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Central Asia Regional Water Information Base: Portal and Information System

Brief progress report
on CAREWIB Phase 1:
December 2003 – December 2006

Tashkent 2007

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Introduction

Water resources management in transboundary river basins involves multifaceted interactions among various stakeholders at all levels of water management hierarchy and requires a shared vision of sustainable water resources management and development in Central Asia.

Despite the overall deterioration of the institutional, human and technological factors, various national and regional organizations continued to accumulate and process large amounts of water-environment-related data. Examples are regional BWOs, national nature protection and statistical organizations, natural resources management structures, sectoral agencies, research institutes, national water management authorities, NGOs and representatives of such regional and international organizations as IFAS, ICWC, UNDP, and the World Bank.

In this context, the development of a regional information exchange system became one of the most important components of the efforts to improve water resources and ecosystem management at the regional, national and province levels. ICWC has given considerable attention to the use of many tools available in the region, which facilitate information exchange among various water stakeholders and are suitable for different settings and types of people.

The application of all IWRM tools available by 2003 showed that more advanced technologies and sophisticated methods of communication between water stakeholders were needed – such as a special interactive web-based *Basin Information System*. Such a system with constantly updated information can be used to identify the best management options for specific conditions, tasks, planning zones in line with overall river basin management goals and targets. It was also acknowledged expedient to introduce an interactive Geographical Information System (GIS) designed for use within agencies or for targeted partners in a water management context. *SDC - being an active promoter and initiator of implementing IWRM principles in the Aral Sea basin – decided to support SIC ICWC to develop work along these lines in collaboration with the UNECE and UNEP/GRID-Arendal Office in Geneva. As a result the Central Asia Regional Water Information Base (CAREWIB) Project was launched in December 2003.*

Despite the complexity of the current socio-economic situation in Central Asian countries, water resources use and management at both on-farm and irrigation system/basin levels are undergoing positive changes, quickly adapting to current developments, and meeting complex challenges of the current transition to a market economy. By enhancing information exchange in the water sector, the CAREWIB Project has undoubtedly contributed to this favorable development.

Based on the good will and mutual understanding on the part of all ICWC members, CAWater-Info Portal and Information System (IS) have been created during Phase-1 resulting in unique information products that have no analogues in Central Asia.

CAWater-Info Portal

Structurally, the Portal consists of “central” CAWater-Info website (www.cawater-info.net), a group of official websites, a group of websites of projects, on-line database and knowledge base. In addition, traditional services such as daily updated news, calendar of events, forum and so on are available on the portal.

Central website of CAWater-Info Portal

CAWater-Info



Official websites



ICWC



SIC ICWC



TC ICWC

Websites of projects

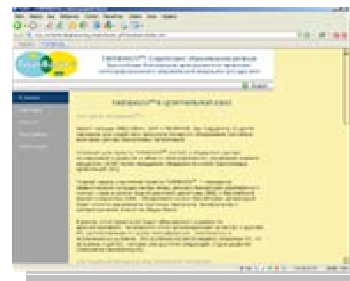
INFO FP6 EU-CA Project



Rivertwin Project



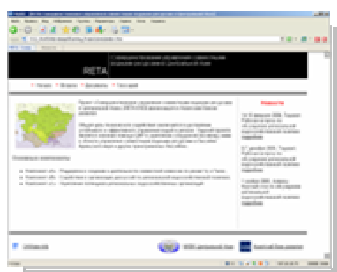
TWINBASIN^{xn} Project



Aral Sea Basin Donors



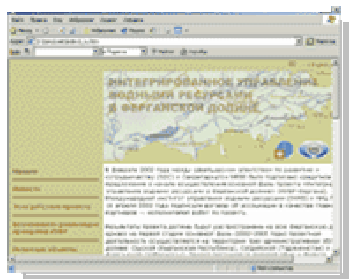
ADB RETA Project



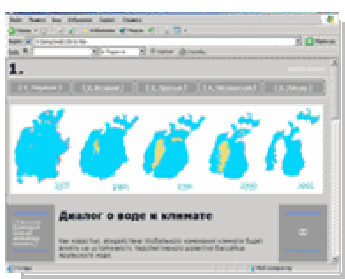
Gender and Water in Central Asia



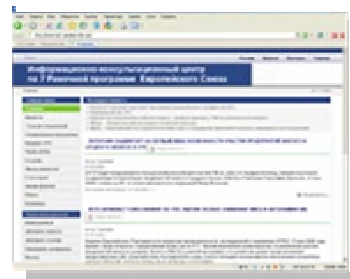
IWRM-Fergana Project



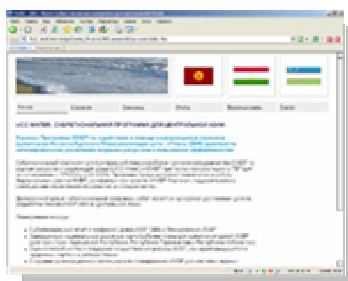
Dialogue on Water and Climate



Towards to the EU FP7

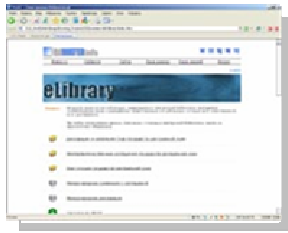


UCC-Water Project

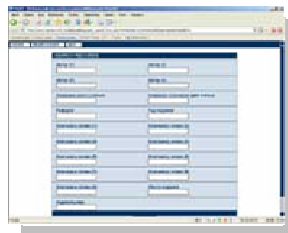


Knowledge base

E-Library



Bibliographic database

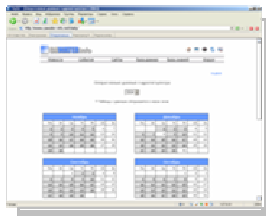


Glossary



Database

Uzhydromet's data



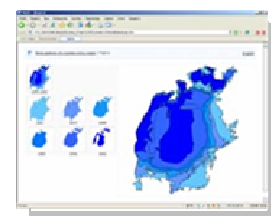
Data of
BWO Amudarya



Data of
BWO Syrdarya



Database of
the Aral Sea



Rivers of Afghanistan: database

In the middle of November 2006, over 500 people visited Portal websites every day.

The overall scheme of information exchange and generation shows that in addition to wide current and basic information exchange with correspondents' and users' cells in the five Central Asian states, a considerable part of informational flow is formed owing to receiving materials from various organizations and projects as well as translations and exchange of documents obtained from foreign and international organizations – constant partners of SIC ICWC.

To attract a wider Russian-speaking audience to the activities of international non-governmental organizations, a section titled "Activities of international organizations" has been launched on the portal. The project staff has developed and maintains the websites of the World Water Council and Asia-Pacific Water Forum. Websites of the International Network of Basin Organizations (INBO), International Commission on Irrigation and Drainage (ICID) are planned.

It is planned to launch in early 2007 a similar section “Activities of regional organizations”, in which information on IFAS, EC IFAS, SIC ICSD and others will be available.

In parallel to the maintenance of the Web Portal, the project staff produces a number of periodical publications, reports and monographs and widely disseminate them in both electronic and printed forms.

Information System CAREWIB on Water and Land Resources

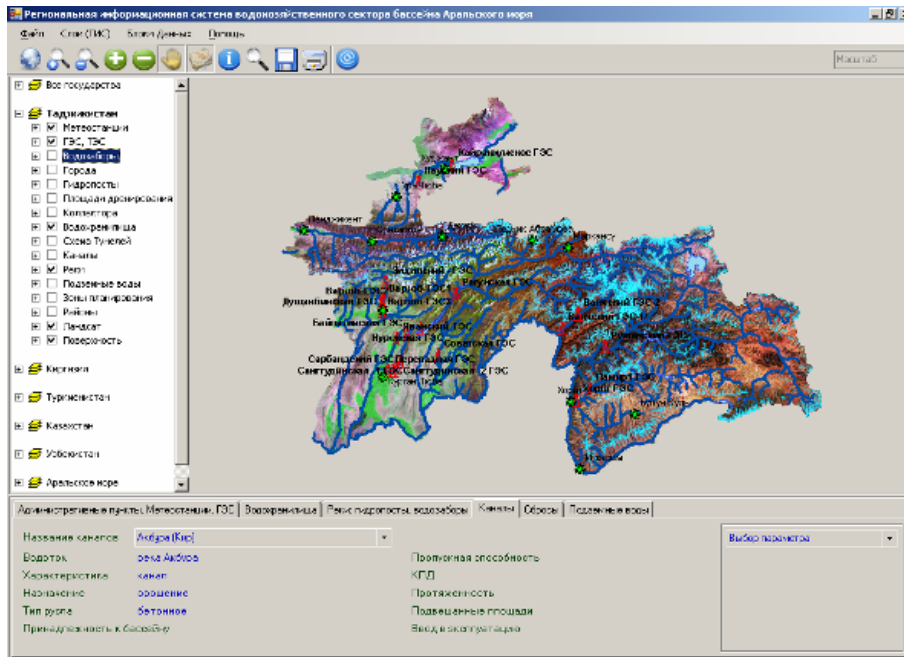
During two and a half years of the Project implementation, by mid-2006, the regional system of information support became fully functional and can at present provide decision-makers, stakeholders and a broader public with timely, regular and relevant information. The information includes the most part of water management issues, water resources and other water-related problems such as hydropower and environment, as well as measures undertaken to achieve sustainable water resources management.

The regional Information System on water and land resources in the Aral Sea basin is mainly designed for supporting decision-making in water sector in Central Asia.

The main objective of the Information System is to develop a common system for accounting land and water resources in the Aral Sea basin capable to assess different aspects of the efficiency of their use and prediction that will facilitate sustainable management and control of different water resources use

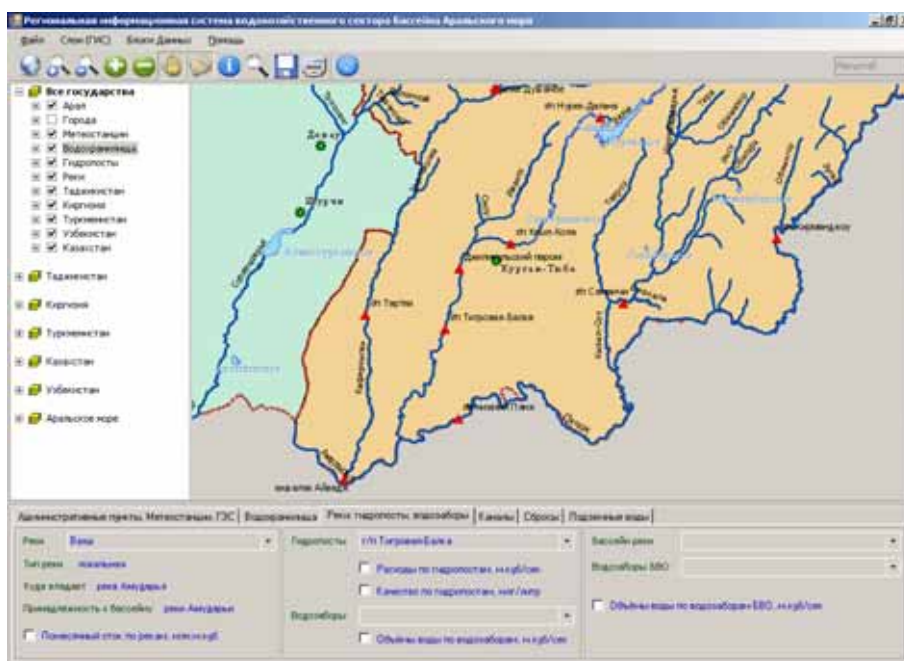
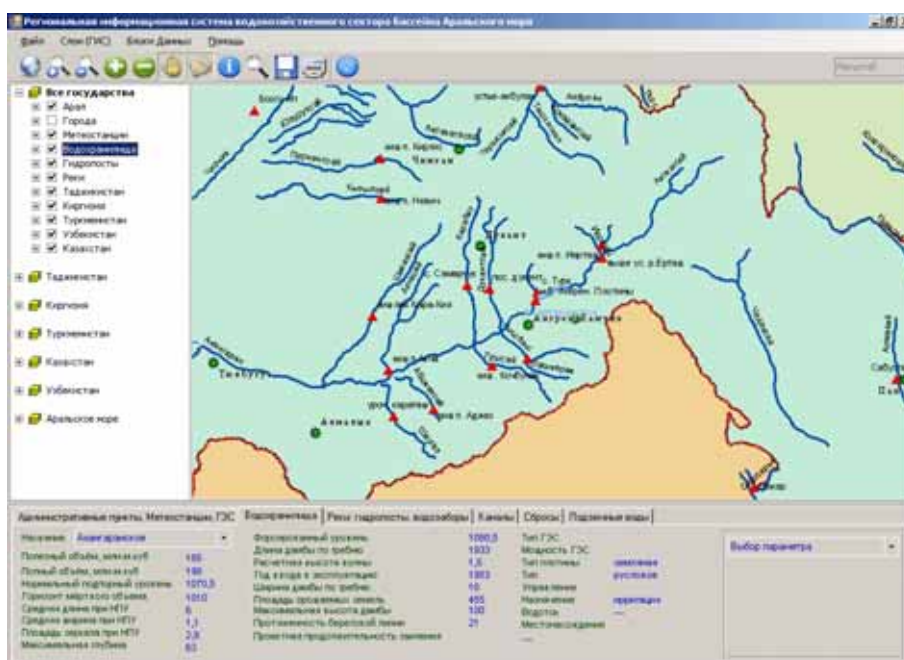
The Information System developed by the project personnel in collaboration with BWO and water management organizations in the basin is a set of software and hardware linked to a database that enable to effectively keep information search, receipt, storage, protection, processing and transmission using specially developed methods.

The existing DB provides governmental authorities, ICWC bodies, ministries and agencies in ASB with reliable water-related information (land resources, water-power information, economics). While augmenting the CAREWIB IS database, the project correspondents have gathered and presented data on 87 parameters for the period from 1980 to 2005. Altogether the IS includes more than 150 parameters (Appendix 2).



The project personnel have developed GIS maps for each of CAR. GIS block is directly connected with the DB making it possible to visually identify a specific object (river, canal, water intake, gauging station, hydropower plant, heat power plant, etc), look through information related to a selected object on the map. The foundation has been laid for future work with application of GIS methods: a digital elevation model has been elaborated for Uzbekistan, South Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan.

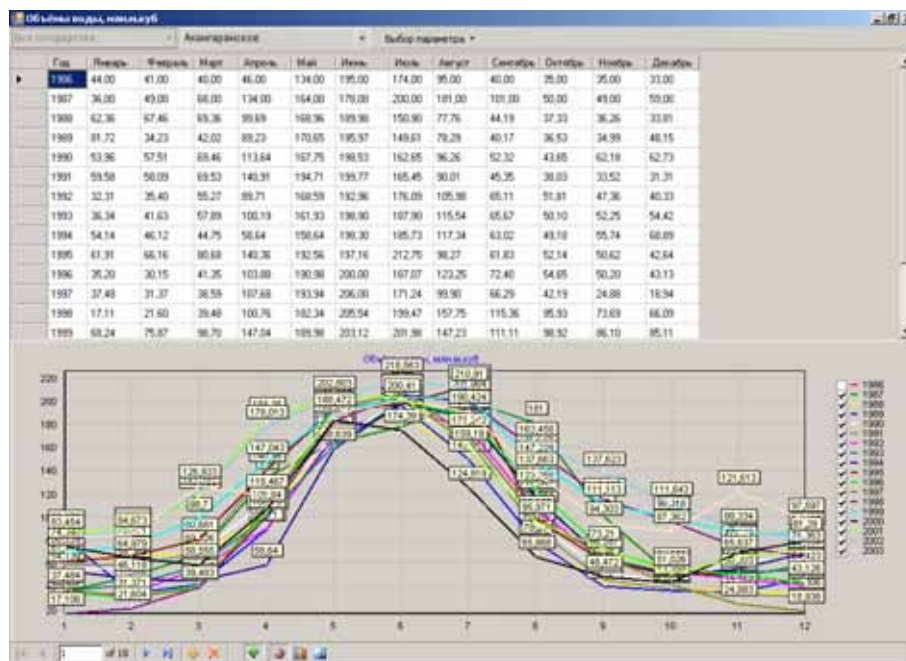


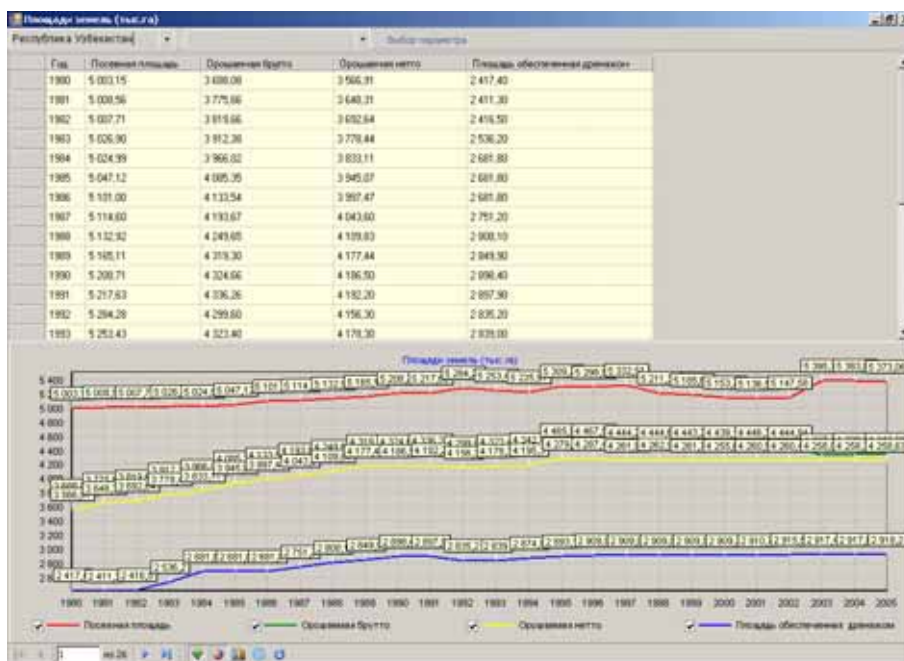


Component “Analysis” contains statistic data on actual water consumption in CARs for several years on the following items:

- Water withdrawal:
 1. Total water withdrawal
 2. Amudarya river basin, out of that by limits – BWO
 3. Syrdarya river basin, out of that by limits – BWO
- Water withdrawal per source:
 4. Rivers and reservoirs
 5. Return flow reuse
 6. Groundwater
 7. Other sources
- Water consumption:
 8. Total water consumption.

9. Irrigated agriculture
10. Drinking and domestic water supply
11. Industry
12. Environmental requirements
13. Other users
- Water disposal:
 14. Total water disposal
 15. Water disposal into rivers and reservoirs – return flow
 16. Water disposal into lakes and depressions
 17. Return flow reuse
- Coefficients:
 18. Consumption coefficients: irrevocable water consumption characteristics (relationship of difference between flow use and disposal to water withdrawal).



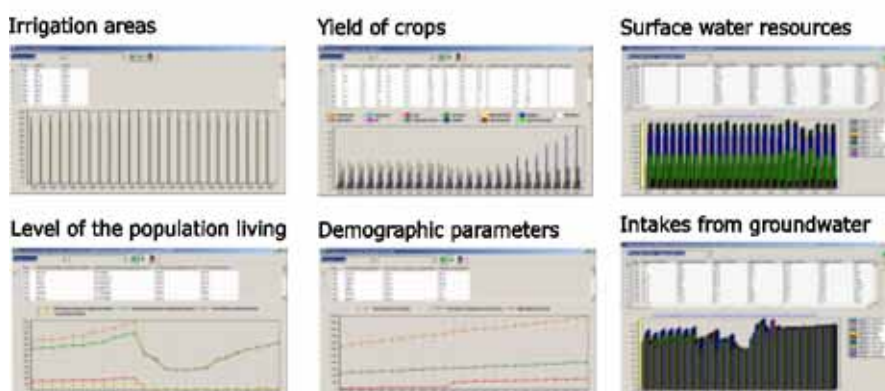
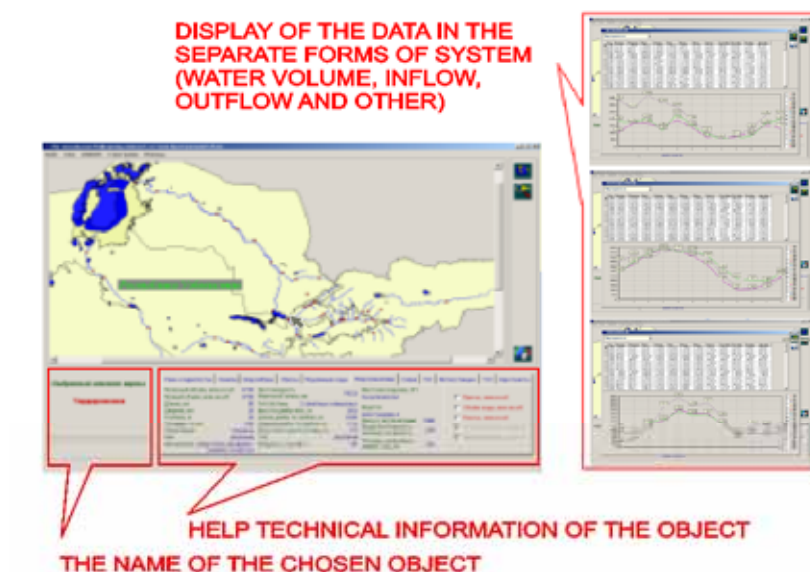


Component “Water objects” displaying reference data on water objects in the Aral Sea basin has been linked to the Information System:

1. Major reservoirs: location (district), effective and full capacity, full supply level, dead storage level, surcharge storage elevation, average length at full supply level, average width at full supply level, maximum depth, water surface area at full supply level, management, type, function, shoreline length, dam type, maximum dam height, dam crest length, dam top width, design wave height, hydro power plant type, hydro power plant capacity, watercourse, commissioning, projected sedimentation duration, projected sedimentation, area of irrigated lands;

2. Groundwater deposits: location, area, operational supply, number of water intakes (wells), design flow, % distribution among consumers, drainage modulus, average groundwater depth, water salinity;
3. Administrative points: location, area, population (1980, 1990, 2000);
4. Collector-drainage network (main collectors): function, where runs into, list of the existing control stations, list of measured parameters, frequency of measurements per parameter, drainage area, flow capacity at the head, design flow at the head, availability of treatment facilities, % of treatment, length, belonging to basin;
5. Major rivers: type, where runs into, starting gauging station, end gauging station (outlet), list of the existing gauging stations, belonging to basin;
6. Main canals: function, where runs into, starting gauging station, end gauging station, list of the existing gauging stations, performance index, flow capacity at the head, design flow, channel type, belonging to basin;
7. Head intakes: location, type, management, control, watercourse, distance from watercourse creek, consumer, maximum flow capacity, design flow, commissioning;
8. Gauging stations at rivers and main canals: location, type, automation, data transmission system, watercourse, distance from watercourse creek, list of measured parameters, frequency of measurements per parameter, commissioning;
9. Drainage areas per drainage type: location, drainage area, drainage network density (1980, 1990, 2000-2005);
10. Hydro power plants location, type, function, installed capacity, guaranteed capacity, yearly projected output, design pressure, maximum pressure, design flow, maximum flow, number of generating units, performance of generating units, type of turbines, watercourse, commissioning, net cost of 1 kWh of electric power;
11. Heat power plants: location, type, function, installed capacity, guaranteed capacity, yearly projected output, type of consumed fuel, number of generating units, performance of generating units, type of turbines, commissioning, net cost of 1 kWh of electric power;
12. Weather stations: location, elevation, list of measured parameters, frequency of measurements per parameter, commissioning.

Example of display of the information by the chosen object (reservoir)



Though the Information System is presently primarily a tool for management and cooperation within the framework of ICWC, part of the information from the Information System is accessible through CAWater-Info Portal for free use.

Thus, forecasting information from UzHydromet and data from BWO “Amudarya” and BWO “Syrdarya” on flow and actual water withdrawals per ten-day period is placed on the portal every day. There is also a database on the Aral Sea at the portal.

In future it is expected that DB together with a set of models being developed and already working will enable each of the participants – water management, planning and other authorities in the countries, BWOs – to predict their own options for future development and regimes of water releases and allocation in the current context, in order to assess the impact of their own actions on other countries and separate planning zones.

At the same time, there is an opportunity to permanently assess water use efficiency for all participants in joint management and specify volumes of non-productive water withdrawal.

Regular information and forecasting on the status of natural water resources, comparison of day-to-day forecast and actual data on water resources use and channel balances for major rivers in the region will make it possible to improve the quality of their management, and generates mutual trust, spirit of solidarity and joint responsibility between countries and sectors of economy.

Outreach

During the project implementation, the publication of ICWC Bulletins, collected articles with general information, reviews and on legal issues, regularly edited by SIC ICWC, has been continued, and issuance of a new series - Publications of the ICWC Training Center – has been organized (since January 2004). All publications of SIC are available for free downloading in PDF from the Electronic Library (www.cawater-info.net/library/).

The publication and placement of “ICWC Press-Releases” on the SIC ICWC website, and distribution via e-mail among subscribers has been continued.

Specially prepared advertising booklets of the Project have been distributed throughout Central Asia among potential information users and partners. The booklets have also been distributed among participants of international conferences and workshops, including the 4th World Water Forum (Mexico), World Water Week (Sweden) and seminars organized by ICWC Training Center.



The publication of a new periodical - CAWater-Info-News - in Russian and English has been started. It covers all updates at the portal websites. A paper version of the bulletin is distributed among water organizations, ministries and agencies in Central Asia, as well as among embassies of foreign states accredited in Uzbekistan. An electronic version of the bulletin is available for downloading at the website and distributed via e-mail among subscribers.

The publication of new series – “CAREWIB Project Publications” and “Innovations in water management” - has been started. The latter is published on the instruction given at the 42nd ICWC meeting with a view to regularly informing ICWC members and water management organizations in ASB about all recent achievements and innovations in the world.



Advertising booklets of the Project and demonstration CDs were distributed at international conferences and workshops.

A series of posters advertising the portal and IS has been prepared and distributed.



By request of WWC and INBO, advertising booklets of these organizations (with CAWater-Info logo) have been translated into Russian, developed and distributed.

Project development activities

The general objective of Project Phase-2 is to develop an official tool for decision support in water resources in the region (Portal + IS), which 1) answers the current requirements, is trustworthy and user-friendly, and meets practical needs of users; 2) is politically recognized and officially recommended; 3) facilitates mitigation of water-environmental tension.

The further work on promoting the Portal and improving the Information System should be carried out in coordination with activities of ICWC and IFAS, mainly through national agriculture / water resources ministries and representative offices of IFAS in the countries based on partnership and cooperation.

In Project Phase-2, more emphasis will be put on the development of analytical tools. The analysis of water use trends in the region will make it possible to identify trends forming in water and agricultural sectors in order to assess the most important places, which can further exert influence on the economy of the countries and environmental safety.

The availability of a set of data (on economy, water and land resources) will enable to provide an insight into processes taking place not only in specific water bodies, but also in the whole watershed. From this perspective, it would be important that data on all kinds of water resources (transboundary, ground, return water, small watercourses) in the region would be available in the database. Unfortunately, scattered information from different agencies now can not give such an insight.

From this point of view, it is supposed to solve the following tasks in Phase-2:

1. Enhance information scope and coverage of CAREWIB Portal and Information System including strengthening mechanisms for data collection

This task is divided into 1a – Further development of the CAREWIB Portal and 1b - Further development of the information system. During Project Phase-2 these two main CAREWIB components will be further developed and the links between them improved.

The project outcome is that the systems contains and provides authorities and the public with reliable up-to-date information on key water, land and economic parameters for all major water bodies and watersheds, and that regular and sustainable exchange of information is in place between principal holders of such information and CAREWIB.

2. Production and dissemination of publications and other types of information

The Project will continue the production and dissemination of publications and other types of information - in hard copy as well as digital formats - on water and ecological issues for specialists as well as a broader public.

The desired outcome is that priority user groups receive regularly CAREWIB information through the Internet and in other formats, and use it in water management, planning and awareness raising.

3. Capacity building in water management organizations and among other users and integrate CAREWIB into decision-making processes of national, regional and international bodies as well as in public debate

The task is to develop CAREWIB horizontally and vertically at national level, develop tools designed to integrate CAREWIB into decision-making processes of national, regional and international bodies as well as into the public debate. The desired outcome is that major regional (in particular IFAS, ICWC, ICSD), national and international bodies, public groups active in water & environmental policy refer to and use CAREWIB information in their decision-making and debate.

The Project will lay a foundation for national Information Systems by transmitting them a collected database on countries as a whole and provinces, a common methodological basis for national Information Systems of all CARs and initial training on the use of CAREWIB interface, methodology and experience to create such databases.

Efforts will be made to prepare water experts to use the opportunities created by CAREWIB better. The task is capacity building in water management organizations and among other users. This will first consist in establishing frameworks for national water databases in the five countries in the region. At the same time, priority user groups will be aware of CAREWIB contents, capacities and accessibility, and able to use its information in their day-to-day work. Workshops will be organized to train experts of national water management organizations (ministries, provincial water management authorities, research and educational institutes), NGOs, WUAs and other stakeholders on the use of the IS and Knowledge Portal in their daily work.

4. Ensure long-term political and financial support to CAREWIB

Project Phase-2 will be used to develop a solid political support and a sound economic basis for CAREWIB. The desired outcome is that adequate resources are available for sustaining CAREWIB in the long-term. This task is also linked to tasks 1, 2 and 3.

Establishing and developing solid cooperation and links with important actors inside and outside the region will be a basic task in Phase-2. Active and constructive cooperation with IFAS and ICWC through representation offices of IFAS in the countries and national agriculture / water management ministries is essential as is developing cooperation with other relevant authorities in Central Asia.

According to the draft Agreement on the Establishment and Functioning of National, Basin and Regional Databases on Integrated Water Resources Use and Protection in the Aral Sea Basin signed by ICWC members at the 44th ICWC meeting (Ashkhabad, 30-31 March 2006), one important avenue to sustain the project is to improve access to information on water resources, water management and the environment in Central Asia at regional, basin and national levels through starting establishment of national Information Systems closely linked to regional, basin and national databases.

Project Phase-2 will further aim to identify additional sources of funding to establish national databases, and fund raising from the commercial market by searching for partners interested in advertising on the website.

Principal Project results

1. Regional Knowledge CAWater-Info Portal must facilitate access to information on water management and ecology in the Aral Sea basin, thus enabling users to interact with each other, relate information with common collective understanding, system of spiritual values and experience. The Portal will facilitate collection, structuring and transferring of information obtained from various sources and systems (internal and external) to end users and ensure support to the team spirit in using information and knowledge, promote new

knowledge forthcoming in the process of interaction between people. Unbiased decisions on overcoming of emerging crisis situations will be made through broad discussions.

2. Information system for decision making and keeping records, data collection and use, analysis and modeling of water and land resources in the Aral Sea basin. Based on the regional IS, annual analytical reports will be produced and submitted to ICWC members. In addition to the development of the information system into an official analytical and record keeping system for ICWC, efforts will be made to broaden the access to the IS.

3. Production and dissemination of publications on water sector and environment in Central Asia throughout the region for public at large.

4. Capacity building of province water management organizations. Potential of these organizations will be augmented owing to involving them into the sustainable regional network of correspondents actively interacting between each other.

5. Provision of conditions for a sustainable continuation of the Project-activities will be an important result to be achieved by further developing contacts and relations with partners meant to play an important role in future co-funding and information provision.

Appendix 1. CAWater-Info Portal structure

INFORMATION BLOCK

News of Central Asia

Digest of daily updated information materials; covers the following subjects: water resources, environment, energy, socio-economic development, etc.

www.cawater-info.net/news/

Press Releases of ICWC

On-line archive of Press Releases of ICWC published since 2002.

<http://sic.icwc-aral.uz/releases/>

CAWater Info | News

An official bulletin of the CAWater-Info portal published under the ‘Central Asia Regional Water Information Base (CAREWIB)’ Project.

www.cawater-info.net/news/carewib-news.htm

Reviews and analytical articles

Reviews and analytical articles on the portal subjects.

www.cawater-info.net/news/review/

News: Afghanistan

News section covering the situation with water resources use in Afghanistan.

www.cawater-info.net/news/afghanistan/

Facts about water

In the section, materials from the UNESCO Water Portal relating to water resources use in different human activity areas translated into Russian are available.

www.cawater-info.net/news/water/

New technologies

The section of the portal that covers new developments in water resources and agriculture; includes an archive of electronic versions of “Innovations in water management” bulletin.

www.cawater-info.net/news/technology/

Calendar of events

Calendar of seminars, symposiums, conferences, etc.; includes plan of operation of the ICWC Training Center.

www.cawater-info.net/events/

Catalogue of water and environmental sites

A set of sites on water and environmental subjects carefully selected by hand and sorted out by subjects.

www.cawater-info.net/sites/

Calls

Announcements about calls, in which scientists from Central Asia can take part.

www.cawater-info.net/calls/

DATABASE**Database**

Includes useful information: addresses of water and environmental organizations in Central Asia (including NGOs), brief information on the Aral Sea basin states, a set of links to external (outside) databases and other useful information.

www.cawater-info.net/bd/

Regional Information System

Description of the CAREWIB IS

www.cawater-info.net/careweis/

On-line data from UzHydromet

Daily water discharges; daily water levels; reservoir operation modes; average ten-day water discharges; average ten-day reservoir water balances; ten-day channel water balances.

www.cawater-info.net/daily/

On-line data on discharges per water intake in the Amudarya river basin

On-line database on actual ten-day water withdrawal in the Amudarya river basin. The section also contains general information on the basin: basin morphology; water resources; water-management structure; reservoirs and flow regulation; water requirements; losses along the channel.

www.cawater-info.net/amudarya/

On-line data on discharges per water intake in the Syrdarya river basin

On-line database on actual ten-day water withdrawal in the Syrdarya river basin. The section also contains general information on the basin: basin morphology; water resources; water-management structure.

www.cawater-info.net/syrdarya/

The Aral Sea Basin

General information: Location, geomorphology, landscape, climate; Water resources; Formation of the surface flow; Surface water resources quality; Lakes and depressions; Groundwater: reserves and use; Waste and drainage water; Dams and hydropower; Lands; Irrigated lands; Salinization and drainage; The Aral Sea basin in figures. History of the Aral Sea: from ancient times to the present.

www.cawater-info.net/aral/

Database on the Aral Sea

Map; precipitation; level; wind speed; water temperature; water mass volume; volume of water from river; relative humidity; evaporation from water surface.

www.cawater-info.net/aral/data/

Water resources of Afghanistan

Surface water; hydrological study; surface water resources; hydrogeology and groundwater

www.cawater-info.net/afghanistan/

Database on rivers of Afghanistan

Data on 16 rivers in Afghanistan
www.cawater-info.net/afghanistan/data/

The Aral Sea Basin Management Model

Description of the Aral Sea Basin Management Model (ASB-MM)
www.cawater-info.net/asbmm/

UNECE Environmental Performance Review

UNECE Conventions; Environmental performance reviews; Special programs.
www.cawater-info.net/unece/

Reports on the state of the environment of GRID-Arendal

Reports on the state of the environment of UNEP/GRID-Arendal
www.cawater-info.net/grida/

Donors of the Aral Sea basin

A site dedicated to donors of the Aral Sea basin (in English)
www.cawater-info.net/donors/

KNOWLEDGE BASE**Knowledge Base**

Contains processed knowledge structured by sections: Electronic Library of SIC ICWC; The publications of the month; Central Asian newspapers and magazines; Photolibrary; Thematic knowledge bases; Glossary; Bibliographic database.
www.cawater-info.net/bk/

Electronic Library

Information structured by sections: Declarations and Statements of the Heads of Central Asian States; Intergovernmental Agreements of Central Asian States; Constitutions of Central Asian States; International Conventions and Agreements; International Declarations; ICID Declarations; ICWC Agreements; International Water Law; National Laws on Water; National Laws on Land; Environmental Laws of the States of Central Asia and Caucasus; Aral and Priaralie; ICWC Bulletins; Reviews of SIC ICWC; Information Digests of SIC ICWC; Collected Articles on Legal Issues of SIC ICWC; Publications of the ICWC Training Center, Publications of GWP CACENA; Publications of ICC; Books; Articles/Reports; Abstracts; Leaflets; Maps; World Water Forums; CAREWIB Project's publications, Publications of EC IFAS; Publications of the IWRM-Fergana Project; Posters; Use of Library free of charge.
www.cawater-info.net/library/

The publication of the month

Information on released publications.
www.cawater-info.net/publications/

Central Asian newspapers and magazines

Catalogue of newspapers and magazines being issued by water agencies and organizations in Central Asia.
www.cawater-info.net/publications/magazines/

Photolibrary

Water objects of Central Asia.
www.cawater-info.net/photolibrary/

Knowledge Base “Impeller pump supply regulation”

The knowledge base contains generalized information on impeller pump supply regulation.
www.cawater-info.net/bk/pumps/

Glossaries

The Glossaries contain the main legal terms, definitions and notions used in international water law and water management.
www.cawater-info.net/bk/glossary/

Bibliographic Database

While creating bibliographic database “Land and water resources use in the Aral Sea basin”, the long-term experience of the Scientific-Technical Library of SANIIRI and Information-Publishing Division of SIC ICWC, as well as of the library of the ICWC Training Center being formed has been used; contains more than 2300 records.
www.cawater-info.net/biblio/

WEBSITES OF PROJECTS**Website of the RIVERTWIN Project**

RIVERTWIN: A Regional Model for Integrated Water Management in Twinned River Basins
www.cawater-info.net/rivertwin/

Website of the TWINBASINXN Project

TWINBASINXN: Promoting Twinning of River Basins for Developing Integrated Water Resources Management Practices
www.cawater-info.net/twinbasinxn/

Website of the UCC-Water

UCC-Water: Speedup of Integrated Water Resources Management – 2005 Objectives Implementation in Central Asia
www.cawater-info.net/ucc-water/

Website of RETA

RETA: Improved Management of Shared Water Resources in Central Asia
www.cawater-info.net/reta/

Website of the Information-Consulting Center for the European Commission’s Sixth Framework Program in Central Asia

Project “Establishment of Information-Consulting Center (ICC) for the European Commission’s Sixth Framework Program in Central Asia (INFO FP6 EU-CA)”
www.fp6.cawater-info.net/

Website of the Information-Consulting Center for the European Commission's Seventh Framework Program in Central Asia

Project "Establishment of Information-Consulting Center (ICC) for the European Commission's Seventh Framework Program in Central Asia (INFO FP7 EU-CA)"
www.fp7.cawater-info.net/

Website of Initiative "Gender and Water in Central Asia"

Initiative "Gender and Water in Central Asia" has been proposed by GWP CACENA, SIC ICWC and Network of Women Specialists in Water Resources (NetWwater) with a view to establish cooperation between organizations and individuals on gender perspectives.
www.gender.cawater-info.net

Website of Project "Dialogue on Water and Climate: Study of the Aral Sea Basin"

Materials from the study of climate impact on water resources in the Aral Sea basin are available on the website.
<http://dialogue.icwc-aral.uz/first.htm>

Website of the Project "Integrated Water Resources Management in Fergana Valley"

The website is dedicated to propagation of integrated water resources management in Central Asia in terms of one of the most important projects being implemented in the region in this field — "IWRM-Fergana".
<http://iwrn.icwc-aral.uz/>

"WATER WORLD"

The 4th World Water Forum

About the progress in preparation and results of the participation of Central Asian states in the 4th World Water Forum
www.cawater-info.net/4wwf/

Towards the 5th World Water Forum

About the progress in the preparation of Central Asian states to the 5th World Water Forum
www.cawater-info.net/5wwf/

Activities of international organizations

This section is dedicated to international non-governmental organizations with a view to broader involvement of Russian-speaking audience in their activities.
www.cawater-info.net/int_org/

World Water Council

About the activities of the World Water Council
www.cawater-info.net/int_org/wwc/

Asia-Pacific Water Forum

About the activities of the Asia-Pacific Water Forum
www.cawater-info.net/int_org/apwf/

OFFICIAL WEBSITES

Website of the Interstate Commission for Water Coordination in Central Asia

Contains information on the history of establishment and day-to-day activities of ICWC, brief information on all meetings, reports on the largest conferences with participation of ICWC, reference data (addresses, telephone numbers) of all ICWC members. Home pages of ICWC executive bodies such as BWO “Amudarya”, BWO “Syrdarya” and CMC ICWC are available at the site.

www.icwc-aral.uz

Website of the Scientific-Information Center ICWC

Contains information on SIC ICWC: regional activities, international cooperation, including activities of international organizations, projects, publications, reference data (addresses, telephone numbers) of SIC and its branches in Central Asian states.

<http://sic.icwc-aral.uz>

Website of the ICWC Training Center

Contains information on activities of the ICWC Training Center, including subjects of lectures, minutes of discussions and decisions.

<http://tc.icwc-aral.uz/>

Appendix 2. List of parameters in the Regional Information System on Water and Land Resources in the Aral Sea Basin

“LAND” BLOCK

Crop yields	Crop area
Gross crop harvesting	Irrigated areas
Distribution of areas under crops	Drained areas
Total length of collector and drainage network	Areas under perennial plants
Amount of drainage wells	Areas of forests, steppes, deserts, wetlands
Length of surface horizontal drainage	Areas of saline lands
Length of subsurface horizontal drainage	Distribution of areas by salinity degree

“ECONOMY” BLOCK

Population	Industrial output
Urban population	Foodstuffs
Birth rate	Nonfoods
Death rate	Gross agricultural production including crop production
Population migration	including cattle breeding
Number of labor resources including the employed in economy	Livestock population
Number of the unemployed	Livestock population, out of which cows
Population income	Sheep and goats
Per capita income	Meat production (in slaughter weight)
Population outlay	Milk production
Per capita outlay	Eggs
Average monthly wage	GDP
Average monthly pension	GDP per capita
Housing stock	Industry
Population housing	Agriculture and forestry
Number of pupils at general education schools	Construction
Number of general education schools	Transport and communications
Number of students at specialized secondary schools	Others
Number of specialized secondary schools	Cost of basic assets in water sector for every five years
Number of students at higher education institutions	Investment in maintenance of basic assets
Number of higher education institutions	Investment in development of basic assets
Number of museums	Number of operating personnel with higher education employed in water sector
Number of libraries	Number of operating personnel with secondary education employed in water sector
Number of physicians	
Number of hospital beds	
Sickness	
Number of nursing staff	
Number of medical services providing ambulatory care to population	

“WATER” BLOCK

Actual water withdrawal for irrigation
including small Amudarya basin
including Syrdarya basin

Water consumption in industry
Water withdrawals for non-irrigation needs
Collector-drainage flow to rivers and depressions
Return flow to Amudarya
Return flow to Syrdarya

Return flow to rivers
Consumption in domestic sector
Water withdrawals for non-agricultural
needs from groundwater sources

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