International Workshop and Seminar on UN-GGIM "The Data Ecosystem for Sustainable Development

Deqing, Zhejiang Province, China 17 - 22 October 2019

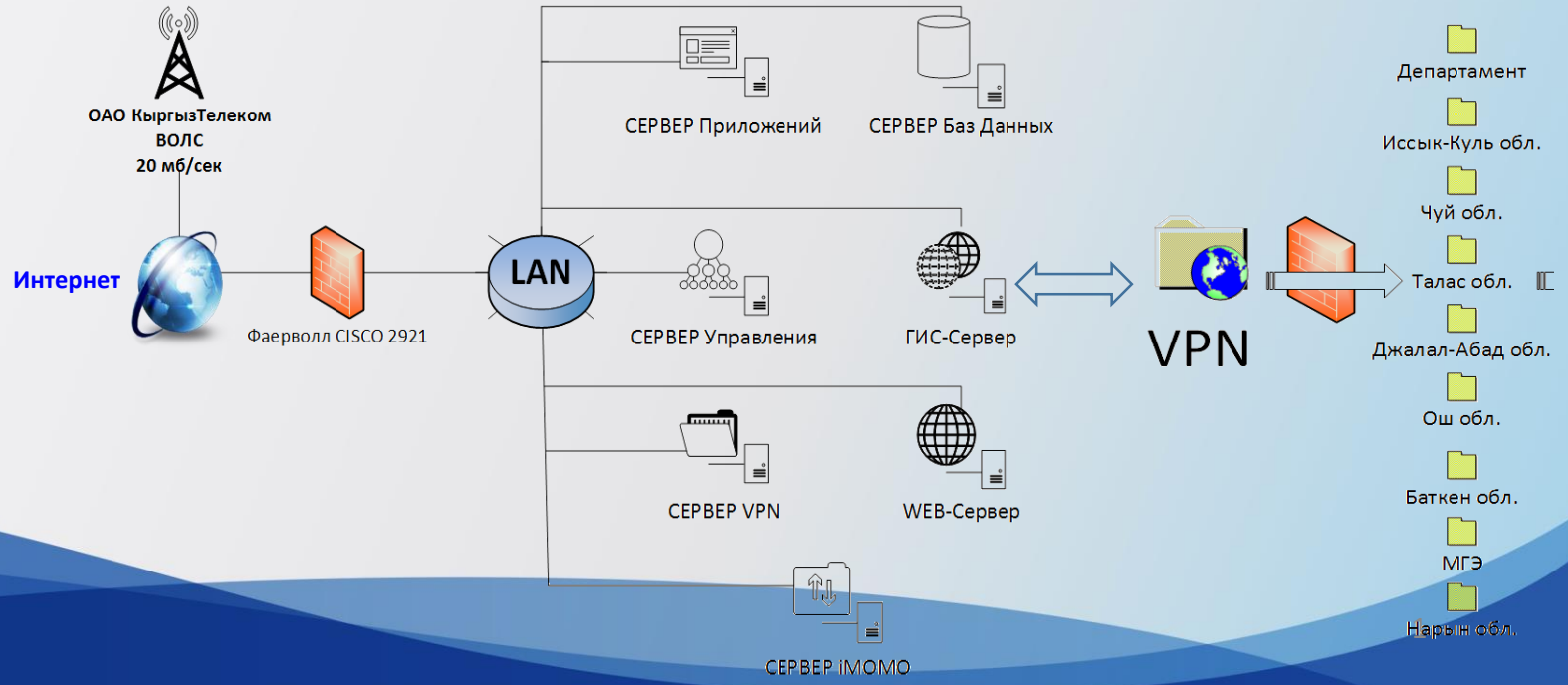
Session#5 "Towards nationally integrated geospatial information management"

National Water Resources Management Project on Implementation of Water Information System (WIS)

Azamat Karypov
Coordinator of WIS

www.water.gov.kg

22 October, 2019



Briefly about Kyrgyzstan

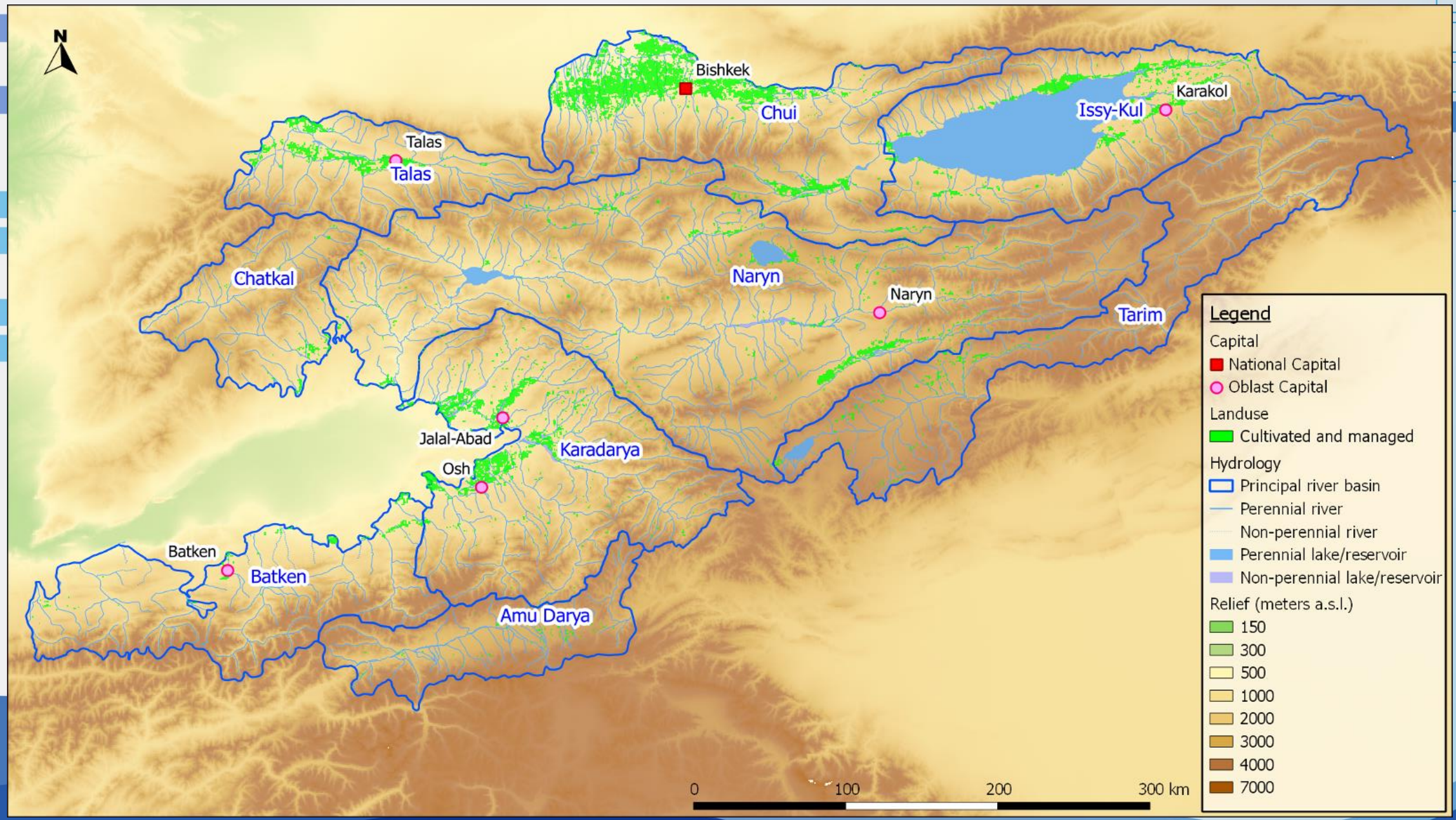
Situated in Central Asia and before 1991 was one of the Soviet Union Republics

Total area of Kyrgyzstan is 199.951 km2 (95% - mountains)

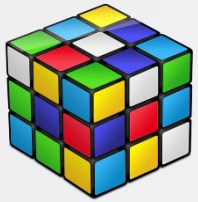
The population is about 6,389 million

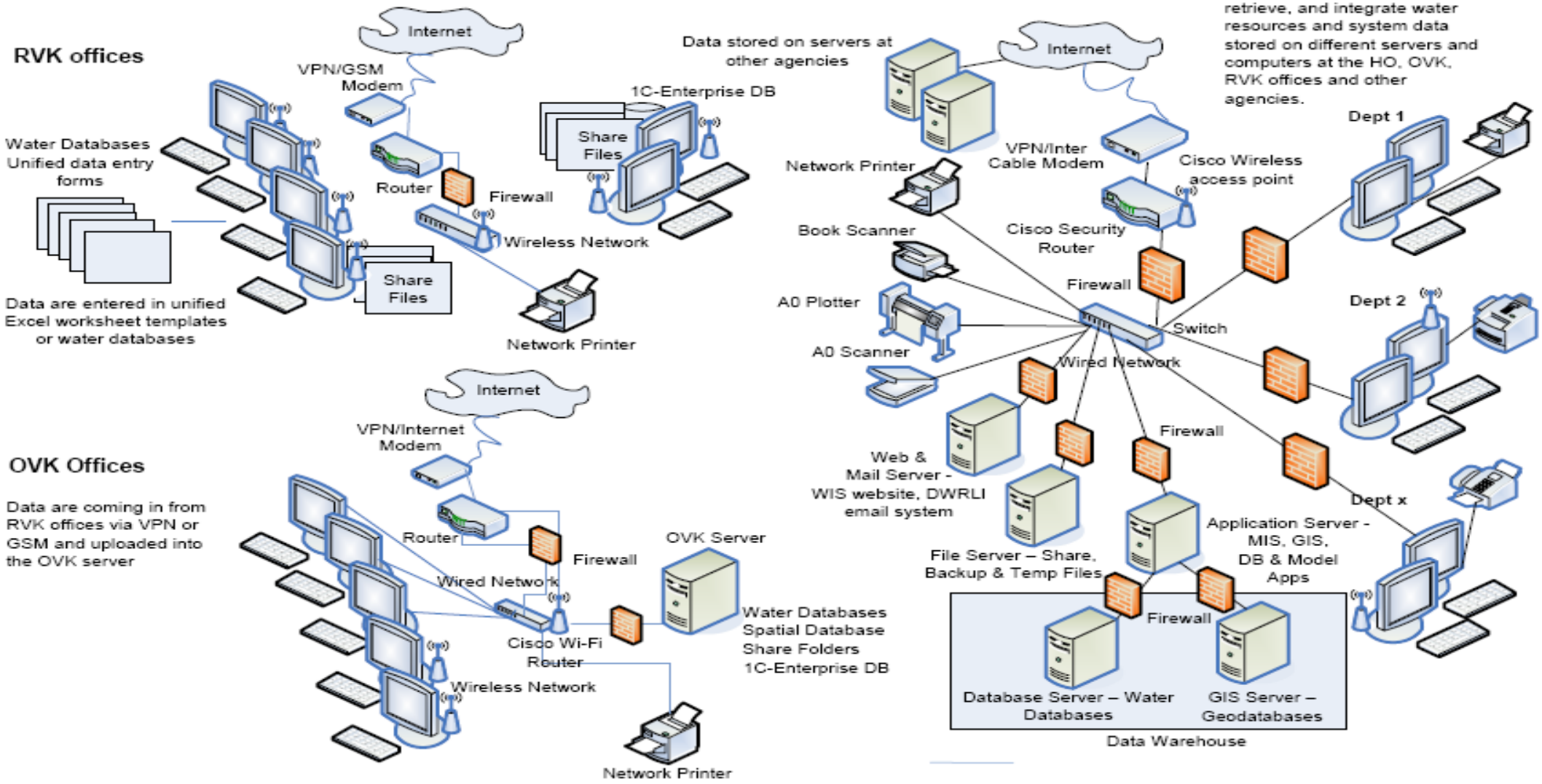
Currency – Som (KGS)

Ethnic groups: Kyrgyz - 72.6%
Uzbek - 14.4%
Russian - 6.4%
Dungan - 1.1%
Others - 5.5%

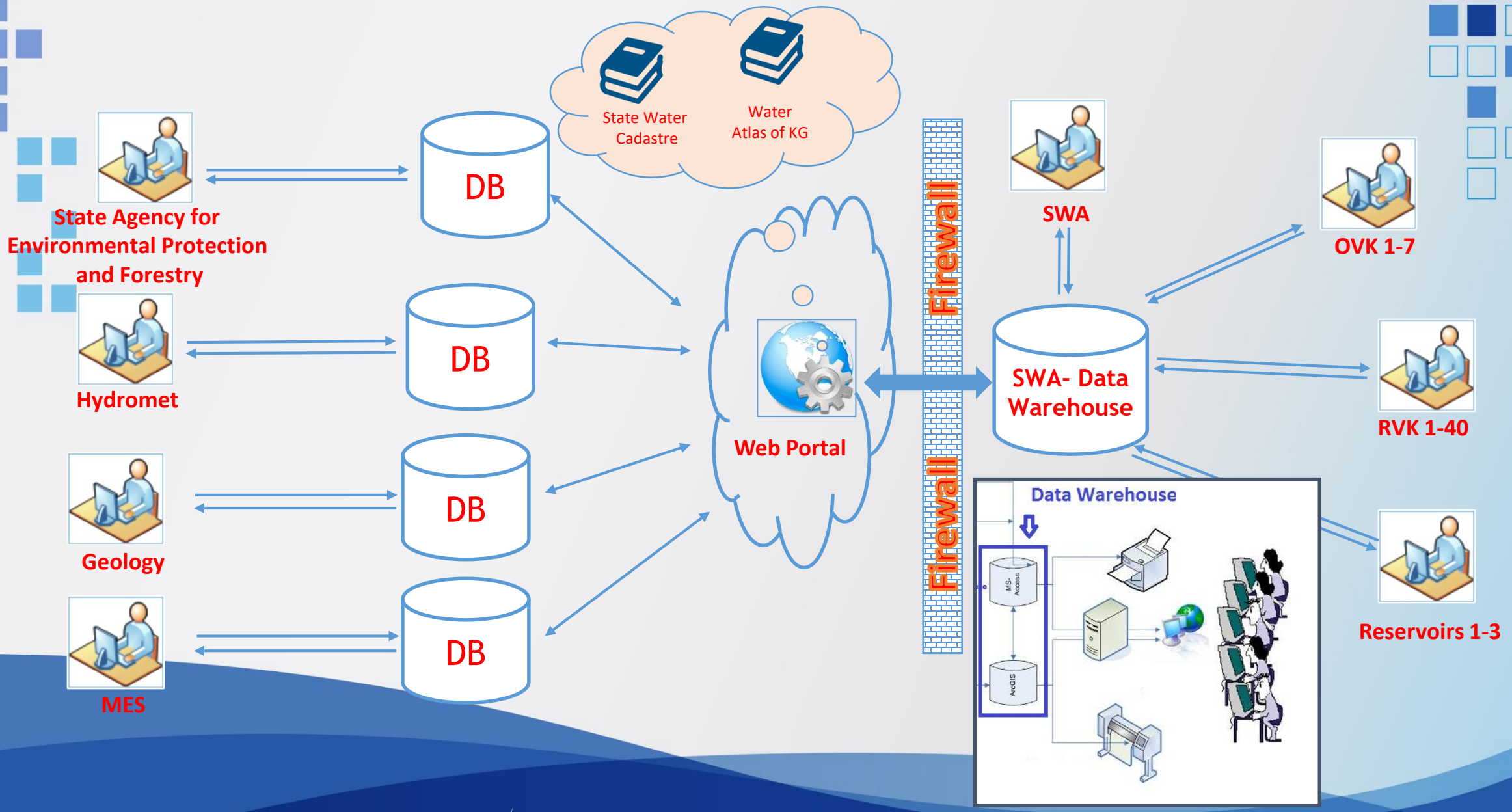

N
Bishkek
Chui
Karakol
Issy-Kul
Talas
Talas
Chatkal
Naryn
Naryn
Tarim
Jalal-Abad
Karadarya
Osh
Batken
Batken
Amu Darya
0
100
200
300 km
Legend
Capital
National Capital
Oblast Capital
Landuse
Cultivated and managed
Hydrology
Principal river basin
Perennial river
Non-perennial river
Perennial lake/reservoir
Non-perennial lake/reservoir
Relief (meters a.s.l.)
150
300
500
1000
2000
3000
4000
7000

WIS Framework





Structure of Water Information System (WIS)



ALL THE AGENCIES INVOLVED: based on MoU

Memorandums of Understanding were signed with 10 state organizations listed below:

- ✓ Agency for Hydrometeorology;
- ✓ Department of Forecasting, Monitoring of Emergencies;
- ✓ Crisis Management Center;
- ✓ Department of Cadastre and Registration of Rights to Real Estate;
- ✓ State Design Institute for Land Management "Kyrgyzgiprozem“;
- ✓ Kyrgyz Integrated Hydrogeological Expedition;
- ✓ Department of Development of Drinking Water Supply and Sanitation;
- ✓ Department of forestry under the State Agency for Environmental Protection and Forestry of the Kyrgyz Republic;
- ✓ Central Asian Institute of Applied Earth Research;
- ✓ The SDC Water Accounting Project.

WATER MANAGED BY 4 MAIN AGENCIES AND OTHER PARTNERS

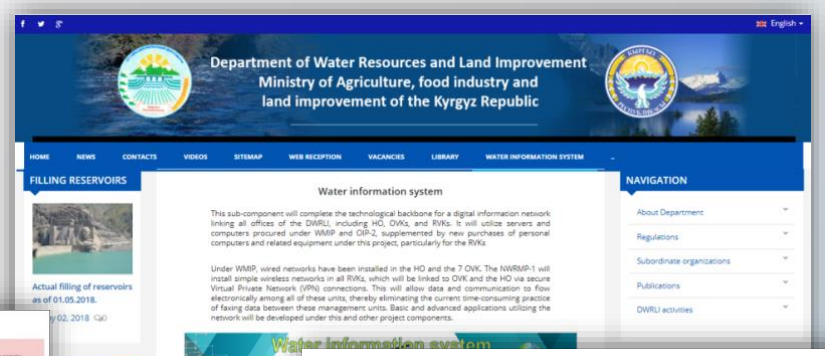
Major tasks

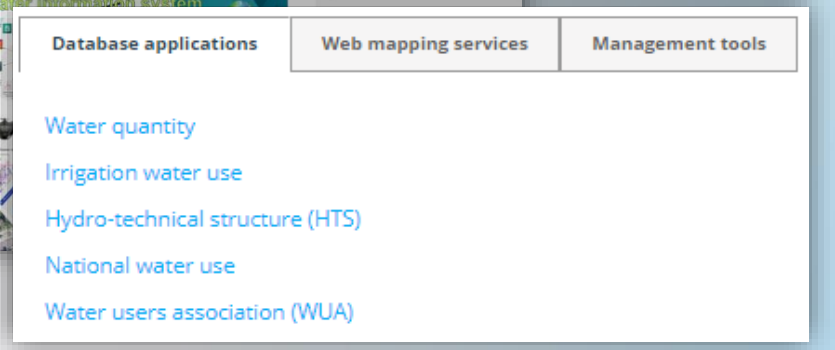
Establishing a digital Water Information System (WIS) with online tabular and geospatial database applications accessible via the SWA website and/or VPN.

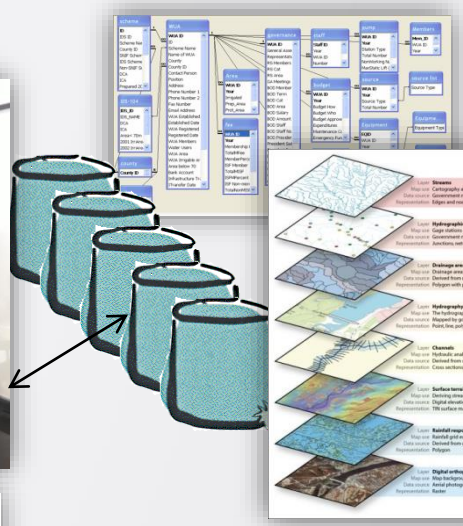
Results

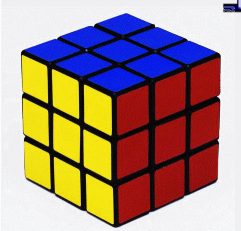
WIS current status

https://water.gov.kg









SWA servers

VPN

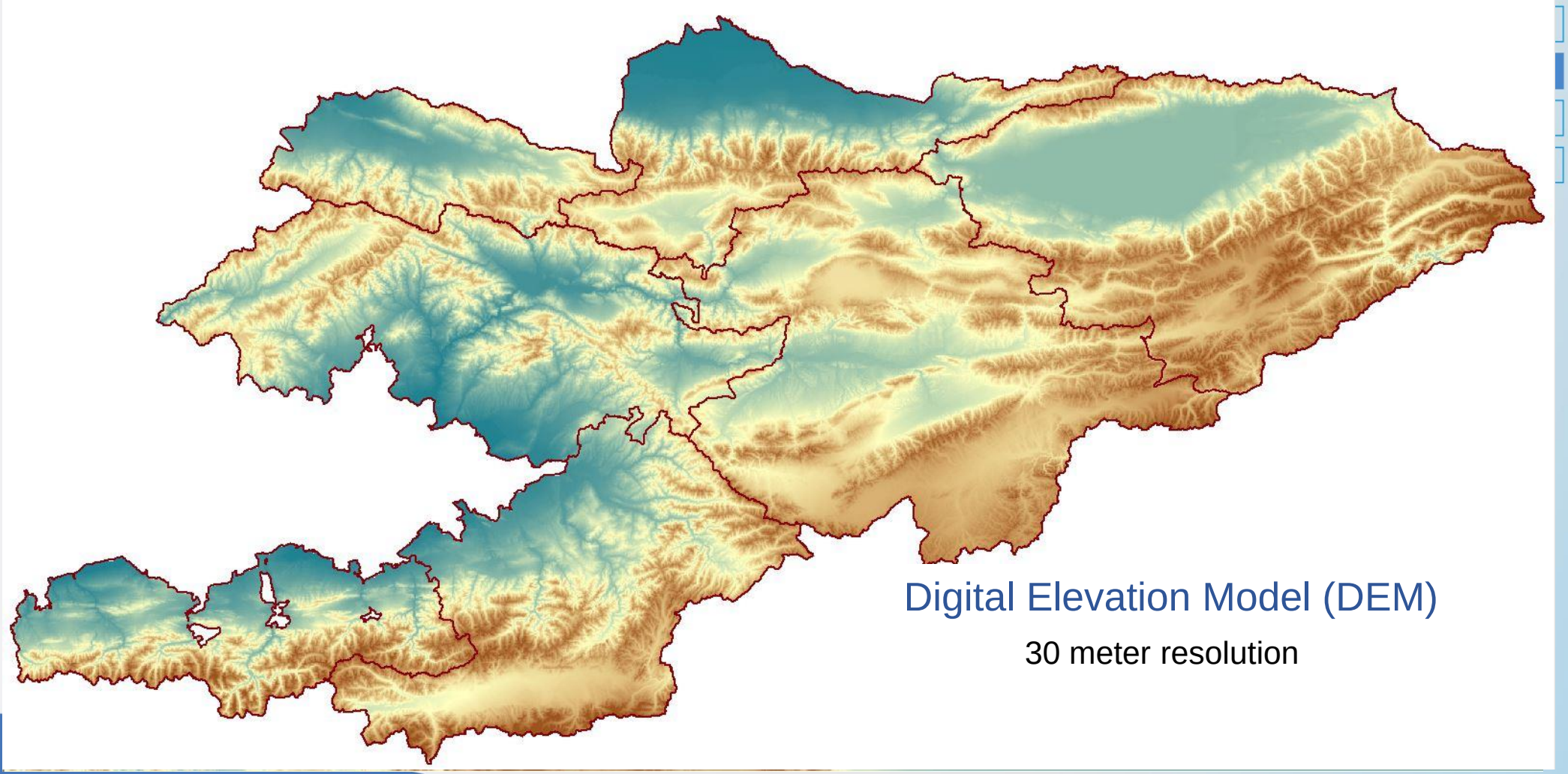
Internet

- 5 online database applications – water quantity, irrigation water use, Hydro-technical structure, national water use, and water users association.
- 2 online web mapping services with over 100+ spatial layers & 40+ thematic maps
- One demonstration under the management tools and two more under development
- Books with 701 scanned documents and eMaps with 38 scanned raster image files.

5 ON-LINE DATABASE SYSTEM

	Status	Action	Output
MS ACCESS WUA DB	Developed online database.	Training and implementation in the WUA. Support Units	ON-LINE DB http://wua.water.gov.kg
Postgre SQL + PHP Monitoring of Water Resources DB	Developed online database, access is provided by IAS under the SWA and regional units	Further technical support	ON-LINE DB http://indicators.water.gov.kg
MS ACCESS Water Use DB	Developed online database.	Training and implementation in the RVK and OVK	ON-LINE DB http://wuse.water.gov.kg
MS ACCESS Technical Passport DB	Developed online database.	Training and implementation in the RVK and OVK	ON-LINE DB http://passport.water.gov.kg
MS ACCESS State Water cadastre	Developed online database.	Training and implementation in the RVK and OVK	ON-LINE DB http://2tp.water.gov.kg

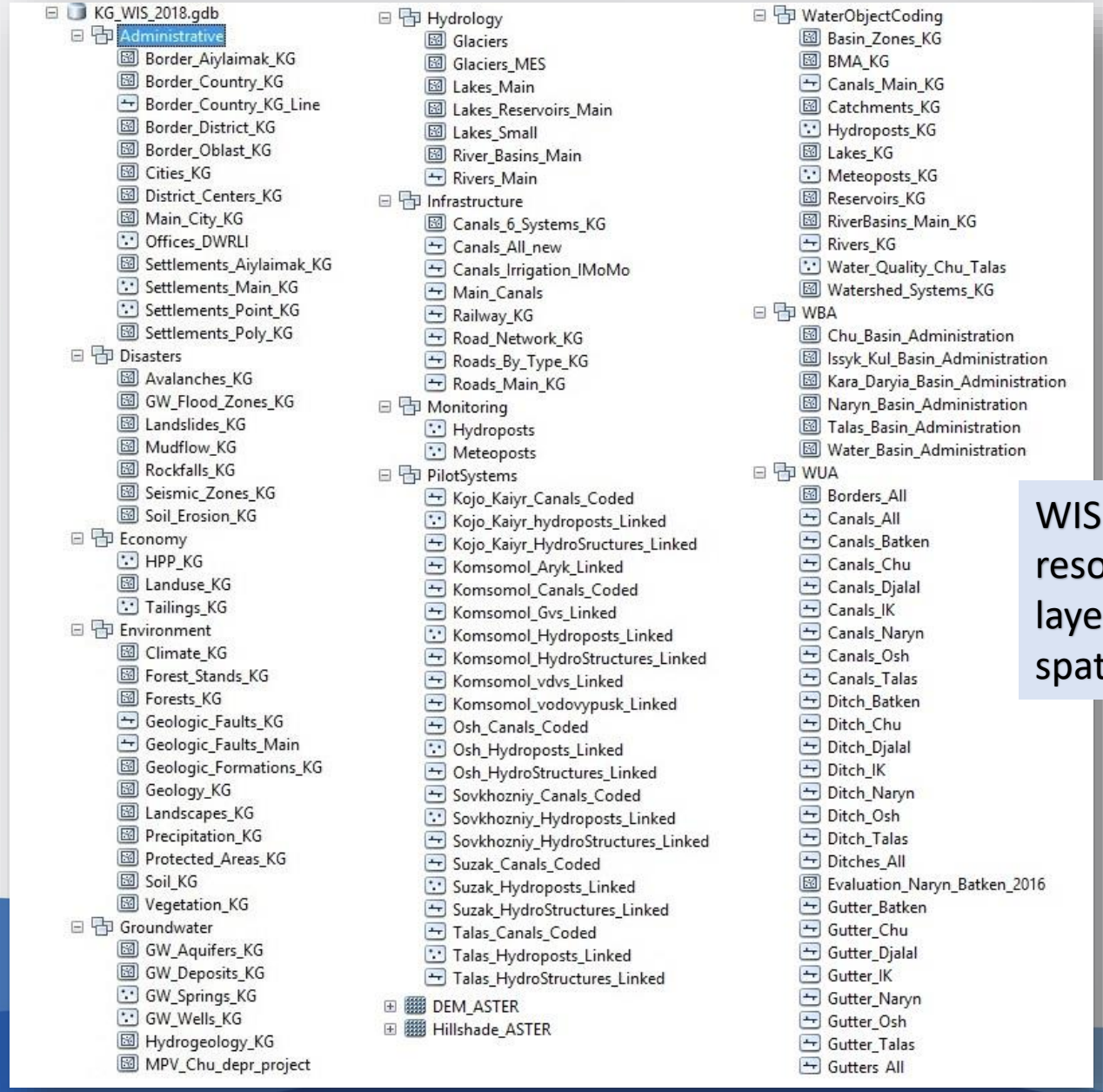
GEO DATABASE



Digital Elevation Model (DEM)

30 meter resolution

GEO DATABASE



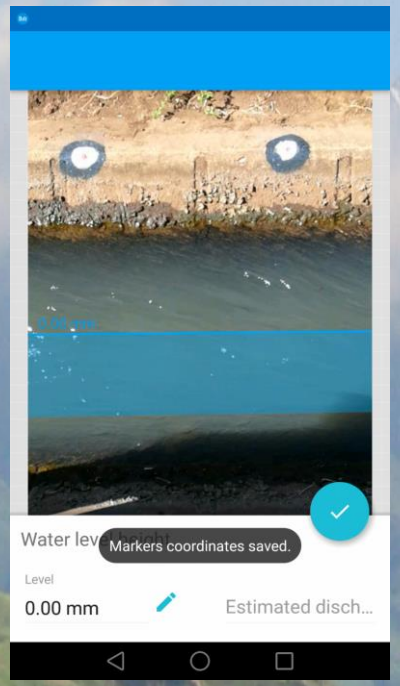
Geodatabase structure

WIS geospatial database built with a rich set of water resources and irrigation data with 126 vector spatial layers and raster images. The WIS team published 100+ spatial layers and 40+ thematic maps online.

The Digital Revolution in Irrigation has just begun

iMoMo Collaboration with SDC, FAO, World Bank, IFPRI, GIZ

hydrosolutions



National Basins IWRM Dashboard
National basin interactive schemes, GIS web mapping, indicators related to IWRM implementation, ...

National WIS
Future National WIS (NWRM Project)

Transboundary Basins Dashboard
Interactive schemes, GIS web mapping and transboundary bulletins, ...

Kazakhstan

Water Dept. WIS (NWRM Project)

Op. hydro. data, forecasts

HM Service Op. Hydrology

Reservoirs

digital link

data

Res. level

Web Basin Planning Tool
Seasonal Interstate Irrigation Allocation Planning

Web OBVDZ Water Accounting & Basin Dashboard
Unit Water Balances, water use and productivity indicators, comparison of planned versus factual allocations. interactive schemes and GIS web mapping.

iMOMO

Production Unit Accounting
Production Unit (Prezvoznviye Uchaste) Water balance

Web-based Operational Hydrology
Gauging station admin., maintenance & update of rating curves, journals and bulletins, forecasts.

OBVDZ WIS

h, Q, Water Balance

h, Q, Water Balance

Pre-season Water Demand Request

Production Unit | Production Unit | Production Unit

Main Canals

Supply Revision

h

Q

h

RVDZ WIS

Hydro Unit A

Hydro Unit B

Staff Gauge read by observer (SmartReyka/Discharge App)

Automatic Sensor (fixed location)

Gauge Reader

Q

Water Demand

h

Web SIMIS RVDZ
Water demand, Water balances per accounting unit and factual use, reports

Irrigation Norms

Cropped area

WUA | WUA | WUA | WUA

h, Q

AQUACROP

Q

link to be established / modernised under NWRM Project

to be implemented under NWRM Project

Web-Tool
Work started under iMoMo KG Project.

Web-Tool
New planned product under MULIS Project

Web-Tool
NWRM Project component

Project “Water Accountability in Transboundary Chu-Talas River Basins”

IOWater activities and outputs

CLOSE INFO

You are here: Home

Home

Chu Local Scheme

Chu Local Schemes in KG

- CHU Local Scheme OT1 - VBCHK
- CHU Local Scheme OT2 - Shamsy
- CHU Local Scheme OT3 - Kegety
- CHU Local Scheme OT4 - Issyk-Ata
- CHU Local Scheme OT5 - YUBCHK
- CHU Local Scheme OT6 - First Alamedyn
- CHU Local Scheme OT07 - Ala-Archa
- CHU Local Scheme OT08 - ZBCHK
- CHU Local Scheme OT09 - Second Alamedyn
- CHU Local Scheme OT10 - Kant
- CHU Local Scheme OT11 - Sokuluk
- CHU Local Scheme OT12 - Ak-Suy
- CHU Local Scheme OT13 - Karabalta
- CHU Local Scheme OT14 - Chumysh

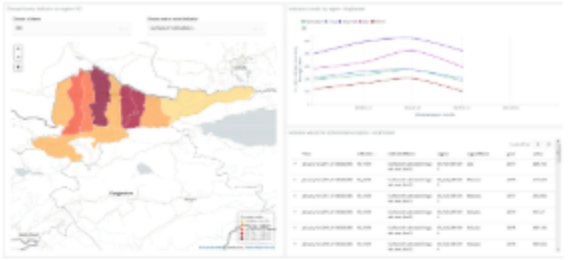
Welcome on the IOWater Web portal sharing tools and outputs in link with the project

"Water Accountability in Transboundary Chu-Talas River Basins"

Portal aiming to visualize and share the main ouptut related to Water Data Management on the Chu Basin and Talas basin in Kyrgyzstan

Transboundary CHU linear scheme

Dashboard - Indicator trends per rayon

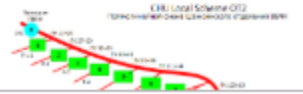


Dashboard - Indicator trends per O

Chu-Talas webmapping (with otdelenia and monitoring points)

CHU Local Scheme OT1 - VBCHK

CHU Local Scheme OT2 - Shamsy



Connexion

Username

Password

Remember Me

Log in

Forgot your password?

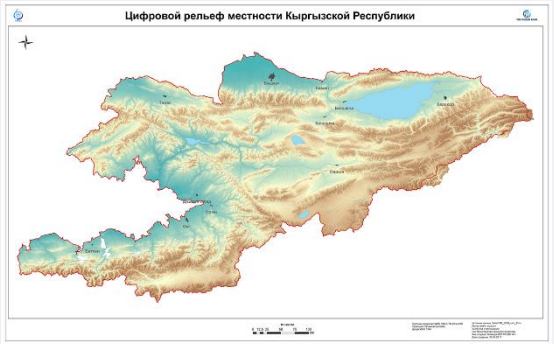
Forgot your username?

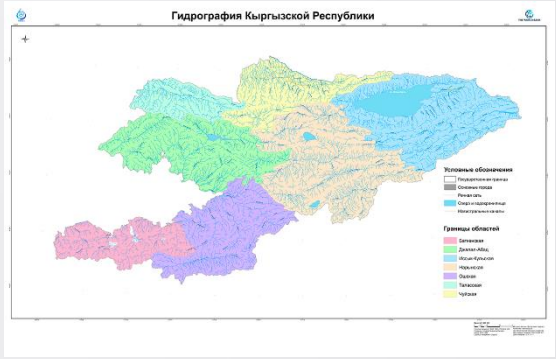
Kyrgyzstan_(ortho....png

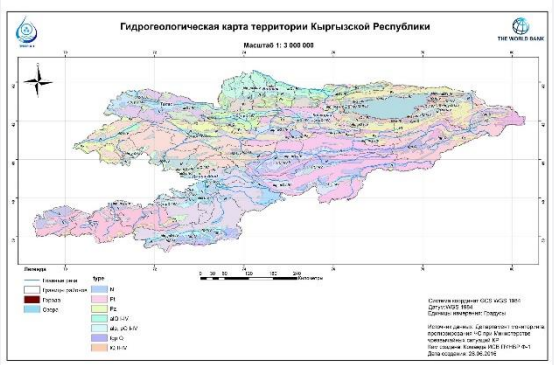
presentation Geo....pptx

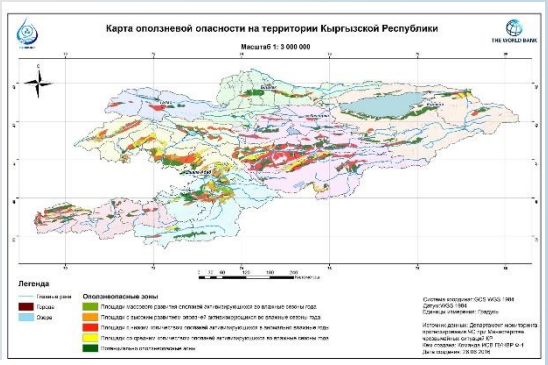
Пока

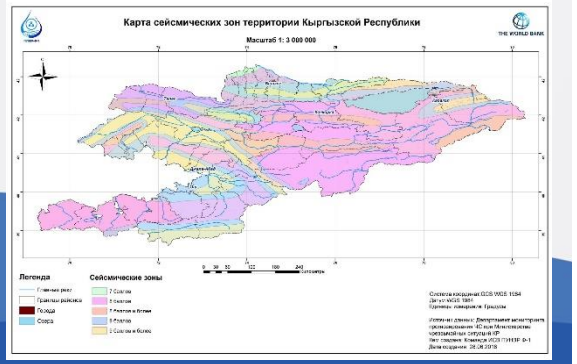
Examples of digital maps

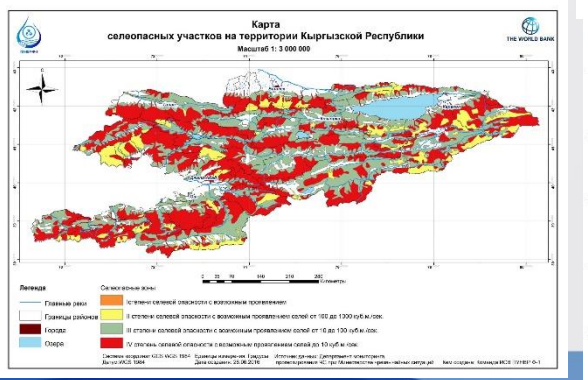


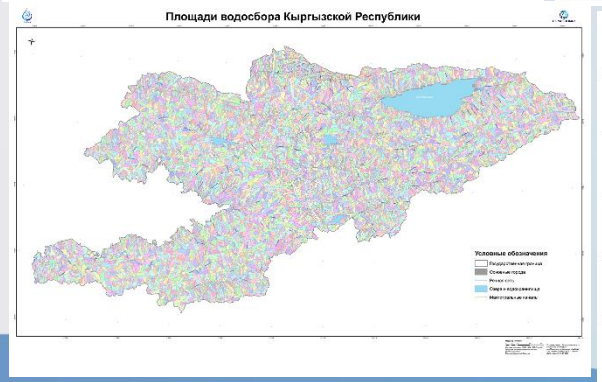












Геоинформационный портал
о воде Кыргызской Республики

Департамент водного хозяйства
и мелиорации Кыргызской Республики

Проект управления национальными
водными ресурсами-1

Featured Maps and Apps https://gis.water.gov.kg/portal

Гидропосты

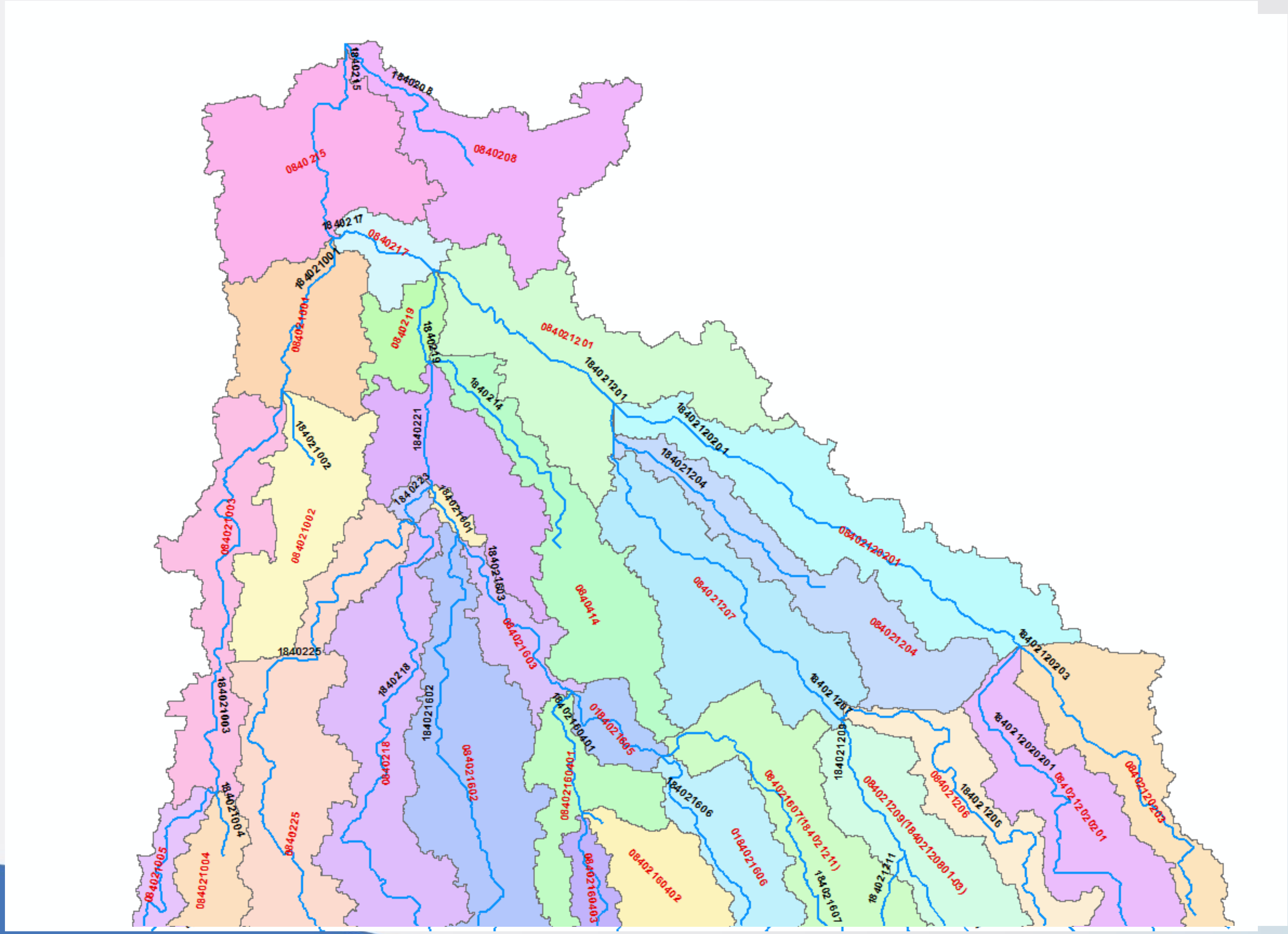
Климат

Ландшафтные_зоны

Water Object Coding (WOC) and testing using the example of the Sokuluk River Basin

Rivers

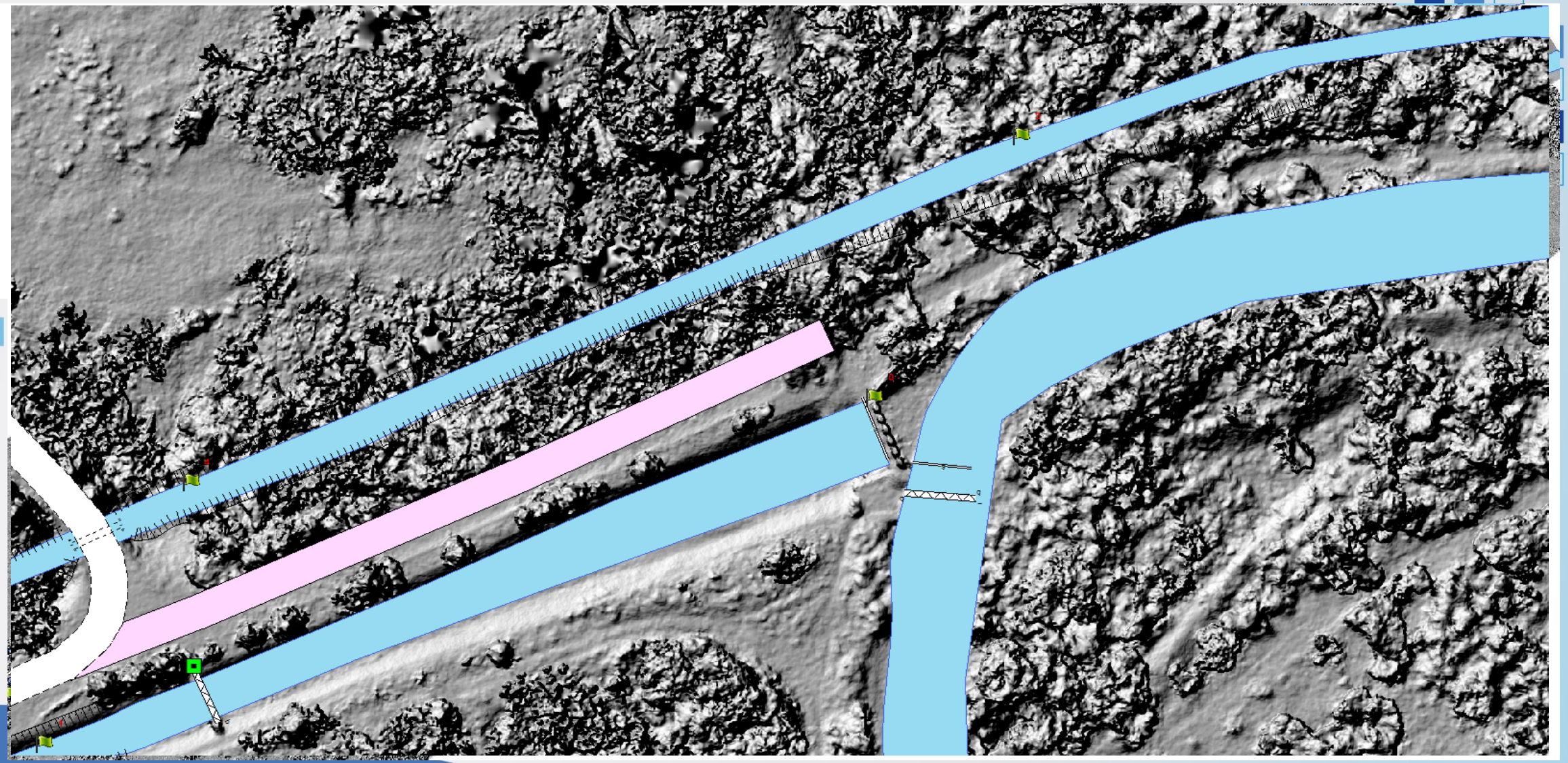
Catchments



Off-farm irrigation canal “Komsomolskiy”

Carried out a pilot survey in the Off-farm canal “Komsomolskiy”

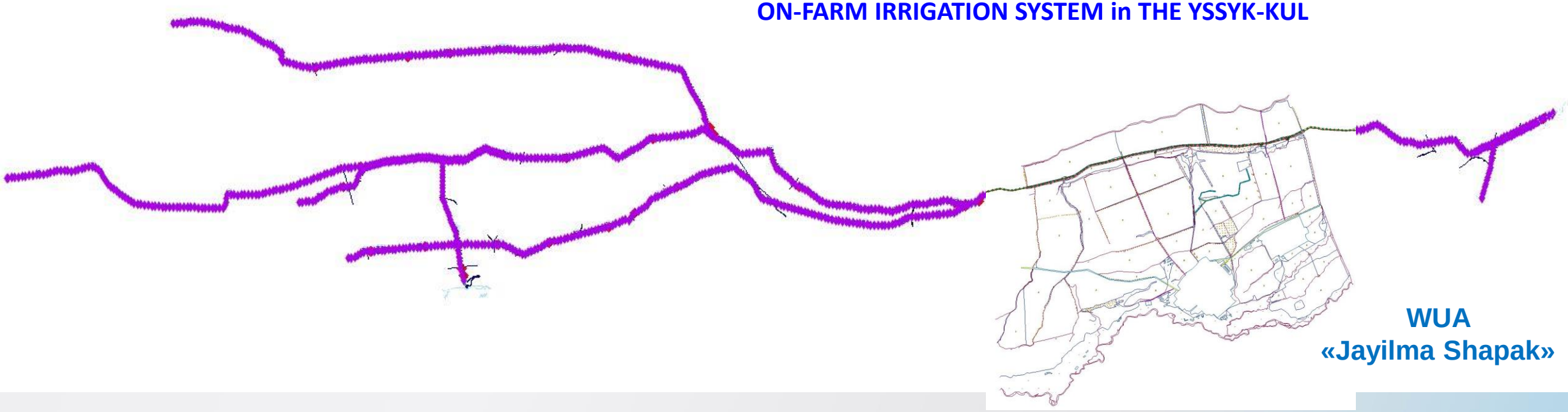
Result of UAV survey in the off-farm canal “Komsomolskiy”



Digital Spatial Data for Off-Farm canal "Komsomolsky"

Off-farm irrigation canal “Komsomolskiy”

ON-FARM IRRIGATION SYSTEM in THE YSSYK-KUL



WUA
«Jayilma Shapak»

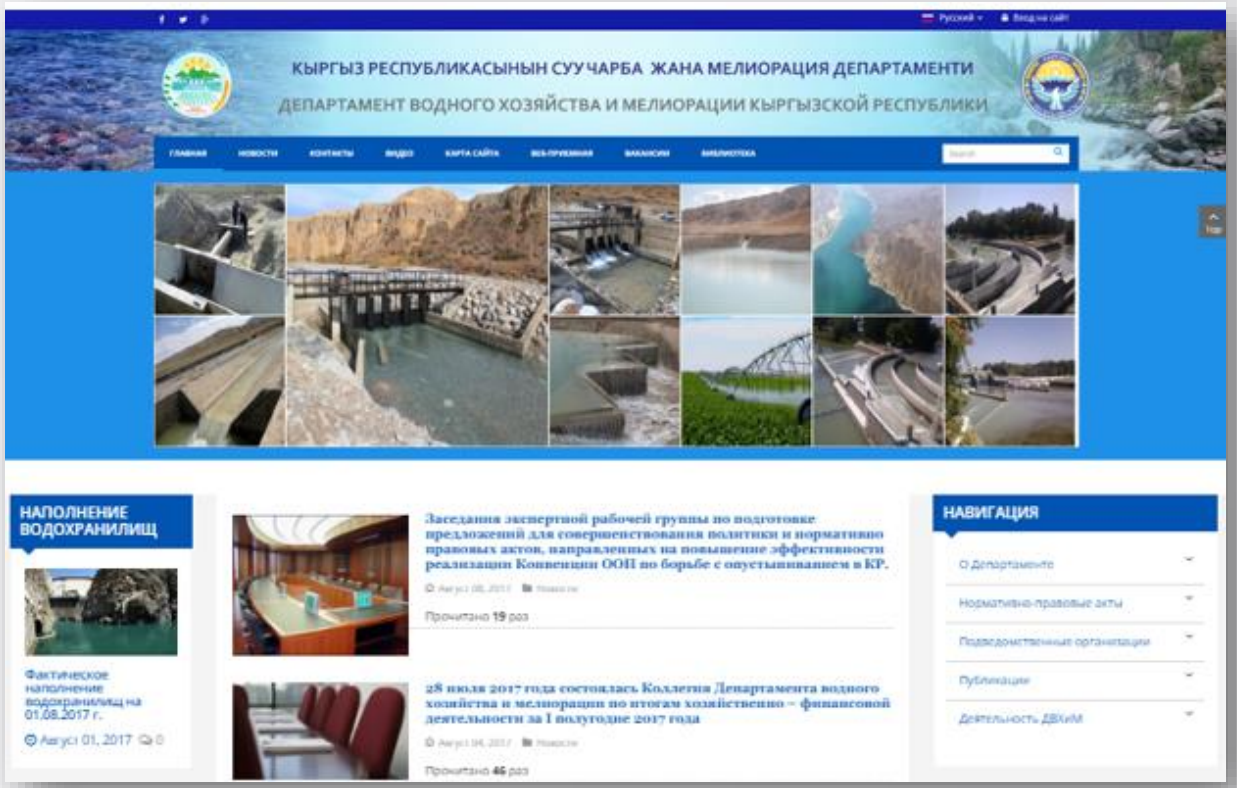
ON-FARM IRRIGATION SYSTEM in THE YSSYK-KUL

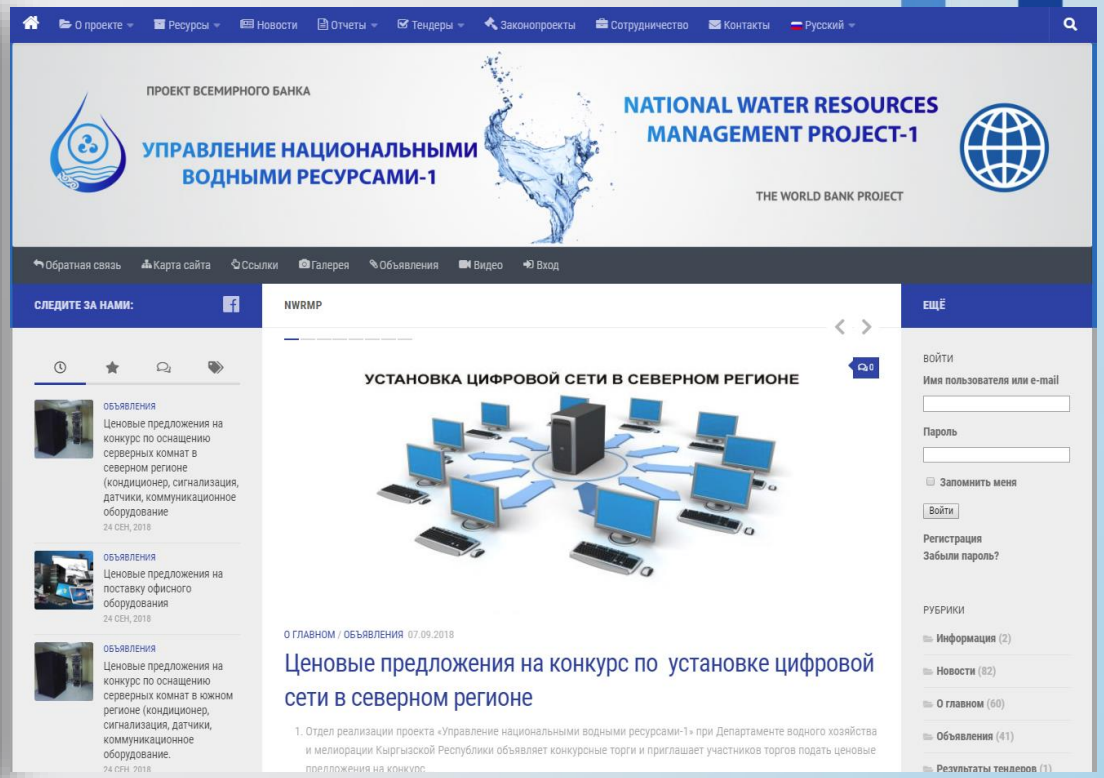
WUA
«Jayilma Shapak»

Web sites

http://water.gov.kg

http://nwrmp.water.gov.kg/

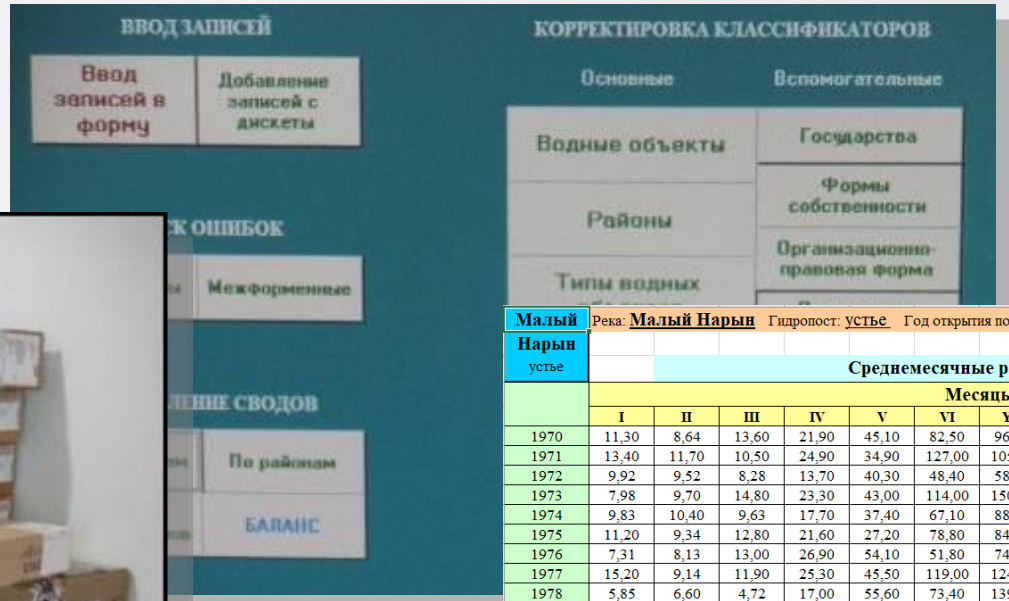


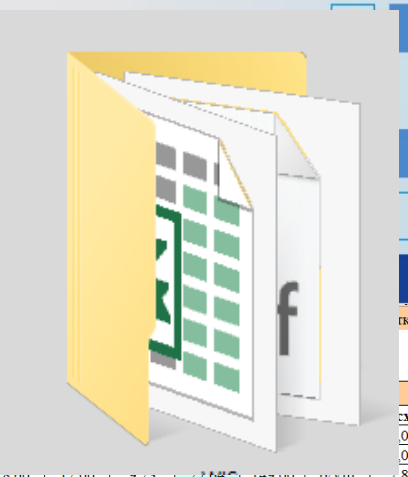


Training and capacity building (2016-2019)

- Basing computer training
- Improve knowledge and awareness of database management and data collection
- Advanced computer trainings (GIS, AutoCAD, Web design)
- Water information system and digital information networks

BEFORE





Приложение 1

Форма 1.1

МСВХ и ПП КР
Департамент водного хозяйства

Технический паспорт № 1

1 _____ р.Падша-Ата _____ 210800 (код)
(наименование системы)

2 _____Канал Беш-Батман_____ АА=51 (код)
(наименование водного объекта)

3 _____Аксыйского РУВХ_____ 07306 (код)
(наименование органа управления системой в структуре ДВХ)

4 Год ввода в эксплуатацию 1927 г. реконструкции 1979 г.

5 Построена по проекту_. Главкиргинводстроя
(наименование проектной организации)

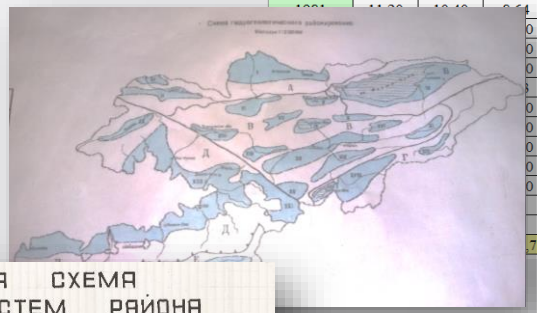
6 Общая площадь орошаемых земель 2496 га

7 Наименование основных водопользователей (АВП, Федерации АВП, предприятия и др.):

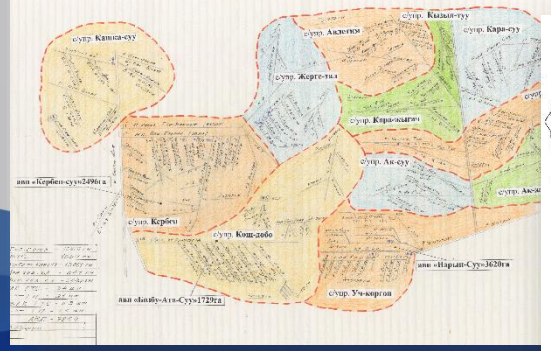
а) _____ АВП Кербен-Суу
(код)

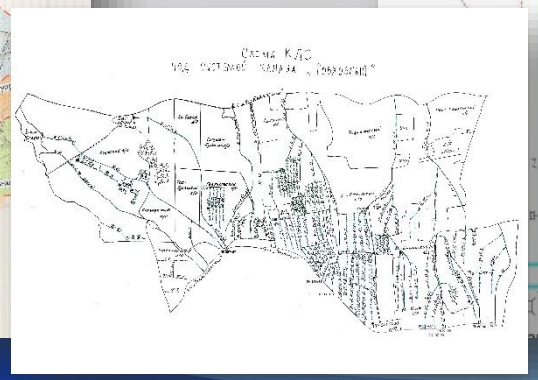
Малый Нарын устье	Река: Малый Нарын	Гидропост: устье	Год открытия поста: 1932	Код поста: 16	ка: 2258 м

	Среднемесячные расходы, м³/с												Min	
	Месяцы												ход	Дата
	I	II	III	IV	V	VI	VII	VIII	IX					
1970	11,30	8,64	13,60	21,90	45,10	82,50	96,10	80,20	51,60				,06	27/I
1971	13,40	11,70	10,50	24,90	34,90	127,00	105,00	86,70	37,70				,00	9/IV
1972	9,92	9,52	8,28	13,70	40,30	48,40	58,60	70,30	32,80				,88	16/III
1973	7,98	9,70	14,80	23,30	43,00	114,00	150,00	94,50	33,50	19,10	14,80	12,30	44,75	279,00	26/VI	6,68	28/I
1974	9,83	10,40	9,63	17,70	37,40	67,10	88,30	61,60	30,70	20,50	14,30	12,90	31,70	133,00	23/VII	5,90	10/IV
1975	11,20	9,34	12,80	21,60	27,20	78,80	84,30	96,90	41,10	20,10	14,80	9,40	35,63	168,00	17/VI	6,37	28/XII
1976	7,31	8,13	13,00	26,90	54,10	51,80	74,80	75,00	46,50	20,90	11,80	17,40	33,97	117,00	16.авг	5,26	10/II
1977	15,20	9,14	11,90	25,30	45,50	119,00	124,00	108,00	47,90	22,10	12,50	11,40	46,00	219,00	23/VI	8,43	10/II
1978	5,85	6,60	4,72	17,00	55,60	73,40	139,00	114,00	36,70	22,50	16,80	16,60	42,40	182,00	19/VII	1,90	27/III
1979	21,40	14,60	14,30	10,30	23,40	106,00	100,00	94,80	38,20	18,00	12,90	11,50	38,78	176,00	26/VI	3,19	12/IV
1980	10,80	7,82	7,73	16,10	55,90	87,50	105,00	87,50	39,60	19,60	12,60	9,62	38,31	149,00	15/VII	6,10	8/IV
				15,40	88,90	98,70	151,00	90,50	38,60	18,90	14,90	17,80	47,08	220,00	6/V	13,50	31/X
																	15/V
																	4/II
																	8/II
																	18/V
																	15/XI
																	6/V
																	21/II
																	3/V
																	2/V

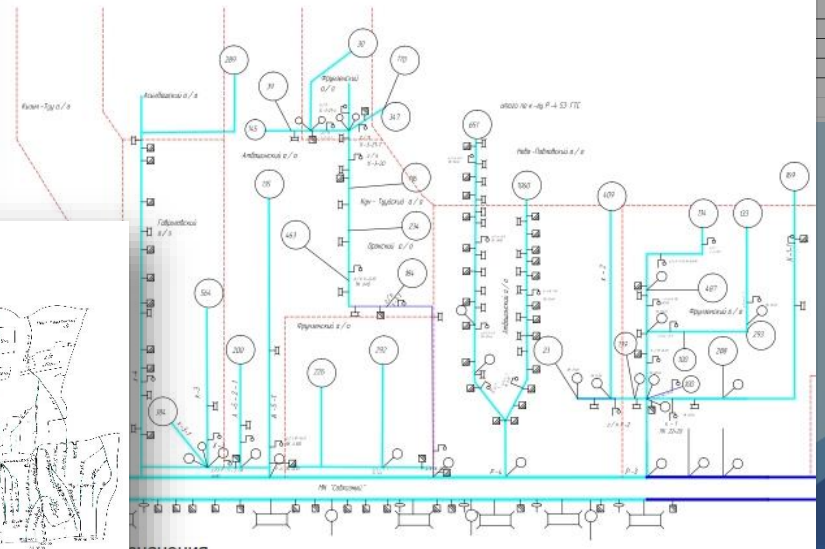


ПРЯМОЛИНЕЙНАЯ СХЕМА ОРОСИТЕЛЬНЫХ СИСТЕМ РАЙОНА





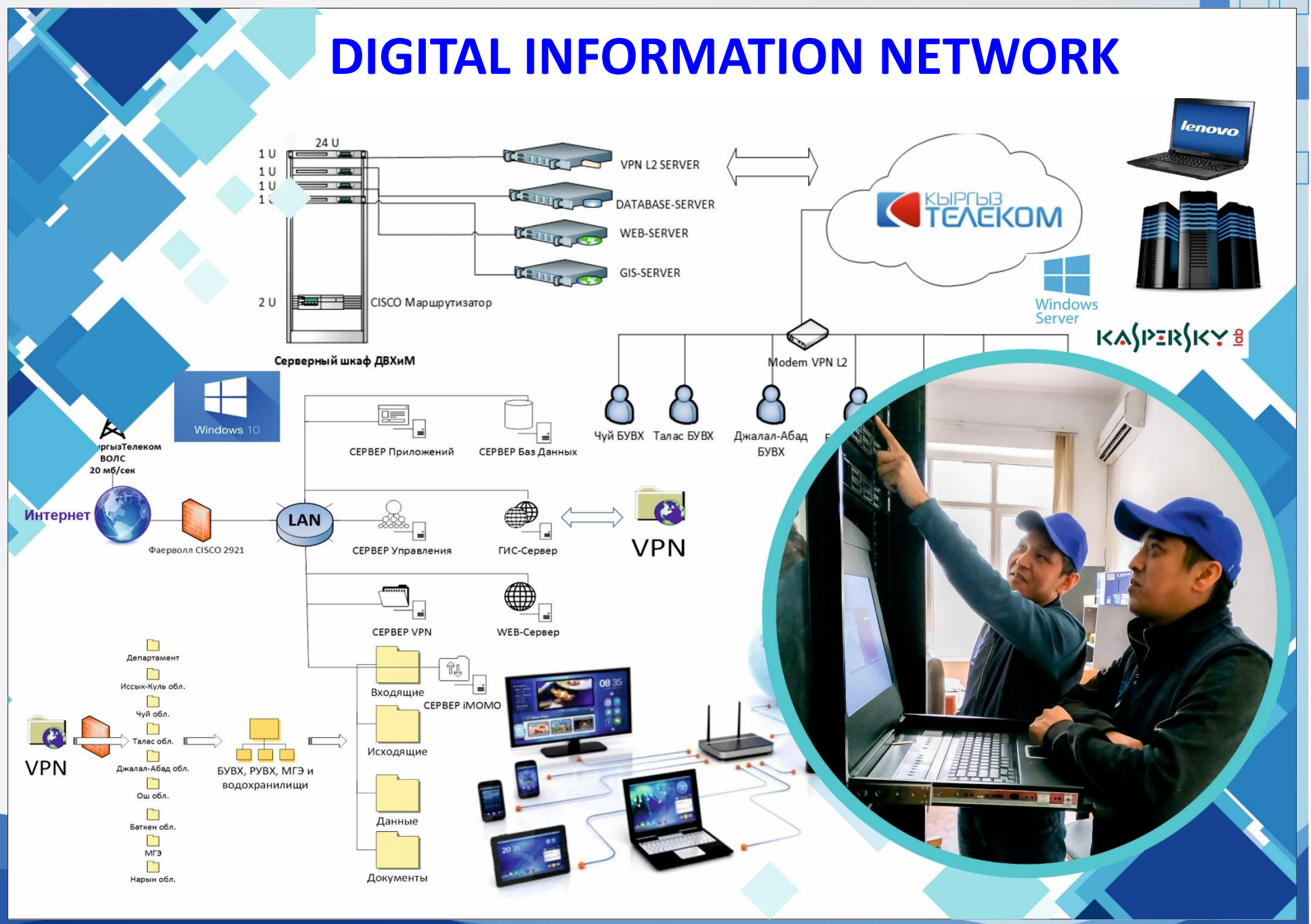
Прямолинейная схема системы канала "Совхозный"



DIGITAL INFORMATION NETWORK

http://water.gov.kg

NOW



WATER INFORMATION SYSTEM

http://water.gov.kg

NOW

Thank you very much for attention!