Ministry of Energy and Water Resources
of Republic of Tajikistan

Green Diplomacy Week – a global just energy transition
EU-Central Asia Sustainable Energy Days

International Conference
Energy Efficiency in Tajikistan: prospects and challenges
Dushanbe Serena Hotel, 25-26 October 2023

Improvement of the system of control and monitoring of electricity consumption in pumping stations in Tajikistan

Bakhrom Gaforzoda, Secretary,
Tajikistan National Commission on Irrigation and Drainage (TajNCID)

Land reclamation and irrigation sector

"Irrigated agriculture is an important part of ensuring food security and employment"

President of the Republic of Tajikistan

Emomali Rahmon

Land reclamation and irrigation is one of the key sectors of Tajik economy contributing to the achievement of the country's strategic goals, including food security and employment in the country's rural regions

- *About 80% of agricultural production is provided by irrigated lands;*
- *Total volume of water taken from all irrigation sources averages 8.0-10.0 km3/year;*
- *More than 90% of the total volume of water intake from natural sources is used for the needs of irrigated agriculture;*
- *About 70% of the country's active population is engaged in irrigated agriculture;*
- *About 20% of the country's GDP comes from agriculture.*

Agency for Land Reclamation and Irrigation under the Government of the Republic of Tajikistan

1

ALRI was created by the Decree of the President of the Republic of Tajikistan dated November 19, 2013 as part of improving the structure of state executive bodies of the Republic of Tajikistan

Based on the Regulations on the ALRI approved by the Decree of the Government of the Republic of Tajikistan No. 125 dated February 27, 2014, and the Water Code of the Republic of Tajikistan No. 1688 dated April 2, 2020,

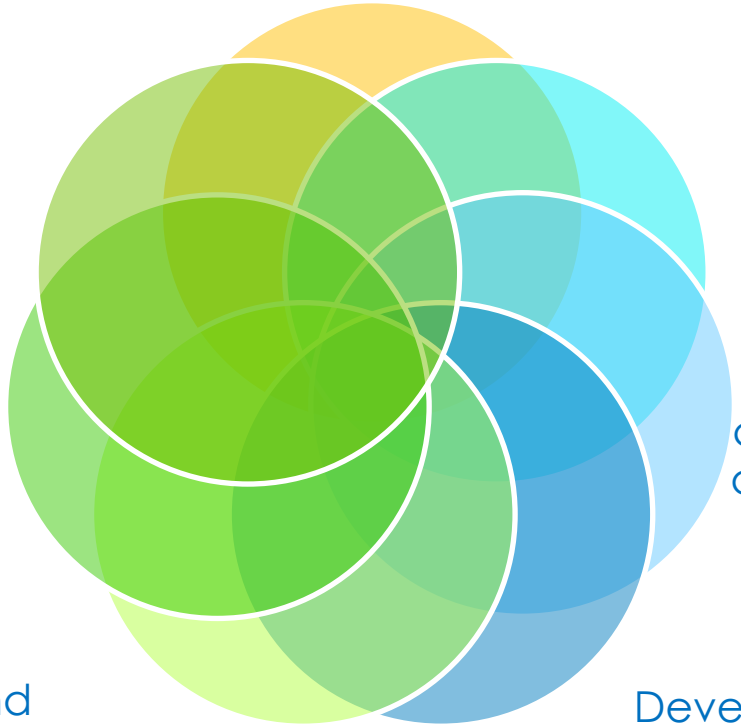
ALRI is an authorized state body in the field of land reclamation and irrigation, in charge of developing and implementing a unified state policy and legal regulation in this area.

ALRI's main functions

Providing water users with irrigation water and water drainage;

Water resources management in reclamation and irrigation systems at the level of basins and sub-basins.

Design, construction, restoration and modernization of hydraulic structures;



Coordination of WUA (Water Users Association) activities;

Reducing the risk of water-related natural disasters by carrying out bank protection and channel regulation work on rivers and canals;

Supervision and improvement of land reclamation conditions;

Development of new lands and restoration of lands out of agricultural use through water supply;

Mechanical irrigation

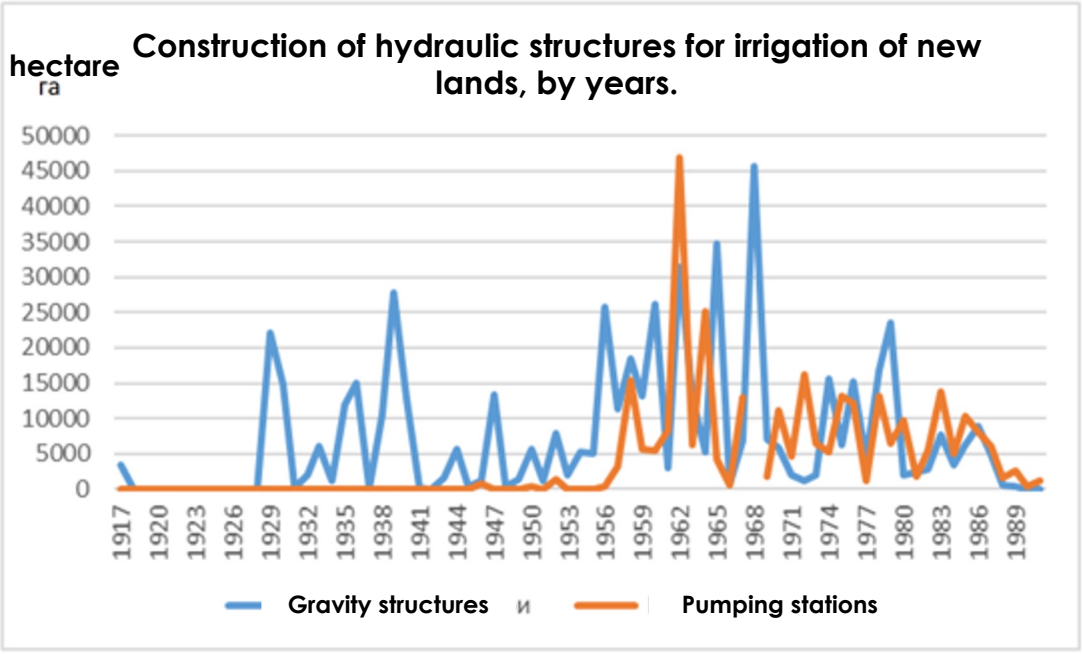
A total of **763,468 ha of** irrigated lands in the country
Of these, **548,273 ha** are irrigated by the ALRI system
Incl. **293671 ha (53.5%) -** by pumping stations
Incl. **214,700 ha -** by cascade pumping stations

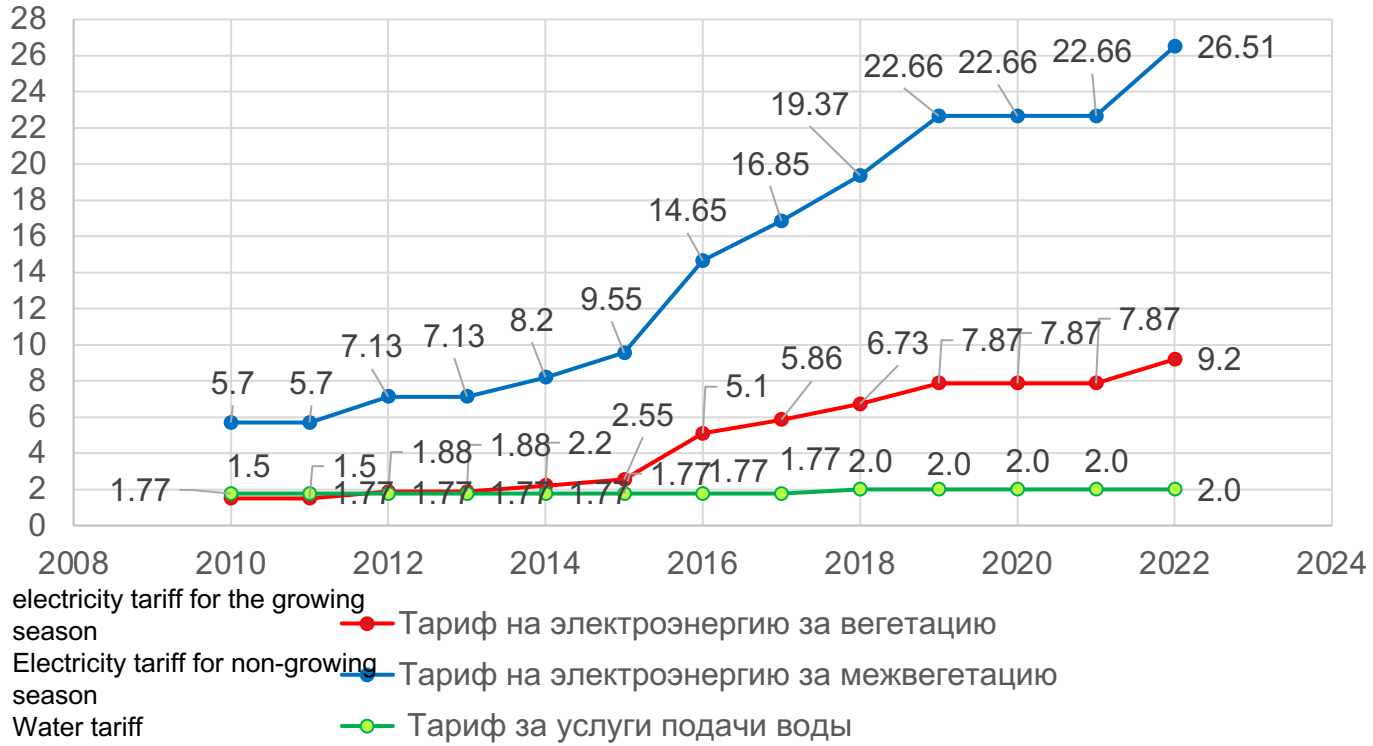
For this purpose, the ALRI system has 393 pumping stations
incl. 228 cascade pumping stations reaching 2-7 lifts
247 substations

The rated volume of electricity use by pumping stations is **4.9 billion kWh**

The average electricity use **over 5 years** was **1.4 billion kWh (28.5%)**

Main issues related to mechanical irrigation





District	Water supply, million m3	Cost, thousand somoni	Electricity use, kW/hour	Cost, thousand somoni
Zafarobod	270,0	6026,0	271183,3	22047,7
Mastchokh	171,7	3434,4	116651,9	9450,5
B.Gafurov	195,2	3834,6	168205,5	14215,6

Improving energy efficiency of pumping stations: case study of Nexus demo project in the Sughd region of the Republic of Tajikistan

Финансирование Европейского Союза

nexus

carec

CAWEP CENTRAL ASIA WATER & ENERGY PROGRAM

THE WORLD BANK IBRD · IDA | WORLD BANK GROUP

EUROPEAN UNION

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs FDEA
State Secretariat for Economic Affairs SECO

UKaid from the British people

Central Asian Dialogue to Promote Sectoral Financing through the Water-Energy-Food (WEF) Nexus (Phase II)

Implementation period:
July 2021 – January 31, 2022

Implementation location:
Sughd region, Tajikistan

Implemented by:
5 national experts under the leadership of the ALRI and MEWR of the Republic of Tajikistan with the support of the European Union and the CAWEP Trust Fund

Goal: ensuring WEF security by developing the following investment projects:

- **Digitalizing the control and monitoring system for electricity consumption at pumping stations in the Sughd region (TsSMPE-NS);**
- **Modernizing Golodnostep pumping stations in the Zafarabod district of the Sughd region using energy-saving technologies.**

Investment proposal

Based on the results of all technical and analytical work carried out, 2 investment proposals were developed:

1.Investment proposal for the implementation of TsSMPE-NS at pumping stations in the Sughd region

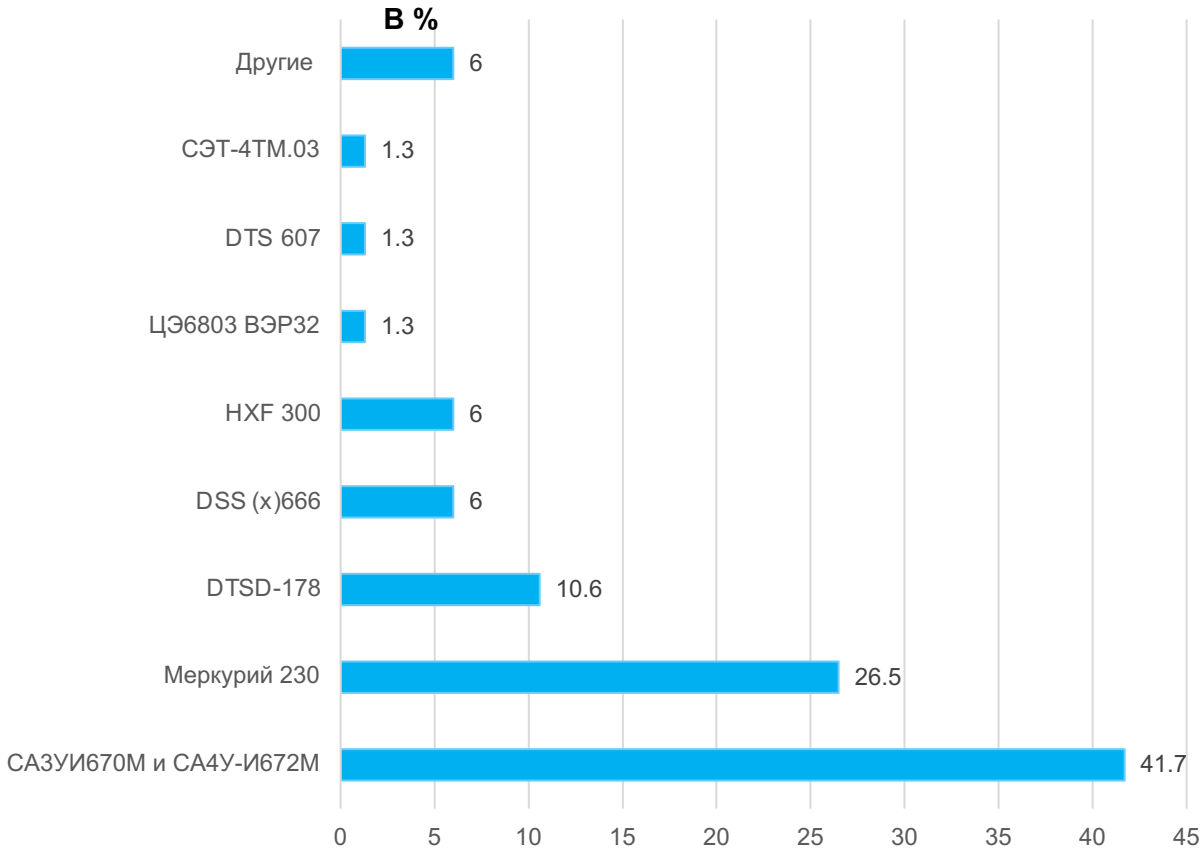
Implementation location: Sughd region
Implementation period: 8 months
Investment required: 767 695,2 USD
Expected payback period: 7,62 years
Current status: looking for an investor

2. Investment proposal Modernization of GNS-1 and GNS-2 (hydraulic pumping station) pumping stations in Zafarabod district

Implementation location: Sughd region
Implementation period: 5 years
Investment required: 26,5 mln. USD
Expected payback period: around 10 years
Current status: the investor has been identified, the feasibility study has been developed, negotiations are underway to sign an investment agreement.

Investment proposal 1
Expected economic benefits of TsSMPE-NS

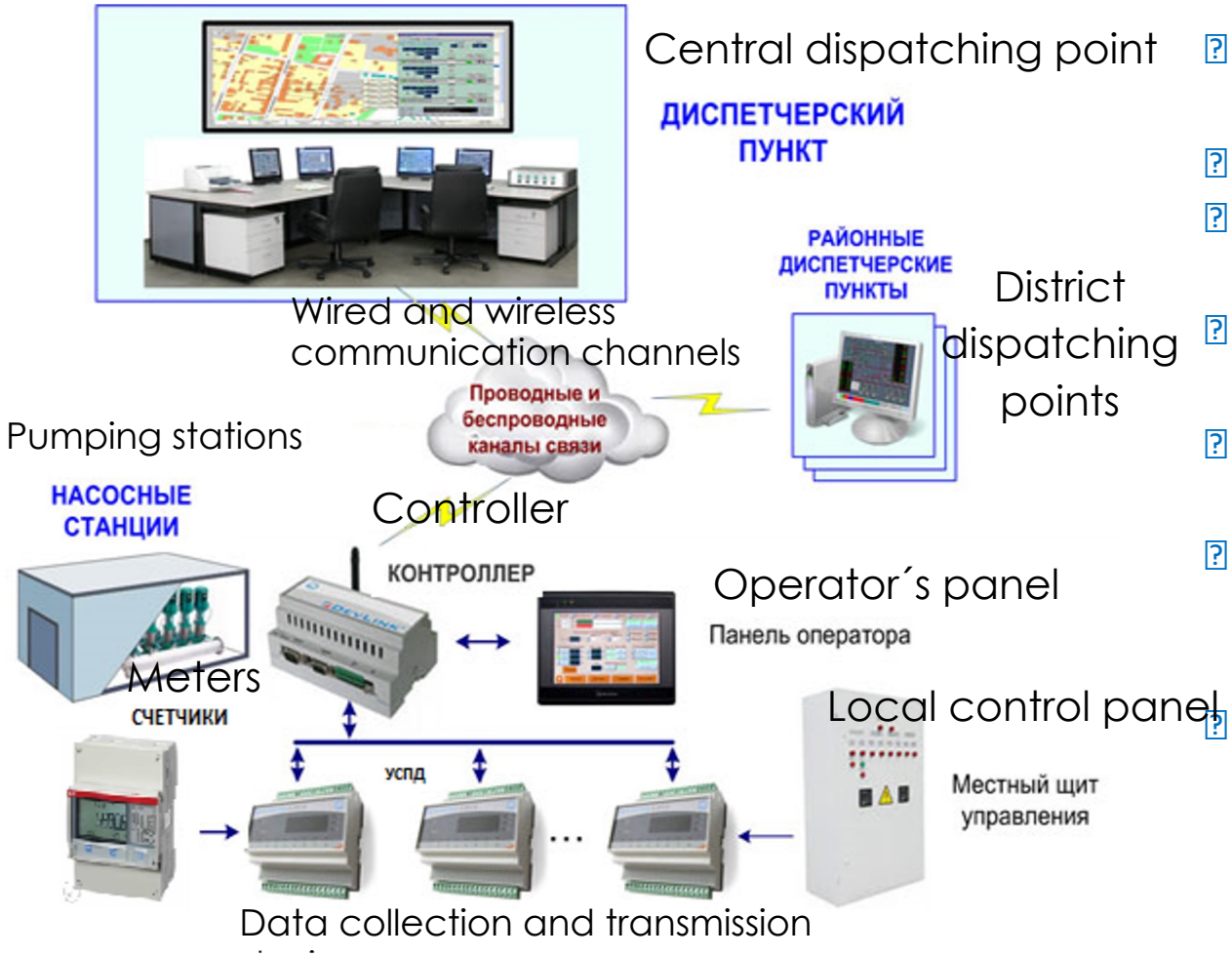
Audit of modified electric meters at 173 pumping stations in Sughd region



- For example, the debt for the use of electricity by pumping stations for 2022 amounted to 89.5 million somoni, and including the debt for previous years the total amounts to **456.9 million somoni**.
- Of this, **362.6 million somoni or 79.3%** of the debt falls on the Sughd region.

- With TsSMPE-NS implemented, on average out of 963,841,960 kW/h of electricity used in the Sughd region, the savings will be 1% (9,638,419.6 kW/h. or 758,544.00 somoni per year).

Expected results of TsSMPE-NS



- Reduced electricity consumption by pumping stations
- Reduced labor costs
- Increased labor productivity associated with collecting and processing information
- Elimination of inefficient or inappropriate use of electricity
- More efficient decision-making thanks to prompt provision of information
- Optimized operating process of pumping units taking into account planned indicators (volume of electricity consumption, volume of water lifting)
- Development of the Irrigation Management Information System (IMIS) and the National Water Information System (NWIS)

Investment proposal 2
Modernizing Golodnostep pumping stations in the Zafarabod district of the Sughd region using energy-saving technologies

Expected results and economic benefits:

- 4068 dehkan farms in the region can do profitable farming on 33,602 hectares.
- Savings of 43.2 million kWh of electricity per year are expected.
- Annual electricity savings of 3.4 million somoni can be used for the sustainable maintenance and operation of irrigation and drainage systems in the area.
- By improving water supply and increasing crop production, dehkan farms will be able to fully pay the current tariff of 2 drams (including VAT) per 1 m3 of water.
- With modernization, the real cost of water will decrease from 8-10 drams per 1 m3 of water to 5-6 drams per 1 m3 of water, and in the future farmers will be able to pay an increased tariff at the level of 5-6 drams per 1 m3 of water.

Government support for the implementation of TsSMPE-NS and modernization of ALRI pumping stations

Decree of the Government of the Republic of Tajikistan "On measures to improve the economic and financial condition of the irrigation, land reclamation and energy system of the Republic of Tajikistan" No. 142 dated March 28, 2023

At the expense of the state budget of 2023, allocated by ALRI to provide electricity to pumping stations, send 5 million somoni to Shabakahoi Taximoti Bark OJSC for the purchase and installation of electricity meters and the introduction of a billing system at ALRI pumping stations. Also, this resolution wrote off 456.9 million somoni of ALRI's debts for electricity to Shabakahoi Taximoti Bark OJSC

Decree of the Government of the Republic of Tajikistan "On the investment program to provide ALRI pumping stations with modern energy-saving equipment for 2023-2027" No. 296 dated June 30, 2023

It is expected that as part of the program, 69 ALRI pumping stations will be modernized for a total amount of 865 million somoni

WATER ACTION DECADE 2018-2028

14th International Drainage Workshop

MAY 30 - JUNE 1 2024 DUSHANBE

Thank you for your attention!