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SIC ICWC

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Regional, national and local level experiences of IWRM principles implementation in countries of CA

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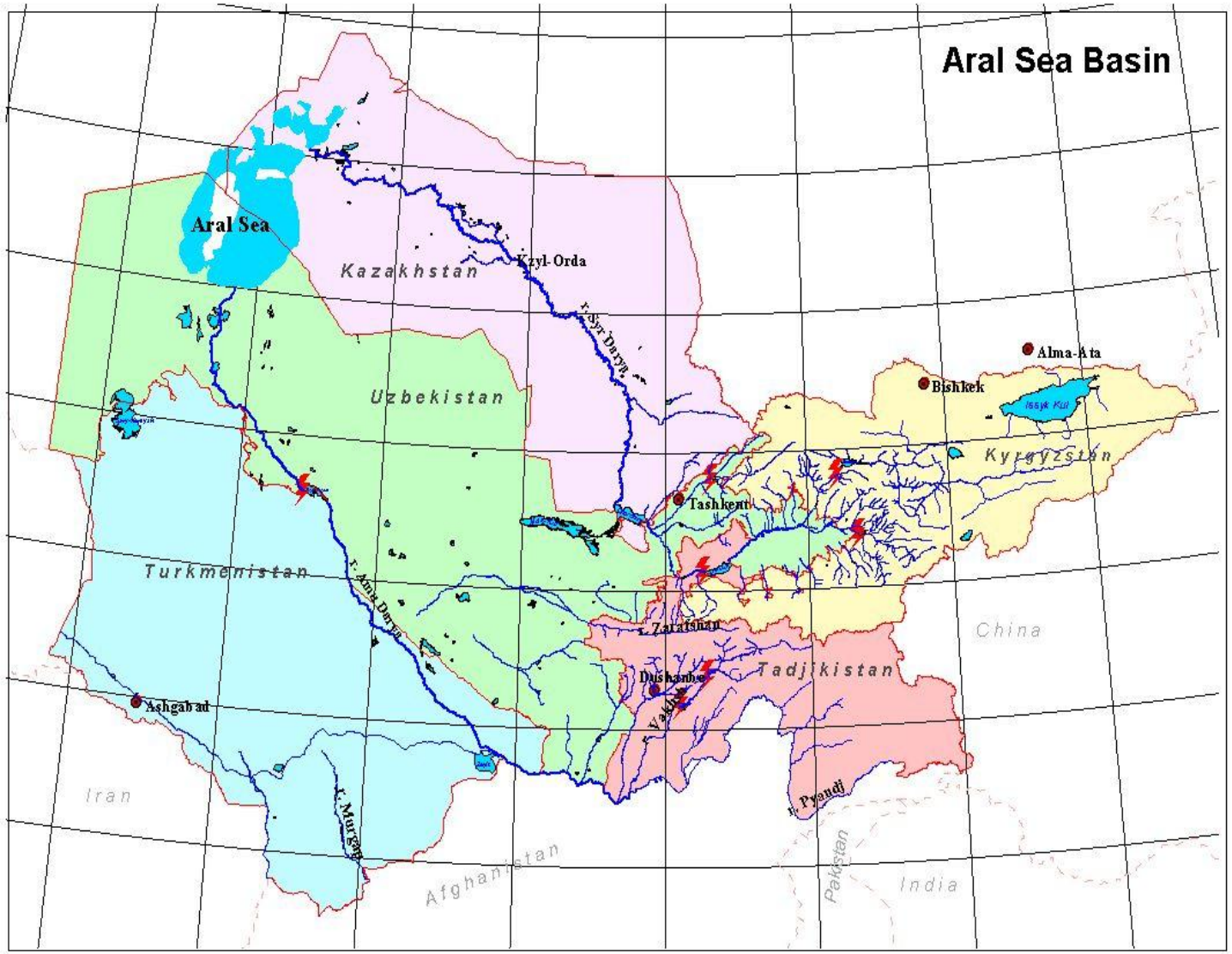
Aral Sea basin

is among the most ancient centers of civilization.



Amudarya and Syrdarya — two main rivers in the basin,

Its tributaries Vakhsh, Pyandj, Zerafshan, Naryn, Chirchik, Karadarya and Small Transb rivers.

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Change of the Aral Sea Border

- Total area of 3,882,000 km3
- Population over 53 million (2007)
- 82 % is living in the Aral Sea basin.
- Climate -continental, mostly arid and semi-arid.
- Precipitation (concentrated in the spring and winter) is about 270 mm, varying between 600-800 mm in mountains zones and 80-150 mm in desert regions.

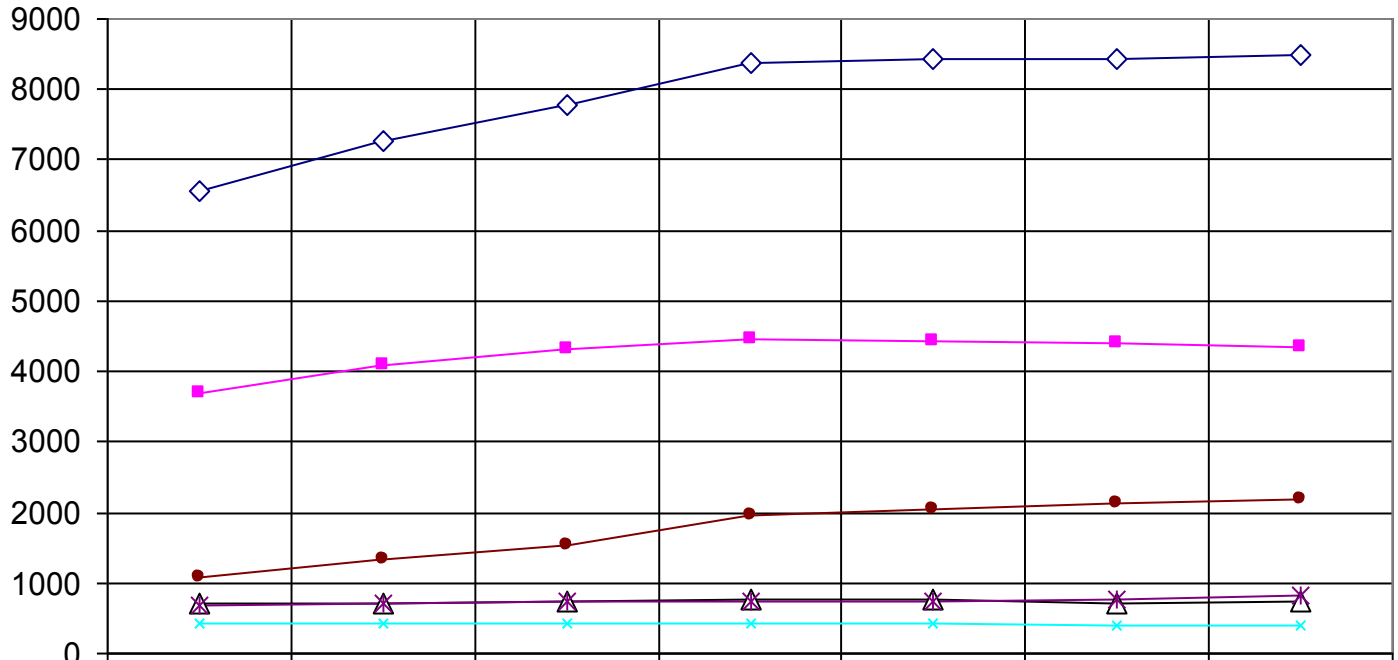
- One of the biggest irrigation region in the world (with about 9.1 million hectares of irrigated crops).

Source: http://karakalpak-karakalpakstan.blogspot.com/

Population Dynamics and Water Use in Central Asia

Indicator	Unit	1960	1970	1980	1990	2000	2010
Population	Mln	14.1	20.0	26.8	33.6	41.5	55 +
Irrigated lands area	thousand ha	4,510	5,150	6,920	7,769	8,434	8,018
Total water withdrawal	Km3/year	60.61	94.56	120.69	116	105	106
for irrigation	Km3/year	56.15	86.84	106.79	106	95	93
Unit water withdrawal per irrigated hectare	m3/ha	12,450	16,860	15,430	14,000	11,850	13,947

Dynamics of irrigated area in the Aral Sea basin, thousand ha



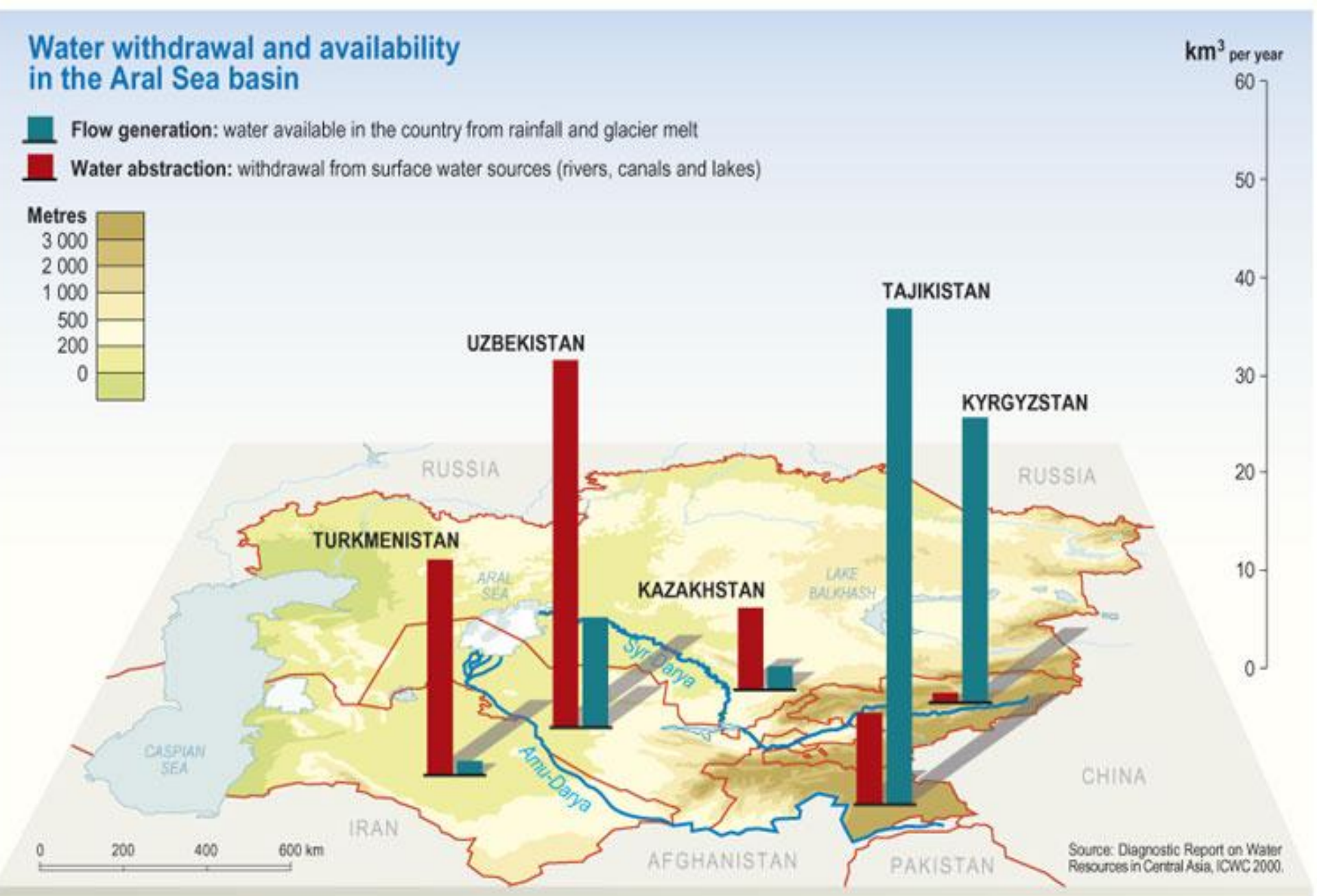
	1980	1985	1990	1995	2000	2005	2009
Increase in agricultural production in ASB	6558	7266	7769	8366	8434	8434	8496
Kazakhstan	696	706	752	758	770	714	745
Kyrgyzstan	423	425	419	428	429	411	407
Tajikistan	671	710	751	747	750	763	810
Turkmenistan	1080	1340	1523	1967	2046	2142	2188
Uzbekistan	3688	4085	4325	4466	4439	4404	4346

Source: materials SIC ICWC

Water withdrawal and availability in the Aral Sea basin

Flow generation: water available in the country from rainfall and glacier melt

Water abstraction: withdrawal from surface water sources (rivers, canals and lakes)

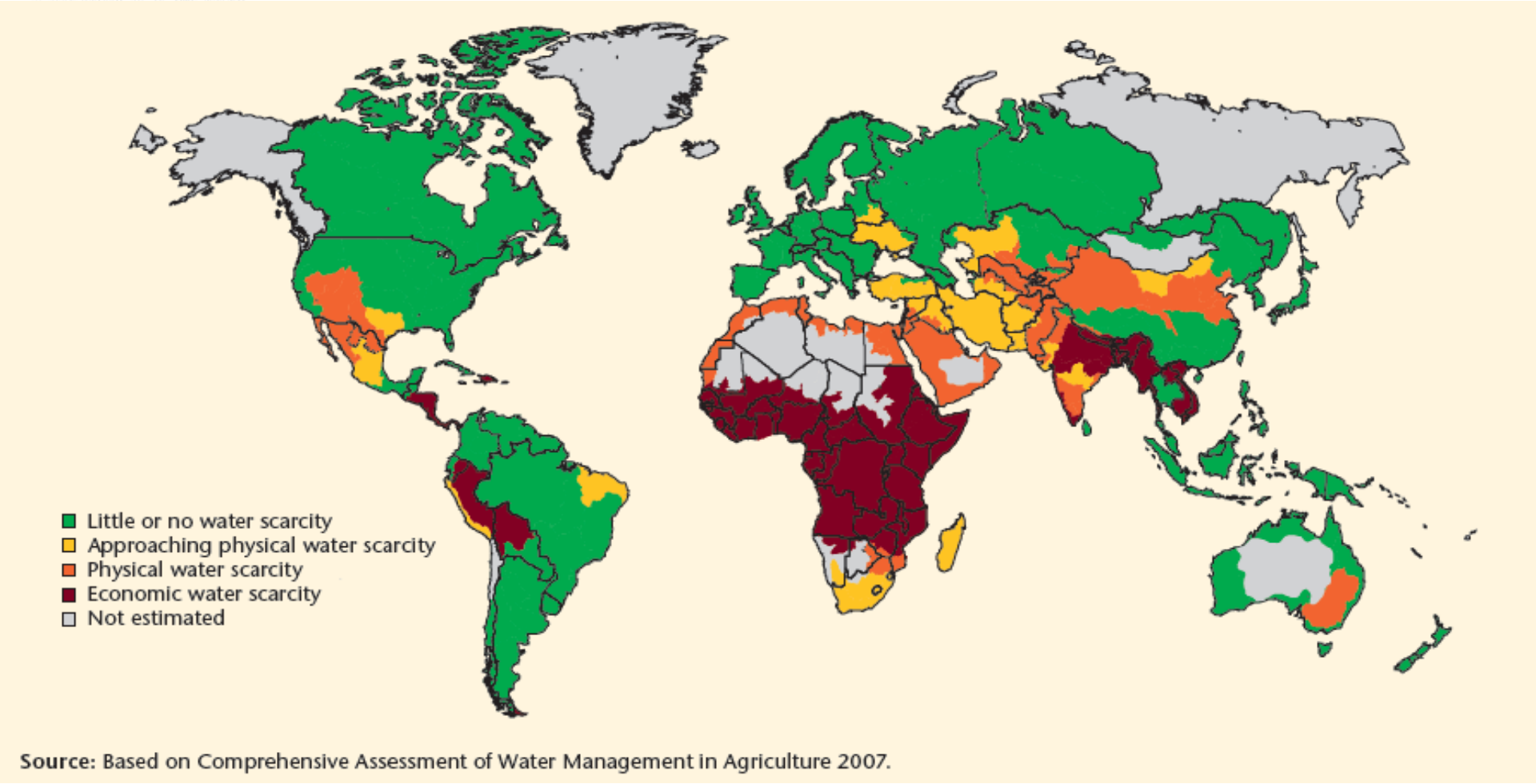


AP BY VIKTOR NOVIKOV AND PHILIPPE REKACEWICZ - UNEP/GRID-ARENDAL - APRIL 2005

Some main challenges of region with rgrd to WRM

- Increasing water deficit due to population growth and economic development;
- Change in the system of organization and governance of agricultural and water sectors, the property rights, land & water use rights;
- Insufficient awareness of the public about the water-related situation;
- Competition of different sectors over the use of WR;
- Insufficient financing of off-farm & on-farm WRM;
- Dramatic reduction of investments in the water sector;
- Global warming: change in rivers run offs & others;
- Physical and Economic Water Scarcity.

Areas under Physical and Economic Water Scarcity



Source: Based on Comprehensive Assessment of Water Management in Agriculture 2007.

Physical scarcity: Intensive water resource development, physical resource constrain, >75% of river flows withdrawn;

Economic scarcity: There is enough water but people still lack water: financial and human resources may constrain the development of more water resources

Main challenges of region with rgrd to on-farm water management

- Water sharing between water users has random character;
- Water user has no knowledge on how much irrigation water he/she needs and how much water is receiving;
- Water supply is not reliable in terms of quantity and duration;
- Water users do not receive irrigation water in a timely manner and in required amount;
- Over application (irrigation) that bears no relevance to crop water requirements;
- Conflicts among farmers;
- Low water and land productivity or low output of an irrigated hectare;

Source: WPI-PL project

Key messages

- *Effectiveness of WRM can be achived through introduction of IWRM principles;*
- *Water productivity can be improved through effective organization of water management at plot level;*
- *Water management knowledge can be managed (delivered) through existing systems by promoting effective linkages for irrigation extension.*

Integrated Water Resource Management - IWRM

IWRM is a process which promotes the coordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

(GWP - Global Water Partnership, 2000)

Sustainable development is a process that meets the needs of the present without compromising our ability to meet those of the future

(World Commission on Environment and Development 1986)

What is IWRM?
What kind of approach it is?

management system, based on:

- taking into account all kinds of water resources (surface water, groundwater, and return water) within hydrological units, and
- coordinating the interests of different economic sectors and hierarchical levels of water use, involving all stakeholders in decision-making, and
- promoting the effective use of water, land, and other natural resources to meet the requirements of ecosystems and human society through a sustainable water supply.

Source: from materials of GWP Central Asia & Caucasus

Main IWRM principles

- water resources are managed within **hydrographic boundaries**;
- **accounting** and use of all types of water resources (surface, ground, and return), taking into account climatic characteristics of regions;
- **close linkage** of all types of water use and all organizations involved in water resources management horizontally between sectors and vertically between water hierarchy levels (basin, sub-basin, irrigation system, WUA, farm-end user);
- **public participation** not only in the management but also in financing, support, planning, and development of the water management infrastructure;
- **priority of environmental requirements** in the activity of water management bodies;
- orientation to **water saving and control of unproductive water losses** of water management organizations and water users;
- informational support, **openness, transparency** of the water resources management system;
- **economically and financially stable management**, sufficient equipping, and staffing with skilled personnel.

Three pillars of IWRM

Implementing IWRM process is a question of getting the "three pillars" right:

1. Moving towards enabling environment of appropriate policies, strategies and legislation

2. Putting in place the institutional framework (through which policies can be implemented)

3. Setting up the management instruments required by these institutions to do their job

Enabling Environment: Regional Support

- Apr 28, 2009 – JS 5 CA Presidents support to strengthen institutional & legal frame of IFAS and mandate for ASBP III programme;
- 1999 Agreement on the status of the IFAS and its organizations,
- 1992 five-Party Agreement on cooperation in joint management, use and protection of water resources of inter-State sources (establish ICWC);
- Nukus Declaration of CA States (1995); Ashgabat Declaration (1999); Tashkent Statement (2001); Dushanbe Declaration (2002).

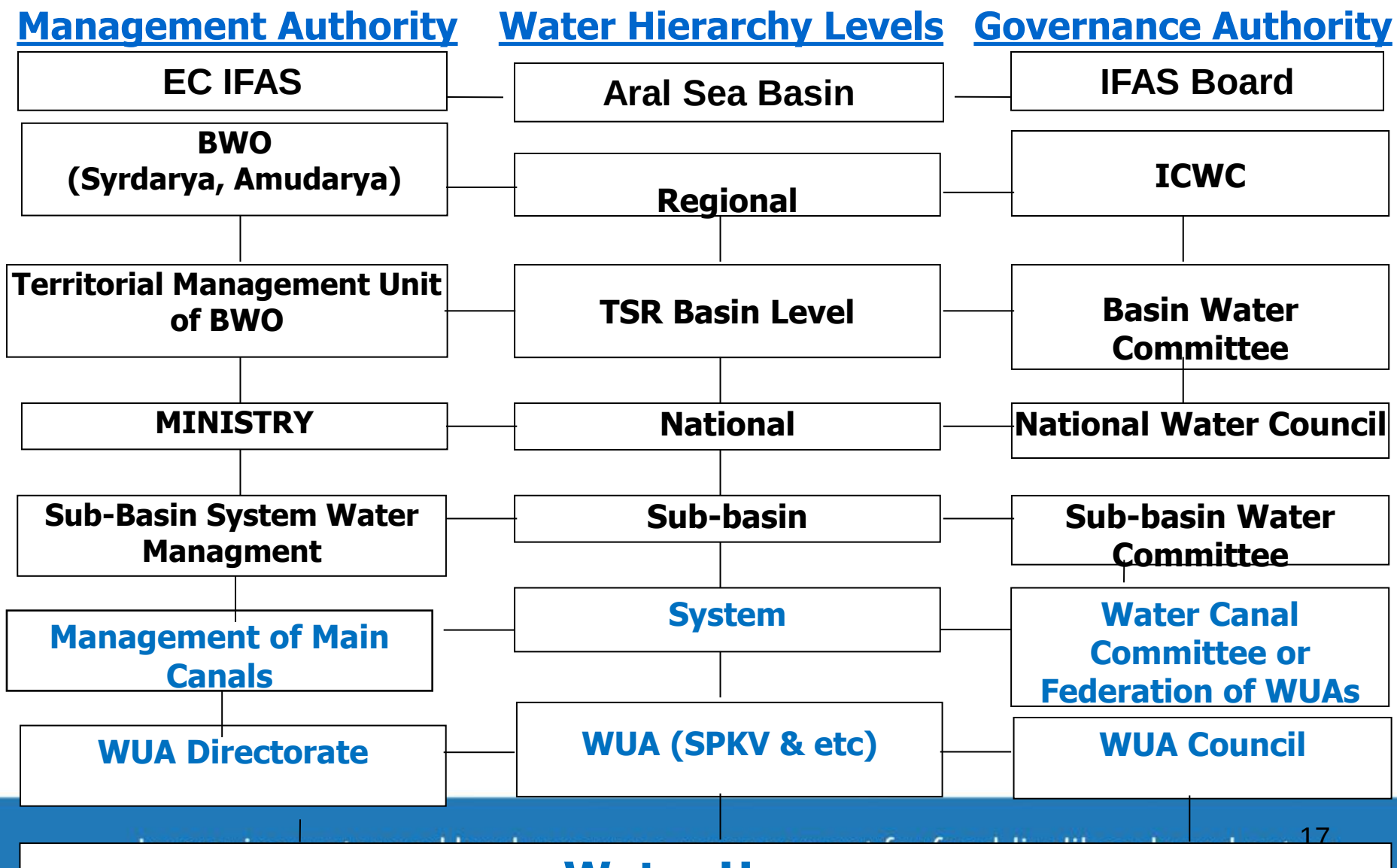
National Level (NL) Support

Kazakhstan: Water Code 2003; Law on Rural Water Users Consumer Cooperatives (SPKV) 2003;
Turkmenistan: Water Code 2004.

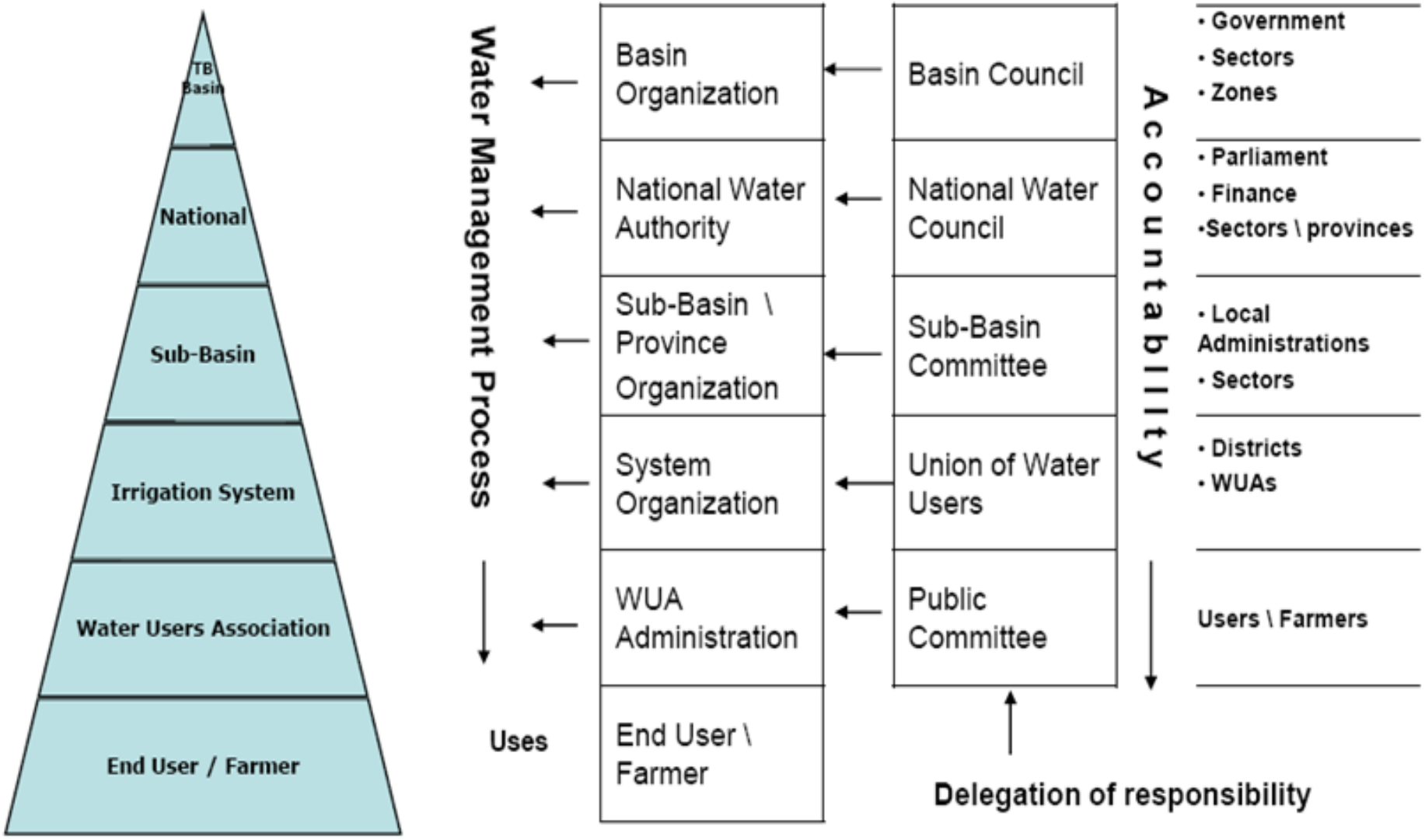
Water Hierarchy	IWRM principles	Kyrgyz Republic: WUA Llaw (2002); Water Code (2005), etc	NL support	Tajikistan: WUA Law (2006); Water Code (2008) & etc	NL support	Uzbekistan: Law on Water and Water Use (1993) plus amendments on Law (2009);	NL support
Sub-basin	Hydrographization		+		Under process		+
	Public Participation		Not impede		Under process		-
	Integration of stakeholders		Not impede		Not impede		Not impede
Irrigation System	Hydrographization		+		-		+
	Public Participation		-		-		-
	Integration of stakeholders		Not impede		Not impede		Not impede
WUA	Hydrographization		+		+		+
	Public Participation		+		+		+
	Integration of stakeholders		+		+		+

Source: IWRM-FV project

Governance and Management Bodies in different levels of water hierarchy in CA

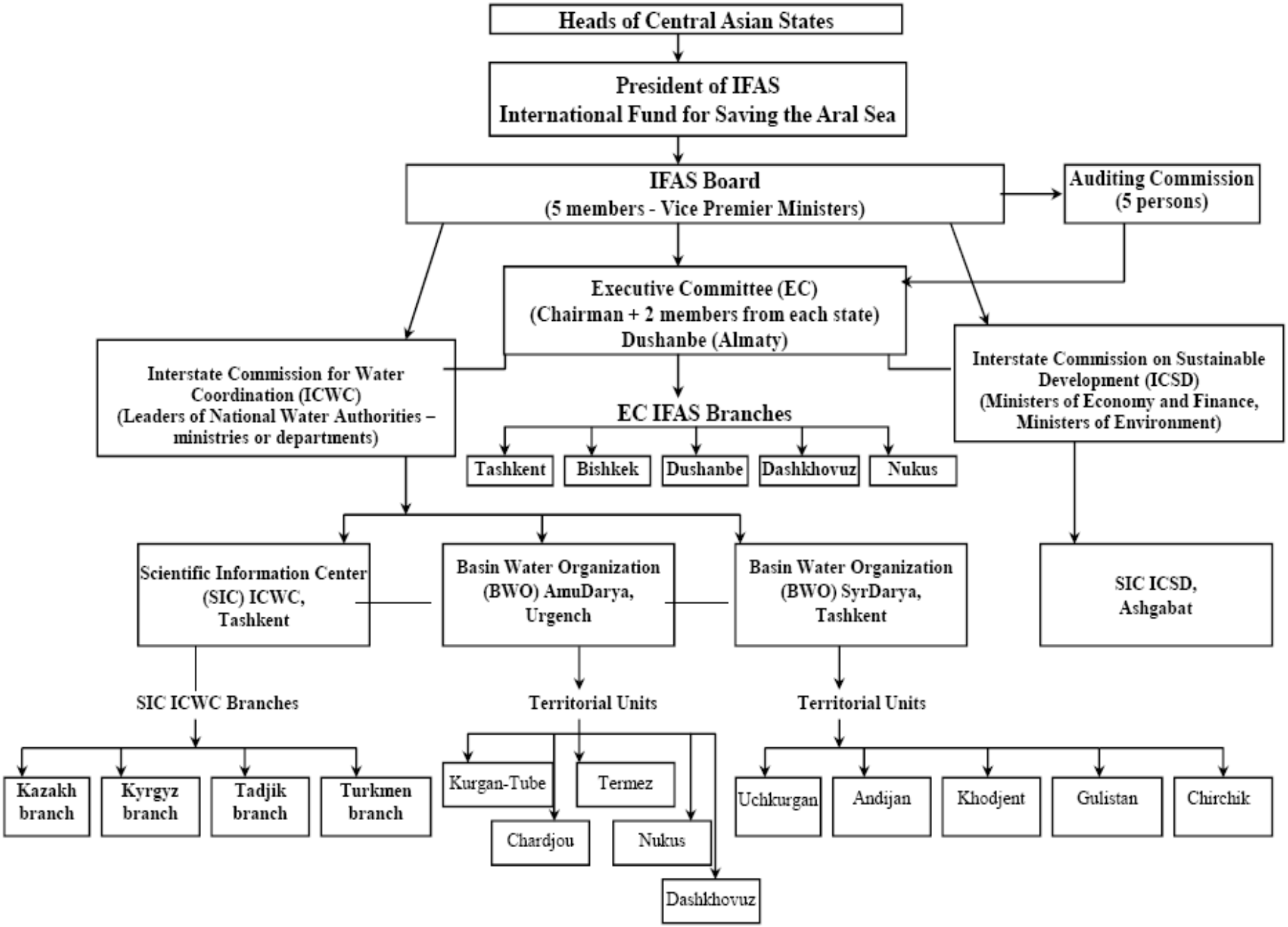


Institutional Arrangements and Public Participation



Source: IWRM-FV project funded by SDC

RECENT INTERSTATE INSTITUTIONAL STRUCTURE



Management Instruments

- UNECE Conventions;
- OECD instruments;
- National IWRM and Water Efficiency Plan for Kazakhstan 2008 – 2025. – UNDP;
- Guidelines for IWRM principles introduction for Main Canal and WUAs. – SIC & IWMI;
- Technologies and Recommendation for WP;
- Road Maps for IWRM introduction;
- Manuals on O&M ADB, SDC, WB and etc.

IWRM-FV & WPI project impact logic

Overall Objectives

-Securer livelihoods > reduced poverty
-Environmental sustainability
-Social harmony > less conflicts

More effective and equitable water use

Specific Objectives

IWRM

Institutional/ governance

Technical/ management

-Institutional arrangements
-Government policies and laws

-Irrigation system management
-Productive water use

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Key messages

Effectiveness of WRM through introd-n of IWRM:

- Improvement & reorganization of institutional structures;
- Achievement participatory & demand oriented water allocation;
- Adequate, transparent and equitable manner water distribution;

Improvement of Water productivity through effective organization of water mgt at plot level

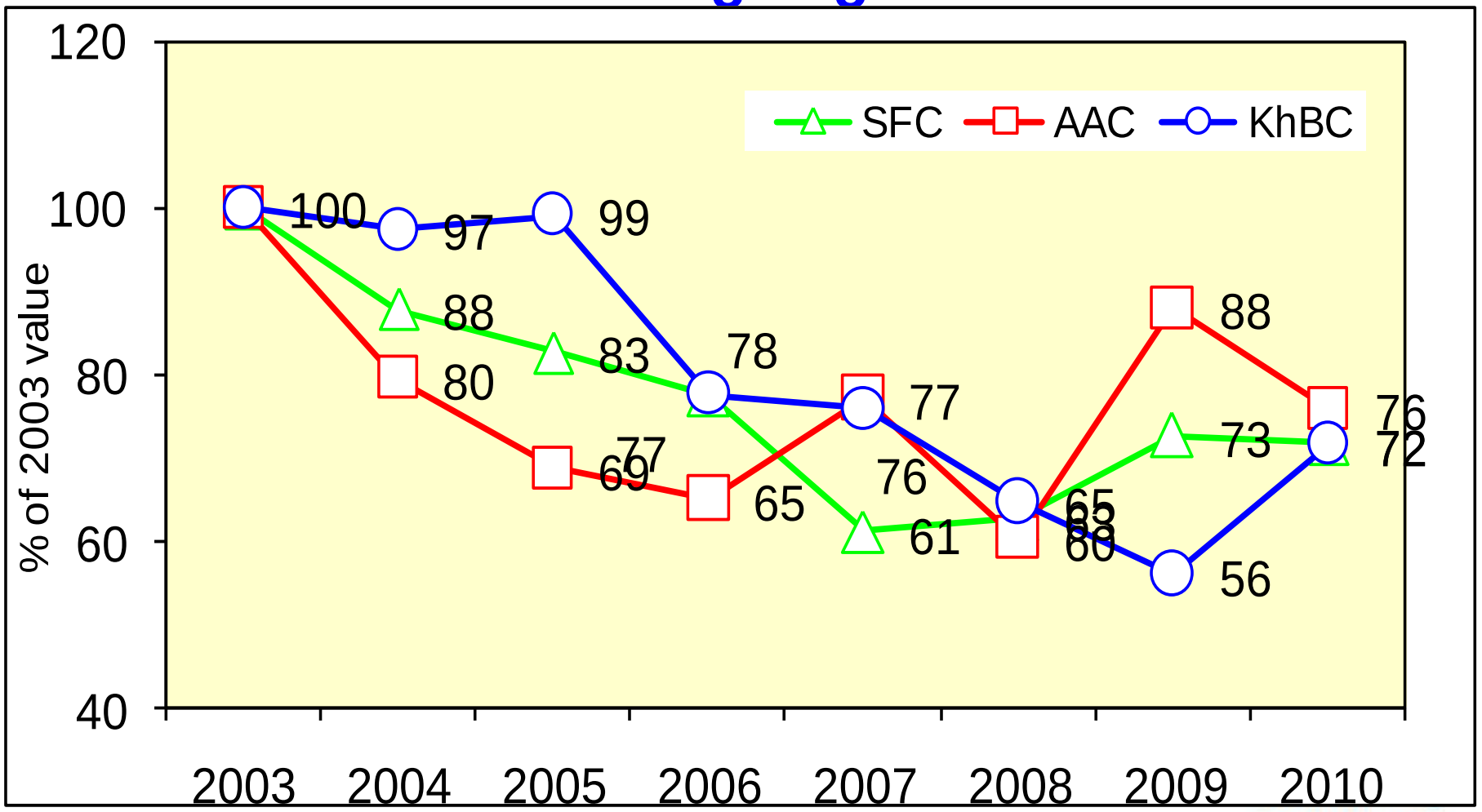
Results:

- ✓ Increase of irrigated agricultural productivity, average 25-30%;
- ✓ Average profitability per ha increased up to 400 $/ha from 270 in demo plots;
- ✓ Since 2003, approximately 200 mln m3 water were saved.

Dynamic of water use in IWRM pilot area

Pilot canals	Indicators	Unit	2004	2008	2009	2010	fall/growth as compared to 2004, %		
							2008	2009	2010
SFMC (UZB)	Irrigated area	Th.ha	105.1	93.2	107.5	108.5	-11	2	3
	Water delivery	Mm^3	912	660	765	754	-28	-16	-17
	Unit water delivery	Th $.m^3/ha$	8.7	7.1	7.1	6.9	-18	-18	-20
KHBC (TAJ)	Irrigated area	Th.ha	8.1	8.5	8.6	8.7	4	6	7
	Water delivery	Mm^3	113	75	65	83	-34	-42	-26
	Unit water delivery	Th. m^3/ha	13.9	8.8	7.6	9.0	-37	-46	-35
AAC (KYRG)	Irrigated area	Th.ha	8.1	8.1	8	8	-1	-2	-2
	Water delivery	Mm^3	65	49	73	63	-24	12	-4
	Unit water delivery	Th. m^3/ha	8	6,1	9,2	7,9	-24	15	-2

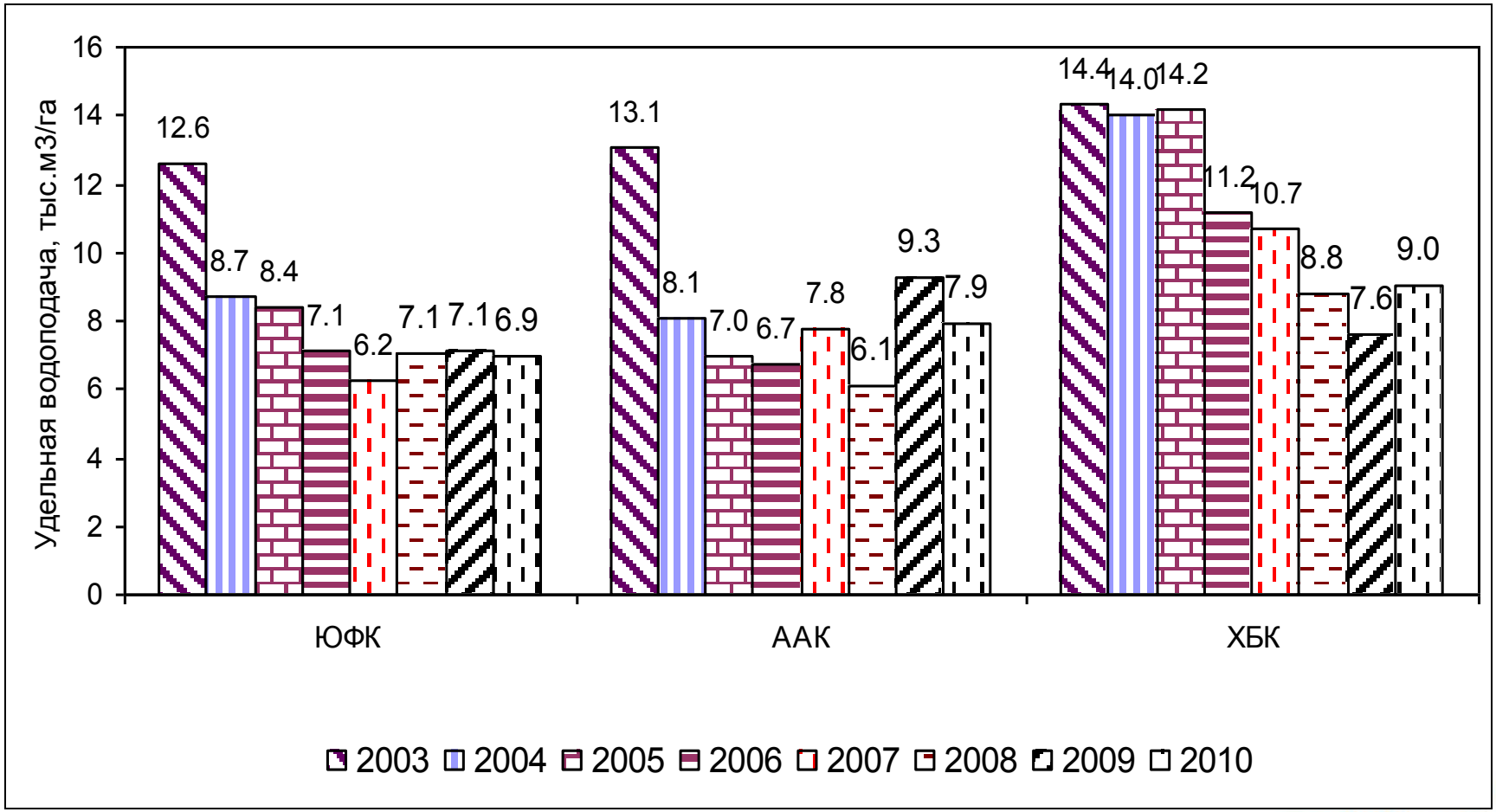
Impact of reorganization – less water intake at the head gate of pilot canals during vegetation



Source: IWRM-FV (Phase IV) project

Results of project interventions

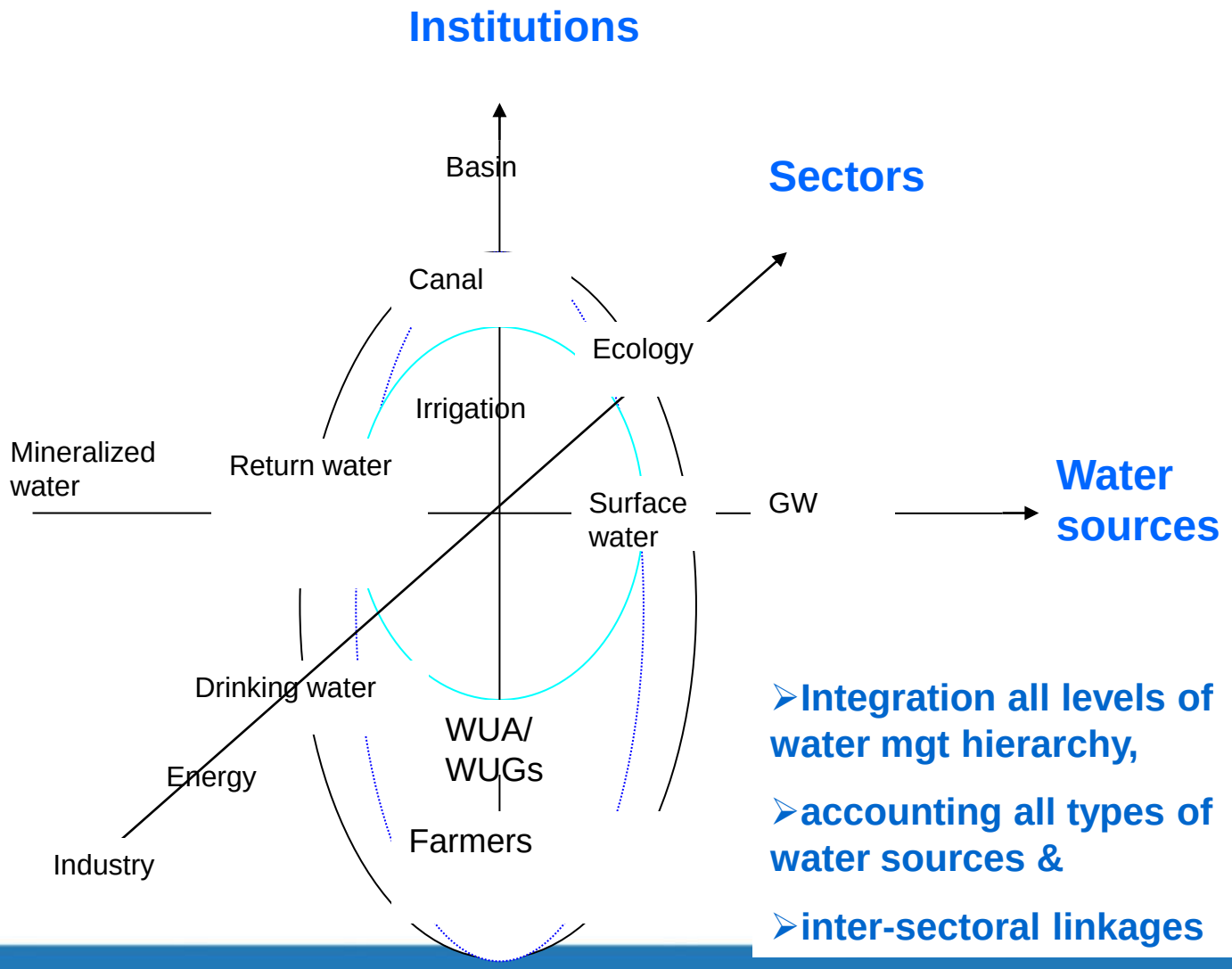
Specific Water supply per ha in 3 main canals, 1000м3/ha



Further Actions & Research Activities

- Achieve acceptance and IWRM implementation fully on national level and move to basin level;
- Financial sustainability of IWRM organizations: pricing, right tariffs, second crop, ability & willingness to pay?
- Roles & Responsibilities of newly created IWRM organizations & interaction btw new & old organizations;
- Optimum WUA model (land reform, farm extension);
- Legal base for organizational, financial & economic aspects of IWRM in each country (enabling env-t);
- Established adequate links (legal, financial, technical) between levels of water hierarchy starting from farmer;
- Questions of allocating water in equitable & reliable manner & systemized farmer knowledge improvement.

Challenge and Opportunities: integration of three axis



- **Integration all levels of water mgt hierarchy,**
- **accounting all types of water sources &**
- **inter-sectoral linkages**

THANK YOU FOR YOUR ATTENTION!

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