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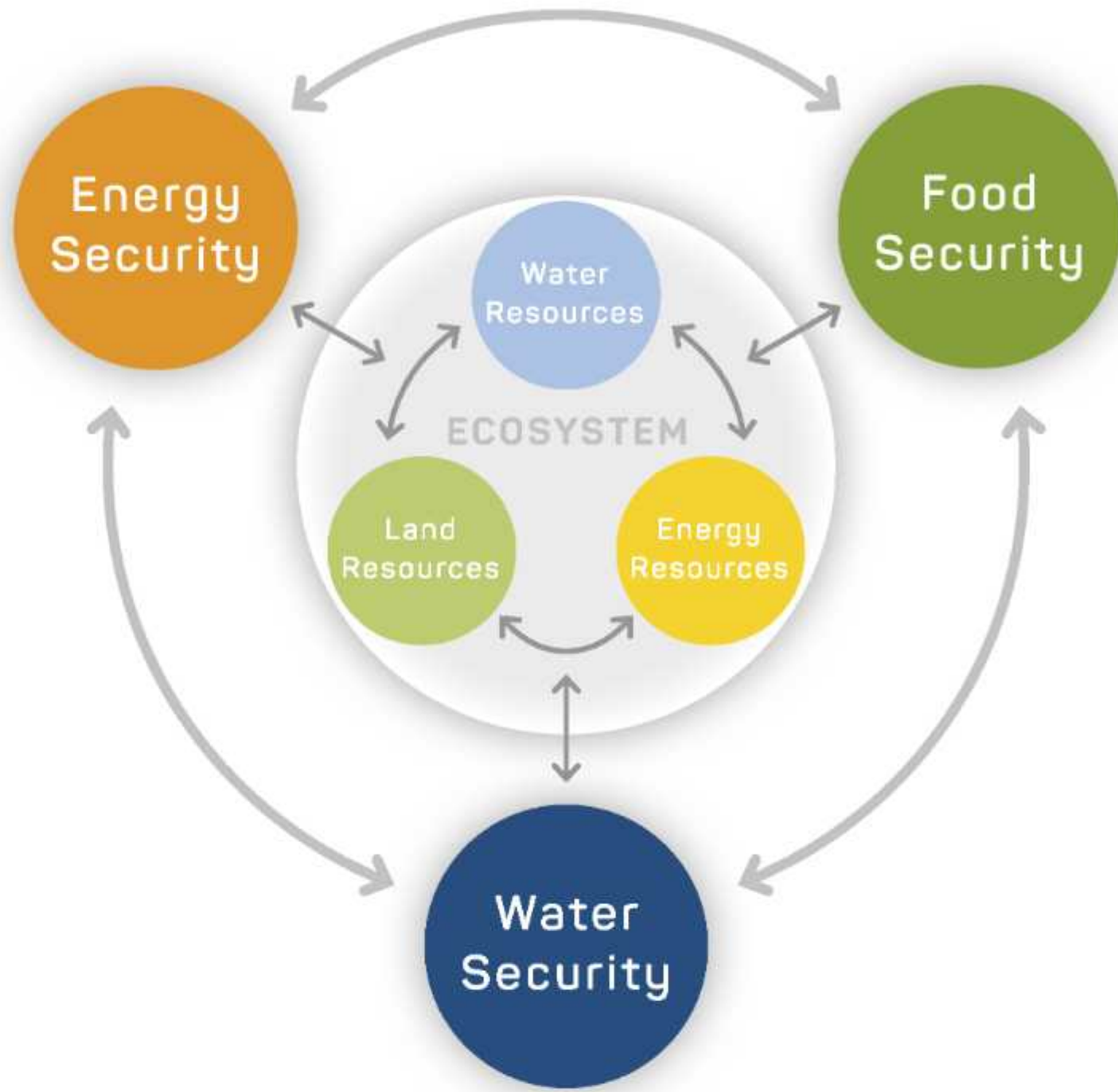


CENTRAL ASIA NEXUS DIALOGUE PROJECT: FOSTERING WATER, ENERGY AND FOOD SECURITY NEXUS AND MULTI-SECTOR INVESTMENT (PHASE II)



GENERAL INFORMATION ON THE PROJECT

Implementing organisation	Regional Environmental Centre for Central Asia (CAREC)
Duration	04/06/2020 – 03/06/2023
Budget	Total 1,250,000 € EU contribution 1,000,000 €
Beneficiary countries	Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan
Location	Central Asia (CA)
Keywords	Linkages between water, energy, food security (WEF Nexus), intersectoral planning, cost-benefit sharing, transboundary cooperation
Grant contract	ENV/2020/416-080
Target groups	WEF related line ministries and experts, local authorities, CA Academic Network, International Financial Institutions (IFIs)



OVERALL OBJECTIVE:

Institutionalisation of WEF Nexus approach in national and regional governance structures and investment decisions for water, energy and food security in Central Asia.

SPECIFIC OBJECTIVES:

- To apply the WEF Nexus approach in planning, policy making and practical implementation;
- To increase interest of public and private investors to support Nexus based projects in CA.

ACHIEVEMENTS TO DATE

- Small-scale projects to demonstrate a practical application of the WEF Nexus approach implemented:
 - To tackle the sedimentation issue at Tuyamuyun Hydro Complex (THC) (TKM-UZB);
 - To improve energy efficiency at pumping stations in Sughd region (TAJ);
 - To pilot a closed root system for planting saxaul seedlings on the dried bottom of the Aral Sea (KAZ).
- Initial concepts of investment projects developed for:
 - Technical solutions for the removal of sediment from the THC reservoir and the production of pilot products from sediment (brick, foam block, facing tiles), profit and loss analysis;
 - Smart and energy-efficient equipment at pumping stations in the Sughd region, Tajikistan;
 - Afforestation of the dried bottom of the Aral Sea.
- 4 analytical assessments on the climate change impact and the socio-economic assessment in Uzbekistan and Turkmenistan;
- 37 regional and national events on WEF Nexus held for 1185 participants (699 men / 486 women);
- 12 universities and public administration academies from Central Asian countries involved to study the WEF Nexus approach and 5 memoranda of cooperation signed
- Three dialogue platforms function: Regional Steering Committee and two Technical Working Groups.



Created by	Centre for Systems Solutions in collaboration with the International Institute for Applied Systems Analysis and the Sustainable Energy for All Initiative
Funded by	European Union
Application in Central Asia	EU-funded project "Nexus Dialogue in Central Asia" in cooperation with the USAID Regional Water and Environment Activity



Interactive Nexus game was developed at the request of the European Union by the Polish organization "Systems Solutions". The game represents a facilitated process of playing five different scenarios on water, energy and food resources management between downstream and upstream countries. Each participant has a role and not only learns how to defend the issues of their sector, but also to hear other participants, argue their proposals and find compromises. The full Nexus Game takes up to 5 hours and is played using a map, colored tokens and cards.

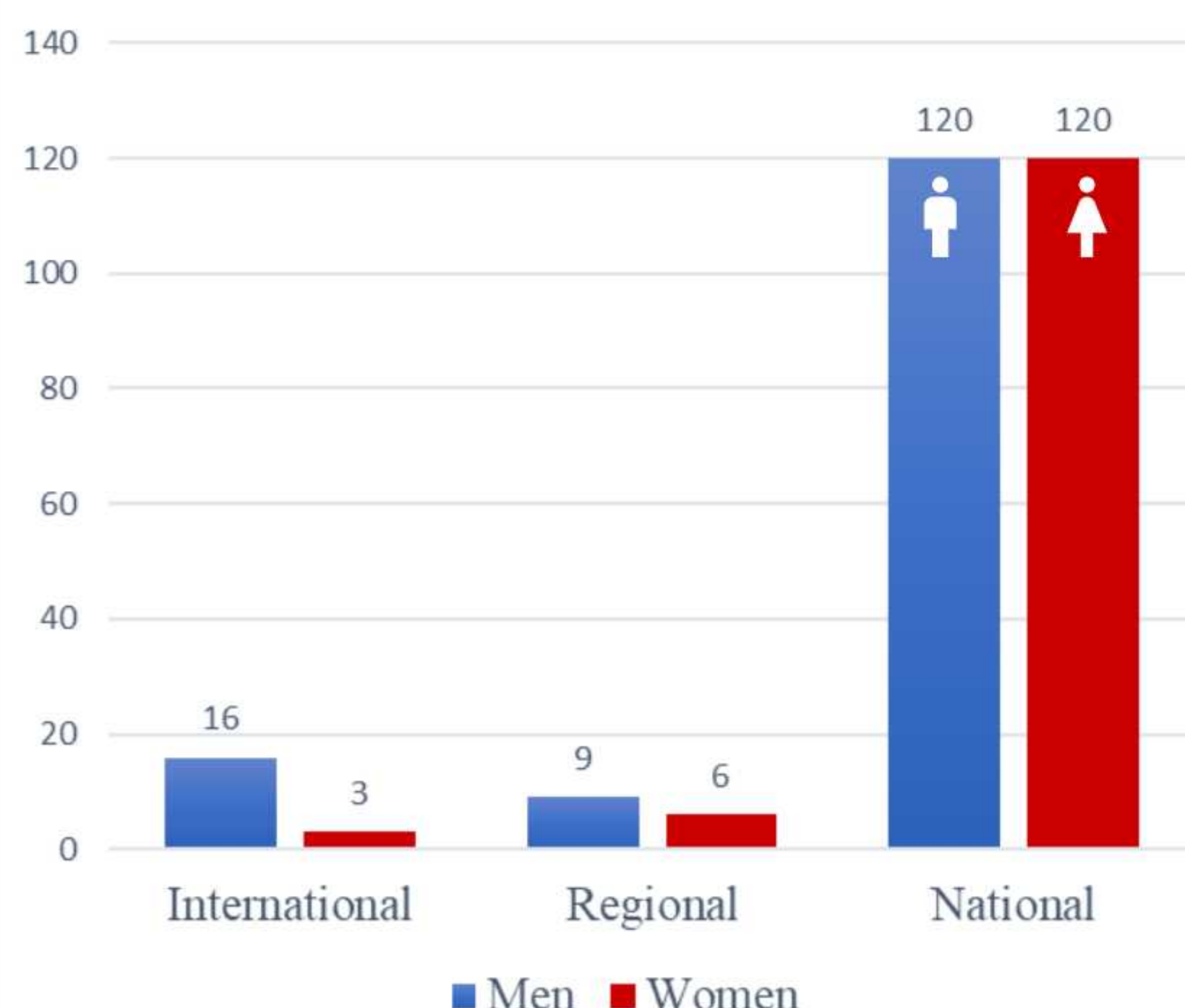


The game vividly illustrates well-known problems and potential conflicts between upstream and downstream countries. During one of the scenarios, for example, participants can put themselves in the shoes of downstream countries that were not willing to tolerate water pollution from upstream countries.

ACHIEVEMENTS TO DATE

- 10 training events were conducted for project partners:
 - 7 national - ToTs in Bishkek, Dushanbe, Tashkent, Bukhara, Astana and Nexus game for media in Almaty;
 - 1 regional - Nexus Game (ToT) in Tajikistan;
 - 2 international - study tour and Nexus training in Senegal.
- 12 Central Asian universities and academies for civil servants studied WEF Nexus approach through Interactive Nexus Game
- Memoranda of cooperation signed with 3 academies of civil servants and 2 universities:
 - Academy of Public Administration under the President of the Kyrgyz Republic;
 - Academy of Public Administration under the President of the Republic of Tajikistan;
 - Academy of Public Administration under the President of the Republic of Kazakhstan;
 - "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University;
 - Gumilyov Eurasian National University.

Capacity building events by level and sex



Trainings carried out by the Action on the Nexus approach disaggregated by level

TRANSBOUNDARY DEMO PROJECT BETWEEN UZBEKISTAN AND TURKMENISTAN “TUYAMUYUN HYDROELECTRIC COMPLEX”

Requested by	Ministry of Water Resources of the Republic of Uzbekistan and State Committee of Water Resources of Turkmenistan
Implemented by	national and international experts
Implementation period	Jan 2020 – Apr 2023
Location	Lebap Veloyat, Turkmenistan
Co-financed by	World Bank, CAWEP Trust Fund, Global Nexus Secretariat, “Central Asian Institute for Ecological Research” (Kazakhstan)



BACKGROUND:

The Tuyamuyun Hydroelectric Complex (THC) is a transboundary water-energy facility located along the Amudarya River at the border between Uzbekistan and Turkmenistan. The facility is located in Turkmenistan, but belongs to Uzbekistan. The land is leased by Turkmenistan based on the corresponding interstate legal agreements. As a strategic facility, THC regulates the Amudarya’s lower stream and secures water resource allocation between the riparian countries. As such, it supplies i) water to 425,000 ha of irrigated land in Turkmenistan and 779,300 ha in Uzbekistan; ii) electricity to Uzbekistan; and iii) drinking water to Khorezm Region and Republic of Karakalpakstan (Uzbekistan).



The growing sedimentation of the THC’s Ruslovoye reservoir – that has already reached 70% – disables water passage to the other three reservoirs of the THC for irrigation and drinking needs. By 2040, the Ruslovoye reservoir is forecasted to get fully silted as per the business-as-usual (BAU) scenario harnessing the WEF security for around 5 million people in total in Uzbekistan and Turkmenistan. The state authorities of both riparian countries have been joining efforts to pinpoint and implement cost-effective technical and investment solutions to tackle the sedimentation at the Ruslovoye reservoir.

AIM AND TASKS:

Support the WEF security by tackling the growing sedimentation at the THC’s Ruslovoye Reservoir via executing the following tasks:

- Task 1.** To conduct social and economic assessment of the WEF dependence on the Ruslovoye reservoir;
- Task 2.** To estimate the current sedimentation volume, forecast the sedimentation growth during the next 50 years and design technical solutions to clean the sediment;
- Task 3.** To conduct climate vulnerability and risk assessment of THC and supported territories;
- Task 4.** To develop technical recommendations on cost-effective sedimentation cleaning supported by profit and loss analysis by the international consultants “Deltares” and “Altus Impact” respectively;
- Task 5.** To determine the sediment’s recycling potential by conducting chemical analysis and lab experiments on producing the pilot products out of the sediment;
- Task 6.** To develop the investment proposal on cleaning and recycling the sediment.

ACHIEVED RESULTS:

- Final reports finalized (Tasks 1., 2. and 3.);
- The draft of the final report produced by the international consultant “Deltares” (Task 4.);
- The chemical composition of the sediment from the Ruslovoye reservoir concluded (Task 5);
- The lab experiments on producing the burnt brick, foam block and facing tile out of sediment of the Ruslovoye reservoir successfully conducted by a Kazakhstan laboratory. The conclusion of the State Sanitary and Epidemiological Surveillance of the Republic of Kazakhstan was issued with the assignment of “first class” to the pilot foam block, i.e. suitable for residential construction (Task 5.);
- A draft profit and loss analysis produced for the treatment and recycling of sediment from the Ruslovoye reservoir by the international consultant “Altus Impact” (Task 4.).

NEXT STEPS:

- Development of the draft investment proposal on cleaning and recycling the sediment from the Ruslovoye reservoir (Task 6);
- Presentation of the developed investment proposal to the potential investors (Task 6).



NATIONAL DEMO PROJECT IN KAZAKHSTAN

“AFFORESTATION OF THE DRIED BOTTOM OF THE ARAL SEA: PILOTING A CLOSED ROOT SYSTEM”

Requested by	Executive Directorate of the International Fund for Saving the Aral Sea (ED IFAS) in Kazakhstan;
Implemented by	ED IFAS in Kazakhstan
Implementation period	Nov 2020 – Apr 2023
Location	Kyzylorda Region, Kazakhstan, premises of the Eco-Aral National Touristic Centre (70 km from Aralsk Town)
Co-financed by	ED IFAS in Kazakhstan

BACKGROUND:

The area of the Aralkum Desert has reached approx. 6 mln ha, out of which 2.8 mln ha are located in Kazakhstan (Kyzylorda Region) and 3.2 mln ha in Uzbekistan (Republic of Karakalpakstan). Both countries have been actively afforesting the dried bottom of the Aral Sea as part of government programs and donor-supported interventions to curb massive dust transfer across Central Asia (CA) and beyond, negatively affecting the environment, public health, and economy in the region and beyond for the last decades.



Today, the Aralkum’s afforested area has reaches 200,000 ha in Kazakhstan and 1.5 mln ha in Uzbekistan, including the self-reproducing plantations. The augmenting water mineralization and soil salinity within the dried seabed area, as well as the anomalous air temperature increase all prevent accelerated greening. According to UNDP statistics, the average survival rate of forest plantations in the target zone equals 0% for 25.4 thous. ha, 0-50% for 15.9 thous. ha, and 50%+ for 10.1 thous. ha.

In addition, climate change has been significantly affecting the Aral Sea Region. Based on the World Bank’s data, a 10 to 30% drop in the discharge of the Syrdarya and Amudarya Rivers will facilitate the expansion of the Aralkum Desert area. Innovative methods shall be considered to speed up the afforestation and increase plant survival rate. One of these methods could be the cultivation of tree seedlings using the closed root system method, allowing to boost the survival rate of saxaul species up to 2-3 times compared to conventional planting techniques.

AIM AND TASKS:

Pilot the closed root system method of growing saxaul seedlings to increase the survival rate up to 70% by executing the following tasks:

- Task 1.** To construct 2 greenhouses and 1 shade-house with the total area of 140 m2 and plant 2,000 black saxaul seeds using the closed root system method;
- Task 2.** To replant seedling to the dried bottom of the Aral Sea in 1 year;
- Task 3.** To carry out estimations on the volume of the water and electricity resources needed for growing seeds of saxaul in a closed root system;
- Task 4.** To monitor the growth and survival rate of saxaul seedlings replanted on the dried bottom of the Aral Sea comparing to other methods (mechanized planting and with Aquasorb hydrogel solution).

NEXT STEPS:

- Development of the draft investment proposal on cleaning and recycling the sediment from the Ruslovoye reservoir (Task 6);
- Presentation of the developed investment proposal to the potential investors (Task 6).

ACHIEVED RESULTS:

- 2 saxaul greenhouses and 1 shade-house built, and seeds of saxauls planted through closed root system;
- Only 20% of the planted seeds survived due to the hot summer and high-water mineralization in Kamystybas Lake in 2021;
- In the spring of 2022, 200 seedlings of saxaul were replanted from the greenhouses and shade-house to the fenced area of 5 ha in the dried bottom of the Aral Sea, where saxaul seedlings were planted in a several different ways as part of the USAID-funded project “Regional Activity of the Environmental Restoration of the Aral Sea” implemented by ED IFAS in Kazakhstan;
- As a result, the planted saxaul seedlings in the closed root system demonstrated the best survival rate comparing to other methods (over 50 %). It was observed that saxauls grown in the closed root system can wake up after some time and begin to grow from the root;
- Given the positive results, one of the national saxaul nursery committed to introduce the closed root system in a massive saxaul replanting.

NATIONAL DEMO PROJECT IN TAJIKISTAN

“IMPROVING THE ELECTRICITY CONSUMPTION CONTROL AND MONITORING SYSTEM AT PUMPING STATIONS AND UPGRADING A LARGE PUMPING STATION IN SUGHD REGION IN THE REPUBLIC OF TAJIKISTAN BASED ON ENERGY-EFFICIENT TECHNOLOGIES”

Requested by	Agency for Land Reclamation and Irrigation (ALRI) under the Government of the Republic of Tajikistan (RT)
Implemented by	national experts
Implementation period	July 2021 – April 2023
Location	Sughd Region of Tajikistan
Co-financed by	CAWEP Trust Fund, Grundfos, Dutch pumping equipment manufacturer



BACKGROUND:

Over 90% of Tajikistan’s territory is occupied by mountains, which requires mechanically lifting water from rivers and canals to irrigate farmland. The pumping stations across the country pump and lift water to 50%+ of domestic irrigated land generating 80% of the country’s agricultural production, and thus secure the functionality of its agricultural sector per se. The industry, in turn, provides jobs to 70% of the population and contributes 20% to the country’s GDP.



Agriculture is likewise a major consumer of water and energy in Tajikistan, using 90% of available water resources and 10% of the total electricity supply (for powering pumping stations). On top of that, the pumping stations were mainly built 40-50 years ago, and thus are highly energy intensive. The corresponding investment costs are hardly collected due to low end user solvency. Hence, the Government of the RT has been subsidizing electricity costs during vegetation season.

The escalating use of old and energy-intensive pumping stations threatens the national food security. According to statistics, the annual population growth in Tajikistan is 2.2%. With such a demographic trend, it is expected to reach 11.2 mln by 2030. To respond to the challenge from the technical side, ALRI is considering introducing power metering and energy-efficient technologies at a pumping station in Sughd Region to ensure proper electricity consumption for subsequent nation-wide replication.

AIM AND TASKS:

Improve energy-efficiency of pumping stations in Sughd Region of Tajikistan by executing the following tasks:

- Task 1.** To conduct the analytical review of pumping stations’ operation modalities;
- Task 2.** To execute technical examination of metering at 173 pumping stations, and design the Concept of digitalizing electricity consumption metering at pumping stations;
- Task 3.** To carry out energy and water audits at 2 pumping stations;
- Task 4.** To draft the investment proposals for digitalizing electricity consumption metering at pumping stations and upgrading the Golodnostep Pumping Station based on energy-efficient technologies.

ACHIEVED RESULTS:

- Analytical review on pumping stations’ operation modalities completed;
- 173 pumping stations fully examined, and the Concept of digitalizing electricity consumption metering at pumping stations finalized;
- Energy and water audits conducted and the energy audit reports developed by Grundfos;
- 2 investment proposals for digitalizing electricity consumption and monitoring metering at pumping stations and upgrading the Golodnostep Pumping Station drafted.

NEXT STEPS:

Presentation of the developed 2 investment proposals to the potential investors.



NATIONAL DEMO PROJECT IN THE KYRGYZ REPUBLIC

“INSTITUTIONALIZATION OF THE WEF NEXUS APPROACH IN THE AGRICULTURAL SECTOR”

Requested by	Ministry of Agriculture of the Kyrgyz Republic (MoA of the KR)
Implemented by	national experts
Implementation period	Jan – Dec 2022
Implementation level	national level

BACKGROUND:

The agricultural sector is key for the overall economic development of the Kyrgyz Republic. Yet, the industry has been developing slower than the national economy at large, and remains uncompetitive. In 2019, agriculture contributed 0.3% to the GDP, whereas the overall economic growth reached 4.5%. Meanwhile, 66% of the country’s population reside in rural areas. There are several challenges holding back the sector’s further growth.



Kyrgyzstan’s agriculture is dominated by small-scale peasant farms (96% market share in 2020). With the limited availability of irrigated acreage, the growing number of small farming households makes the industry inefficient and unappealing for foreign investments. With the slow deployment of technical innovations and high (local) commercial bank interest rates (approx. 16%), the sector is not able to explore its full potential and is hardly able to satisfy the domestic needs. In 2019, the country’s agricultural imports prevailed 1.3 times over exports. Another hurdle is the decreasing land productivity that has reached 36% during the last 5 years; meanwhile, the population growth in same period has amounted to 11%. The exacerbating climate change and degrading irrigated farmland also threaten national food security. To advance the agricultural sector, the MoA of the KR initiated the enhancement of the 2021-2025 Agriculture Development Strategy of the KR (Agro Strategy) and requested the Project to provide targeted technical assistance.

AIM AND TASKS:

Support the MoA in upgrading/drafting the Agro Strategy with the introduction of the Nexus approach through executing the following tasks:

- Task 1.** To evaluate the performance of the active Agro Strategy;
- Task 2.** To enhance the Agro Strategy considering the current macro- and microeconomic and social factors;
- Task 3.** To introduce digitalization in the agricultural sector.

NEXT STEPS:

The Project team will monitor the Concept’s implementation and may consider assisting with designing technical rules and/or other frameworks to support its full-fledged execution.

ACHIEVED RESULTS:

- The Project had supported the review of and enhancements to the Agro Strategy in early 2021. However, with the nation-wide unrest and subsequent government reshuffle, the newly appointed MoA’s management transformed the revised Agro Strategy into the 2021-2031 Concept of Agrarian Development of the Kyrgyz Republic as per the recommendations of the national Cabinet of Ministers. The draft Concept was later approved by the Government of the KR. Given the vast replacement of the technical staff, the Nexus approach is not fully reflected in the Concept as opposed to the earlier Agro Strategy revised with the Project’s assistance (Tasks 1, 2 and 3);
- The assessment of the Agro Strategy during the review pointed to intersectoral discoordination as a principal cause of the agricultural sector’s inefficiency. The approved Concept also highlights the need for a single state body to coordinate, monitor and analyze the efforts within the framework of all state programs and by all partners (Tasks 1, 2 and 3).



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