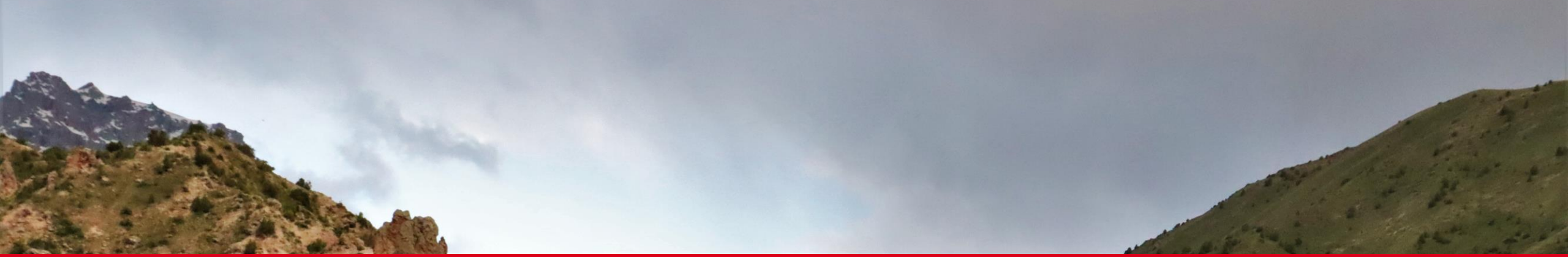

Climate Resilient Integrated Water Resources Management in the Zarafshan River Basin: Establishing Cooperation with Universities

Oyture Anarbekov, CARITAS-Switzerland

Climate Resilient IWRM in the Zarafshan River Basin Project funded by Govt of Switzerland

Meeting of the Network of Academic Society
June 12, 2024, Dushanbe, Tajikistan

Introduction

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC
Shvetsariya taraqqiyot va hamkorlik Agentligi SDC

- 12-year Initiative
- Inception phase: 15.08.2022 - 31.05.2023
- Phase 1: 01.06.2023 – 31.05.2027
- Phase 2 & 3: to come

CARITAS Schweiz Suisse Svizzera Svizra

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hydrosolutions

MeteoSwiss

O'ZBEKISTON RESPUBLIKASI SUV XO'JALIGI VAZIRLIGI

O'ZBEKISTON RESPUBLIKASI QISHLOQ XO'JALIGI VAZIRLIGI

O'ZBEKISTON DAVLAT GEOLOGIYA VA MINERAL RESURSLAR QO'MITASI

MAKTABGACHA VA MAKTAB TA'LIMI VAZIRLIGI

O'ZSUVTA'MINOT AKSIYADORLIK JAMIYATI

Universities/Institutes

- **“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University**

- **Including Bukhara branch of NRU TIIAME**

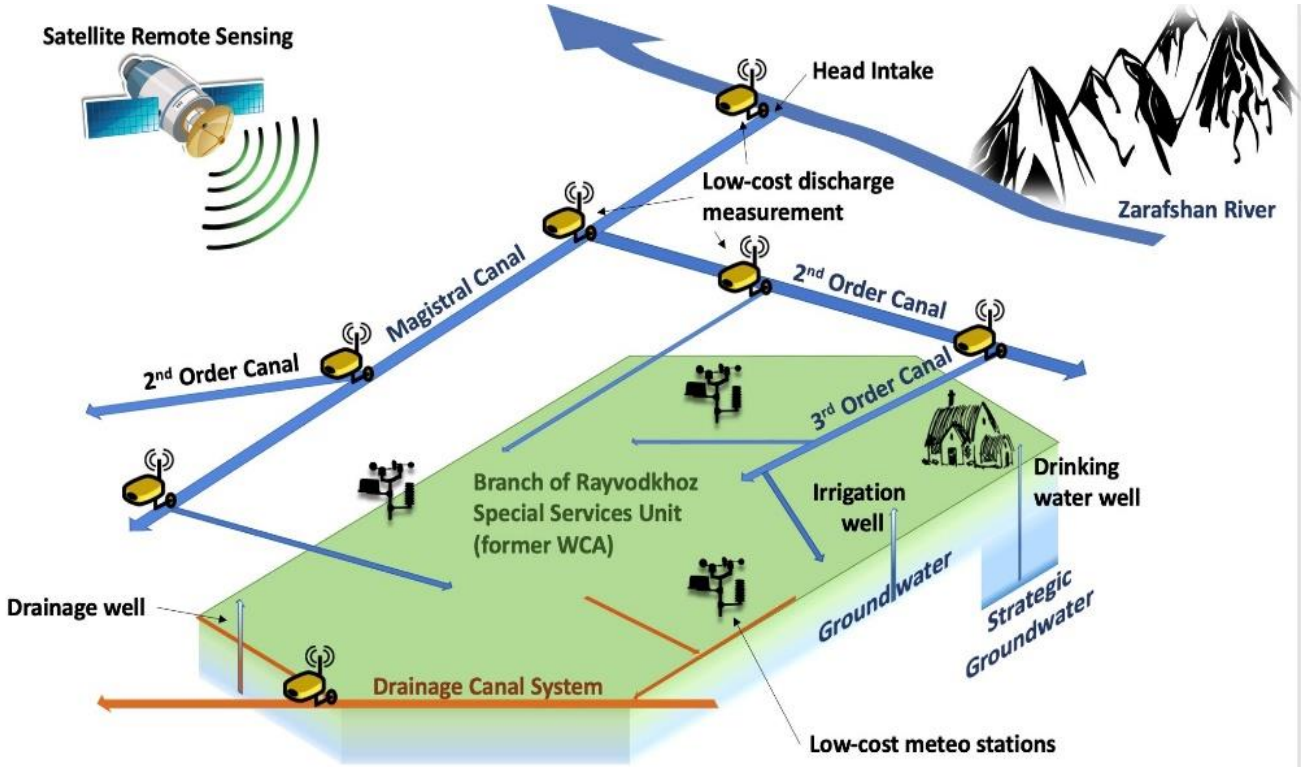
- **Samarkand Agroinnovations and Research University**

SamATI
Samarkand Agroinnovations and Research University

Areas of cooperation with NAS

- Supporting 2 female PhD students for later involvement in project implementation evidenced high levels of support and willingness to engage.
- Involvement of master student's diplomas research to project's pilot site
- Working with SamATI specifically "economics and business" faculty to conduct baseline surveys within ZRB
- Promotion of innovative technologies and approaches into curriculum.
- Engagement of Researchers into project study topics

Engagement NAS research into project activities



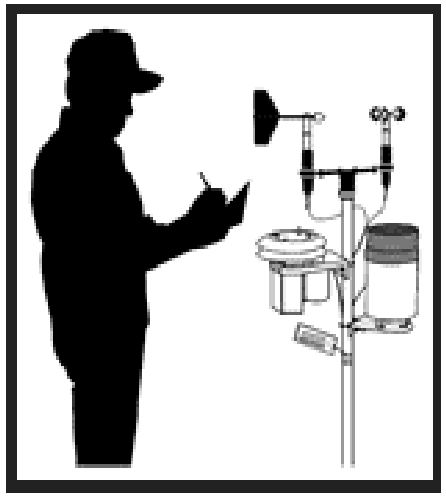
- Establishment of ZRB Councils
- Development of River Basin plan
- Basin development scenarios considering future water demand from agriculture, housing, industry and tourism, as well as the environment
- Analyses of satellite imagery and water monitoring data (by HSOL) for assessing irrigation performance
- integration of climate-resilience and multi-sectoral IWRM
- Analysis of the economic value of water in productive use within the agricultural sector, and comparative analysis of the economic and intrinsic value of water within other sectors
- the transboundary as well as to the regional dialogue on water cooperation

A unified system of data collection and management is established in a pilot irrigation system in the ZRB

WWCS in CRIWRM focuses on effective weather-based irrigation advisory services but supports agriculture and livelihood more generally by providing weather data-based agronomic decision support and more reliable early alerts for extreme events.

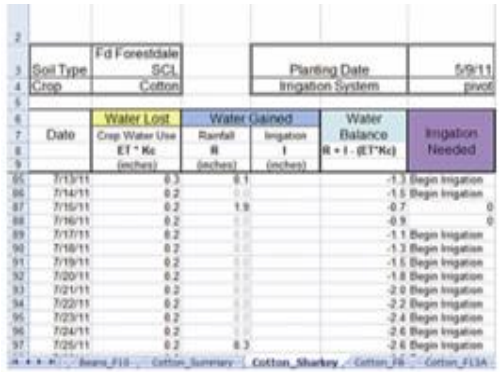
Source: Amudar.io

Weather station-based Irrigation Scheduling



Weather data

Soil moisture data



Soil moisture data

In Uzbekistan, switching from Soviet-era irrigation scheduling method to ICARDA's smart system, there was on average 32% saving of irrigation water and 50% increase in water productivity

Hydro-module Zone I

Traditional Irrigation | ET-based Irrigation

Hydro-module Zone II

Traditional Irrigation | ET-based Irrigation

Hydro-module Zone VIII

Traditional Irrigation | ET-based Irrigation

Save approx. 30-35% irrigation water at the field level without adversely affecting yields

Russian version of Reference ET calculator

Unified system of data collection and management is established in a pilot irrigation system in the ZRB

- **Head Water Intake – Big Karshi Main Canal**

- **Off-Farm irrigation canal (2-order canal)**

Concept of Water Resources Dvpt 2030
Concept of Agricultural Dvpt 2030

- Introduce water-energy saving techs in 2 mln ha by 2030, drip irrigation itself in 600 thousand ha
- Innovative techs in water accounting made a priority in the country's 2020-2030 National Agricultural Development Strategy and its corresponding roadmap.

- **On-farm irrigation canal**

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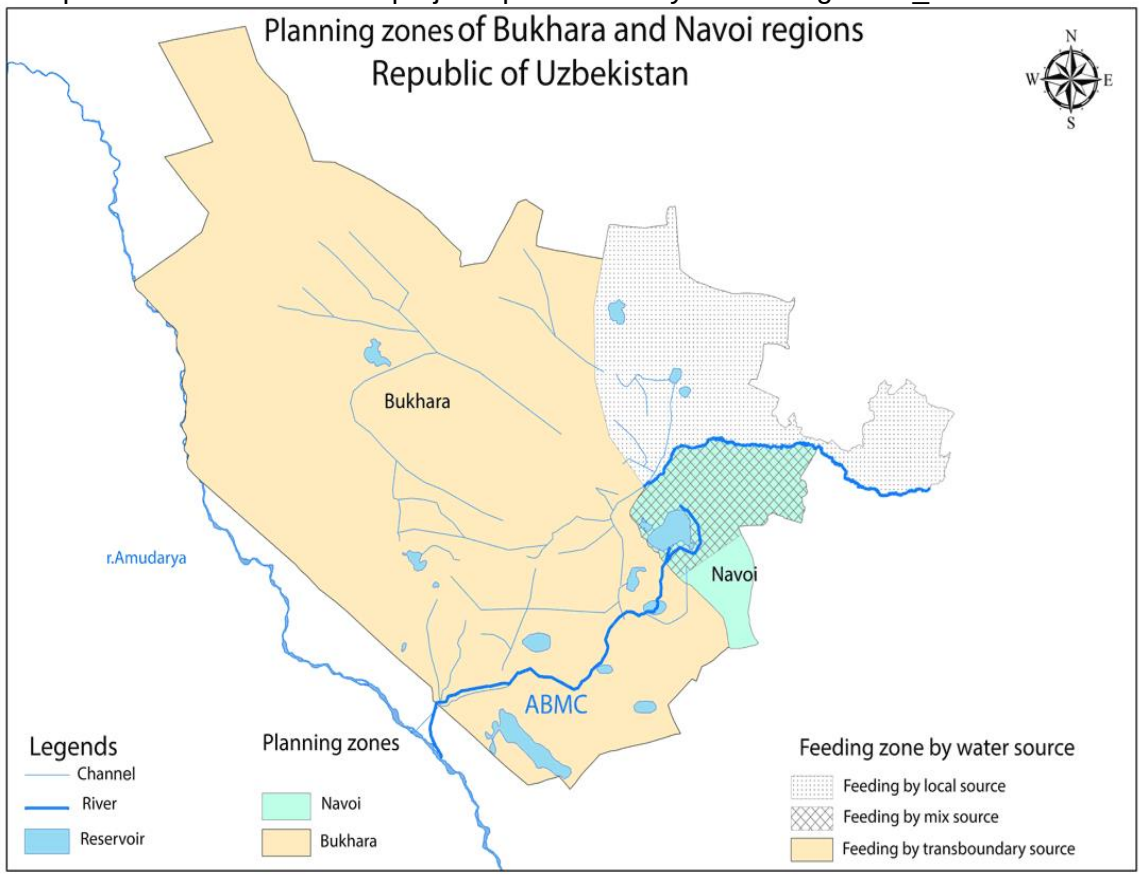
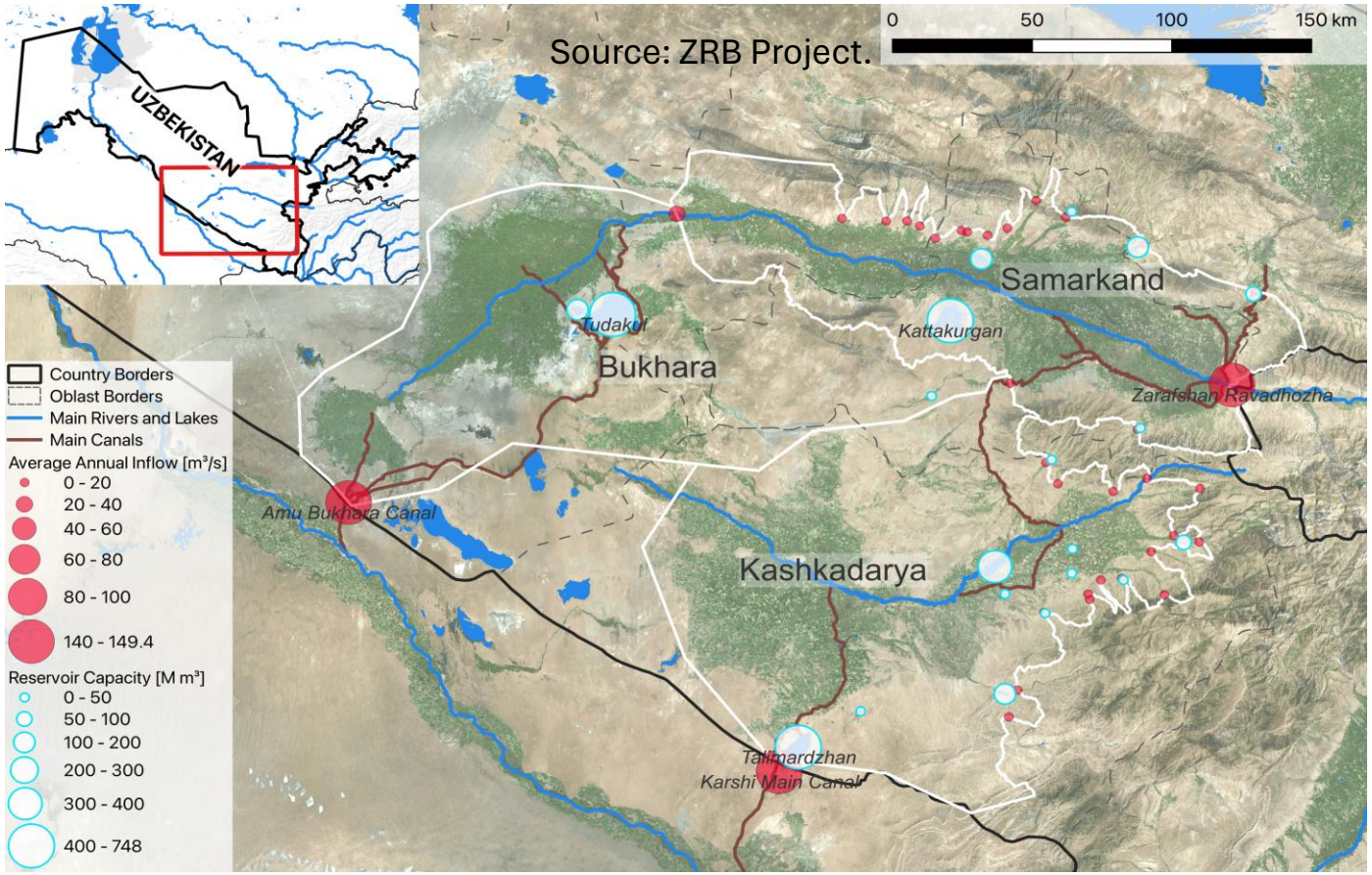
Nexus Research within Amu-Bukhara Irrigation System – Zarafshan – Kashqadarya Water Systems

http://www.cawater-info.net/projects/peer-amudarya/knowledgebase_e.htm





- Approximately 8.3 billion cubic meters of water are pumped annually.
- Pumping water up to 200 meters is costly and results in significant CO2 emissions, especially interlinkages btw Zarafshan Irrigation system and Amu-Bukhara irrigation system.
- About 1.1 million tons of carbon dioxide equivalent are emitted annually.
- Climate change, population growth, and increased water extraction from the Amu Darya will further strain this already limited water resource.

Samarkand Agroinnovations and Research University

Ministry of Agriculture

STUDENTS & STAFF

Study Courses for Bachelors **15**

Study Courses for Masters **14**

Study Courses for Ph.D. **9**

Bachelor students **1700**

Master students **200**

Foreign language skills of Students **60 %**

Professors and assistant teachers **118**

The average age of Professors & staff **38**

DSc **12**

PhD **36**

Compatriot teachers recruited from broad **5**

Overseas – trained teachers **95 %**

Scientific potential **50 %**

FACULTIES & DEPARTMENTS

Faculty of Agrobiology

- Department of Plant science and Fruit and Vegetable
- Department of Agrobiotechnology
- Department of Agrochemistry, Soil Science and Plant Protection
- Department of Fundamental and Humanitarian Sciences

Faculty of Economics and Management

- Department of Economics and business
- Department of food safety and technologies
- Department of Agroengineering
- Department of Digital Technologies and Accounting

INTERNATIONAL COOPERATION

International Projects **6**

Foreign Partner Universities **40**

Foreign Internship Programs for Students **6**

Co-funded by the Erasmus+ Programme of the European Union

Integration of Universities and Extension centers

- Integration of Universities and Extension centres like AKIS, "Fermerlar maktabi", "Suvchilar maktabi".

- Those two schools teach about water saving technologies, water use efficiency, climate change and overall challenges in agriculture etc.

AKIS

Thank you for your attention

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