, best practice sharing and scientific cooperation.