CAREC Technology Forum
Accelerating Climate-Smart Technologies for Resilient Development
7-8 April 2026 | Venue: Hyatt Regency, Bishkek, Kyrgyz Republic

“SMART WATER”
mobile irrigation system for canals and rivers with capability to generate electricity

Project Presentation

8.04.2026

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SMART WATER

Co-funded by the European Union

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Confederation

германия кызматташтыгы
DEUTSCHE ZUSAMMENARBEIT

Implemented by: giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

The project is supported within the Green Innovation Facility by the “Green Economy and Sustainable Private Sector Development in the Kyrgyz Republic” Programme implemented by GIZ and co-financed by the German Government (BMZ), the European Union and the Government of Switzerland (SDC).

Purpose of installation: to supply water and electricity to hard-to-reach areas through an irrigation system that utilize the energy of water itself, thereby increasing the area of irrigated land and generating green energy.

The implementation of "green technology" principles contributes to:

- Environmental protection: reducing pollution and preserving biodiversity.
- Efficient use of resources: promoting the rational use of water, energy, and raw materials.
- Economic sustainability: reducing costs through process optimization and decreasing dependence on non-renewable resources.
- Social responsibility: supporting fair and equitable access to resources for all generations.

Location in Kyrgyzstan:

1. Issyk-Kul oblast - 2 complexes – on irrigation canal Ak-Sai
2. Chui oblast – 1 complex – Chungurchak river, Bishkek city
3. Jalal-Abad oblast – 1 complex – on irrigation canal, Toktogul city

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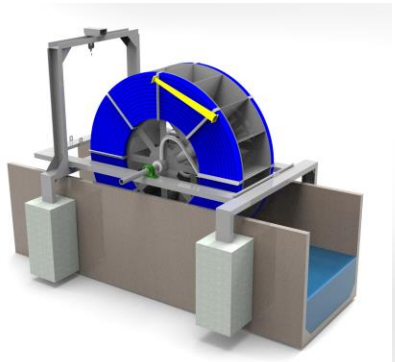
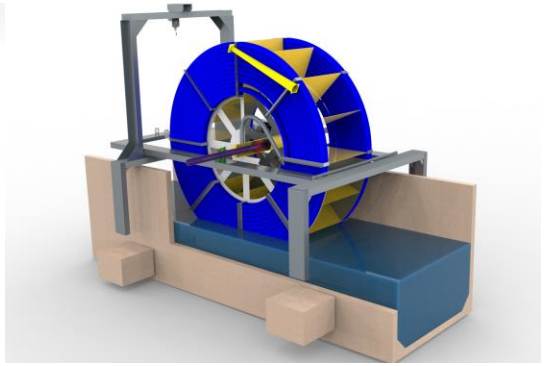
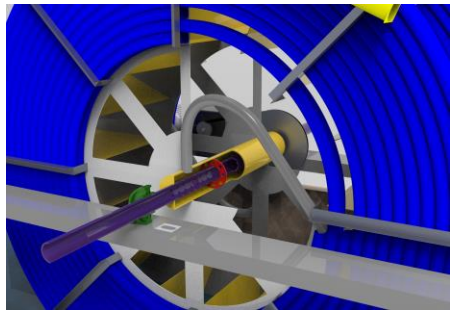
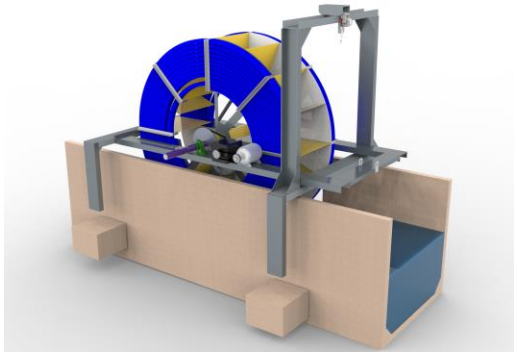
SMART WATER

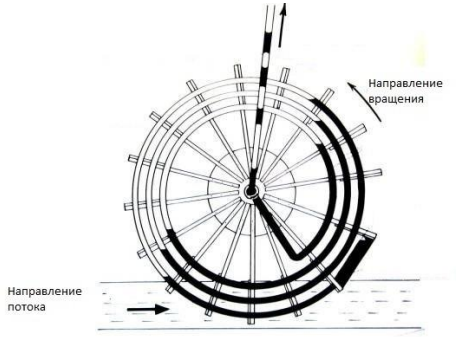
3D model











- Smart Water complex has been installed for the first time in the village of Ak-Sai, Tonsky District

SMART WATER – Ak-Sai, Issyk-Kul oblast

Installation specifications:

1st Installation for up to 10 households
Flow rate: 1.5 L/sec
Water lift: up to 40–50 meters
0.65 hectares per day
3 kW – street lighting on the main street of Ak-Sai village

2nd Installation for up to 30 households
Flow rate: 3 L/sec
Water lift: up to 50–60 meters
1.3 hectares per day
5 kW – street lighting on the main street of Ak-Sai village

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SMART WATER – Bishkek city, Chunkurchak river

Installation specifications: :

3rd

Installation covering up to 3 hectares of the I. Razzakov KSTU Training Polygon

Flow rate: 3 L/sec; Water lift: up to 30–35 meters; 1.3 hectares per day;

1 kW – lighting for the I. Razzakov KSTU Training Polygon

to ADB Mana

SMART WATER – Toktogul city, Jalal-Abad oblast

Installation specifications: :

4th

Installation up to 7 hectares;
Flow rate: 1.5 L/sec;
Water lift: 30–45 meters; 0.65 acres per day;
Up to 3 kW – main street lighting

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SMART WATER

Information about irrigation complex:

- One complex supplies water to up to 30 households
- Flow rate: 3 L/sec = irrigates 1.3 hectares of land = pumps 260 m³ of water per day
- Water lift to 60 meters (using a hydraulic ram without an electric pump)
- Power generation: 5 kW – when using a storage unit (inverter-based storage unit up to 15 kW)
- The unit is fully mobile (it can be moved to the desired section of the river or canal)
- Production time: 1 unit = 2 weeks
- For interested in installation, we can make measurements, manufacture the installation and make it running

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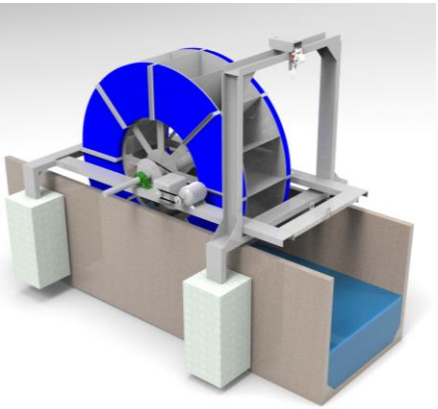
SMART WATER – types of work



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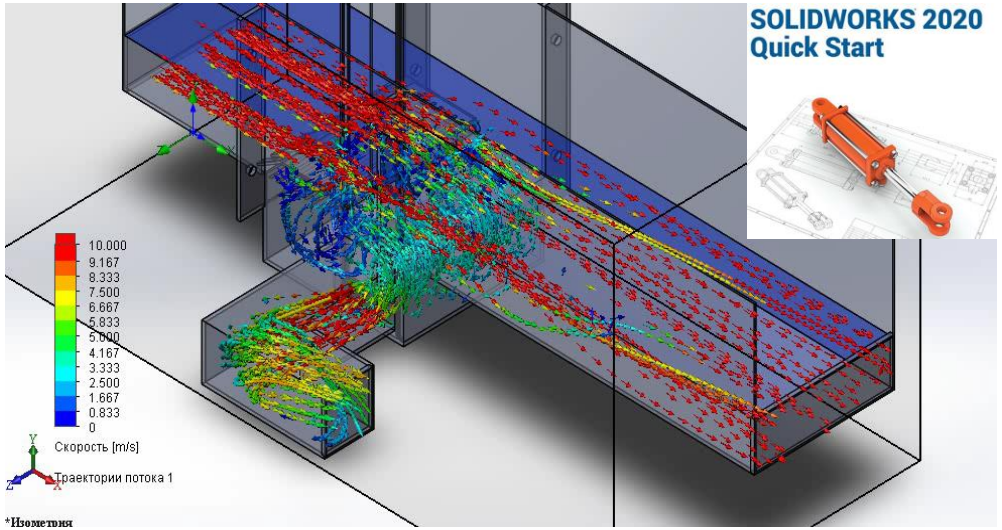
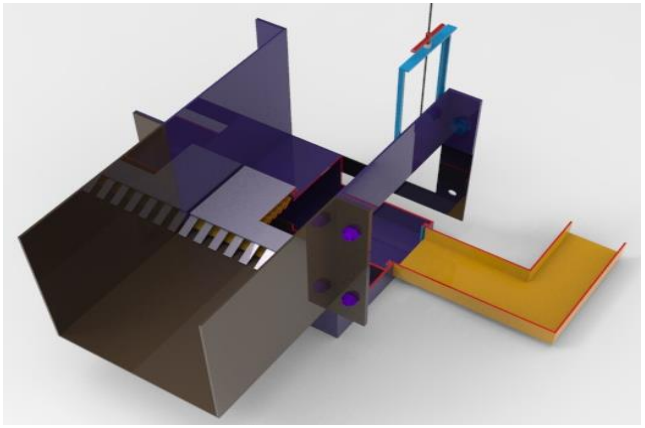
KYRGYZPATENT

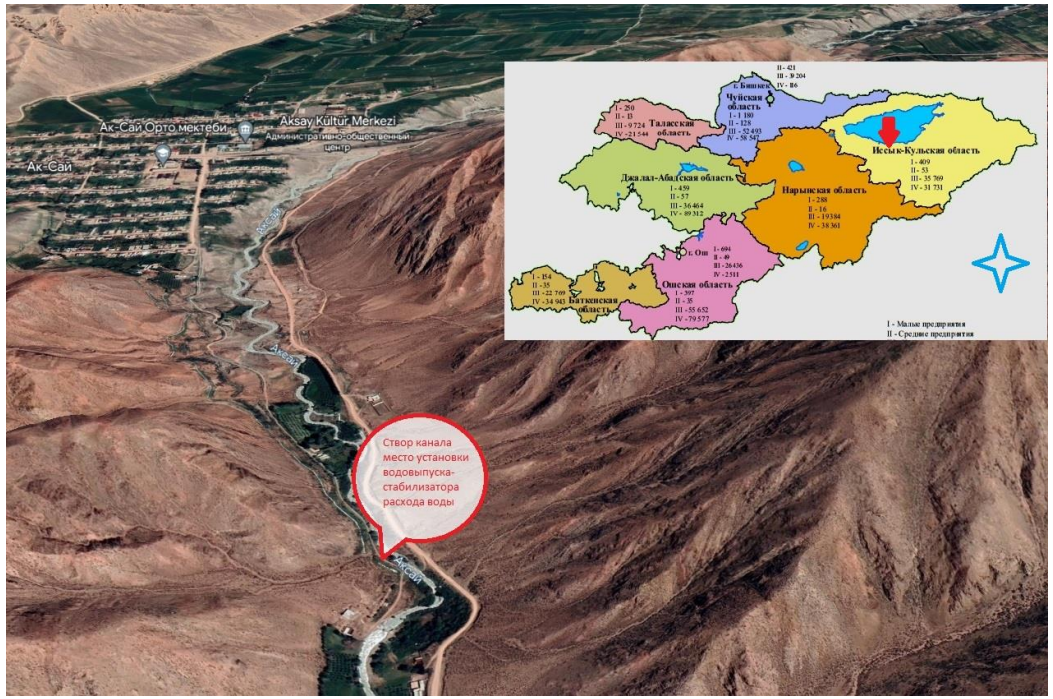
Water intake structure for channels with turbulent flow





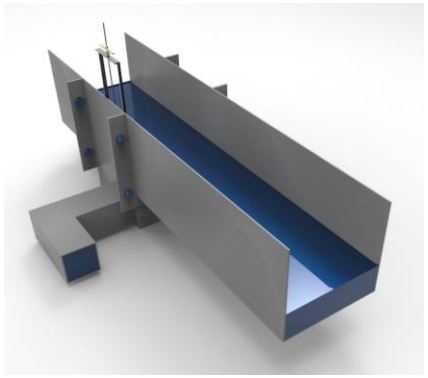
Water intake structure for channels with turbulent flow

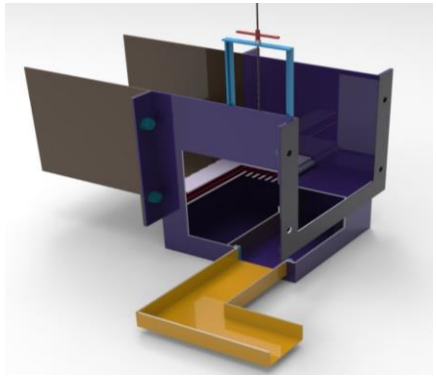
1. Obtaining a patent for inventions in 2017
2. Laboratory testing in 2018
3. September 2018: start of production
4. The system has been in operation since September 2018
5. The facility has been transferred to the balance sheet of the Tonsky District Water Supply and Sewerage Department, Issyk-Kul Region



Target group

- farmers, youth, women, tourist centers, local residents (people engaged in
- horticulture/farming/livestock raising)





Irrigation area up to 120 ha,
Launched in 2018
Used by more than 250 households

Location: Ak-Sai Main Canal, Tonsky District, Issyk-Kul Region, Kyrgyzstan,
Source: https://earth.google.com/web/

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PUBLICATIONS

KYRGYZPATENT

ALS Advanced Logistic Systems Theory and Practice

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Home / Archives / Vol. 18 No. 2 (2024): Advanced Logistic Systems - Theory and Practice / Articles

New trends in sustainable supply chains: insights from recent studies

Tynchtyk Mukanov
Akylbek Umetaliev
Asel Mambetkulova
Almaz Kaiyrbekov
Irina Goncharova
Péter Veres
Péter Tamás
Zulfiya Kannazarova

DOI: https://doi.org/10.32971/als.2024.017

Keywords: smart logistics, smart transportation, digital technologies, sustainable supply chain

Abstract

Research on the Sustainable Supply Chain is a significant focus within the academic community, highlighting the importance of smart logistics, smart

ALS Advanced Logistic Systems Theory and Practice

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Home / Archives / Vol. 18 No. 2 (2024): Advanced Logistic Systems - Theory and Practice / Articles

Water resources in Commonwealth of Independent States countries: a literature review

PDF

Tynchtyk Mukanov
Akylbek Umetaliev
Asel Mambetkulova
Almaz Kaiyrbekov
Zulfiya Kannazarova
Gulsara Monkayeva
Ákos Cservenák
Péter Tamás

DOI: https://doi.org/10.32971/als.2024.020

Keywords: water resources, CIS countries, research tr
Scopus

Abstract

Research on the assessment of water resources in agr

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КЫРГЫЗСКАЯ РЕСПУБЛИКА

КЫРГЫЗПАТЕНТ

ПАТЕНТ

№ 1741

Название изобретения: *Водовыпуск-стабилизатор расхода воды из каналов с бурным режимом течения*

Патентовладелец, страна: *Акматов А.К. (KG)*

Автор (авторы): *Сегизбаев О.О., Муканов Т.А., Канаев М.Д., Жолболдуев П.Б. (KG)*

Заявка № *20140111.1*

Приоритет изобретения *11 сентября 2014 года*

Зарегистрировано в Государственном реестре изобретений Кыргызской Республики *30 апреля 2015 года*

ПАТЕНТ ПОД ОТВЕТСТВЕННОСТЬ ЗАЯВИТЕЛЯ (ВЛАДЕЛЬЦА) на данное изобретение удостоверяет исключительное право патентообладателя на внедрение, использование, а также запрещение использования другими лицами на территории Кыргызской Республики.

АЙЫЛ ЧАРБА, ТАМАК-АШ ӨНӨР ЖАЙЫ ЖАНА МЕЛИОРАЦИЯ МИНИСТРЛИГИ

СУУ-ЧАРБА ЖАНА СУГАТ ДЕПОРТАМЕНТИ

ТОҢ РАЙОНДУК СУУ-ЧАРБА БАШКАРМАЛЫГЫ

722450, Кыргызстан, Иссык-Кол области, Тон району, Боконбаев айылы, Осмоев кочосу, 66
тел. 91-2-67, факс 91-5-26
ӨЖН 01507193610013, ААК "РСК Банк" Боконбаев филиалы, Р/счет 4404042100001605, БЖН 129015, ОКПО 01051784

МИНИСТЕРСТВО СЕЛЬСКОГО ХОЗЯЙСТВА, ПИЩЕВОЙ ПРОМЫШЛЕННОСТИ И МЕЛИОРАЦИИ

ДЕПАРТАМЕНТ ВОДНОГО ХОЗЯЙСТВА И МЕЛИОРАЦИИ

ТОНСКОЕ РАЙОННОЕ УПРАВЛЕНИЕ ВОДНОГО ХОЗЯЙСТВА

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_____ 2018 №_____

«УТВЕРЖДАЮ»
Начальник Тонского РУВХ
_____
Б. А. Алымкулов
«__» _____ 2018 г.

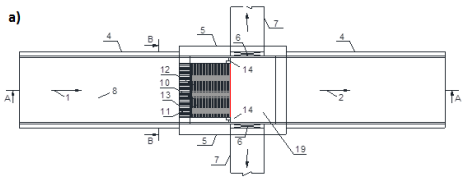
АКТ

сдачи в эксплуатацию «Водовыпуска-стабилизатора расхода воды из каналов с бурным режимом течения» техническое решение автора Муканова Тынчтыка Аскеровича в Тонское районное управление водного хозяйства

Комиссия в составе: председатель – Начальник Тонского РУВХ Алымкулова Б.А. члены комиссии: Главный инженер Тонского РУВХ Сабаева К. ...от Тонского РУВХ ...ВХ Усенова С.Т. ...аты, полученные в ... расхода воды из ...онтированным по ..., Тонского района, ...о разработчиком ...нных испытаний, ...ми указанные в ...расхода воды из ...г. по 4 мая 2018 г., ...каналов с бурным ...;

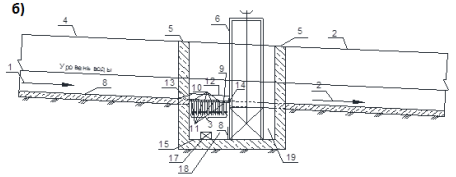
а)

План



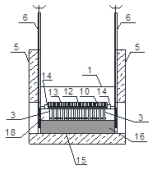
б)

Разрез А-А



в)

Разрез Б-Б



МИНИСТЕРСТВО СЕЛЬСКОГО ХОЗЯЙСТВА, ПИЩЕВОЙ ПРОМЫШЛЕННОСТИ И МЕЛИОРАЦИИ

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ТОНСКОЕ РАЙОННОЕ УПРАВЛЕНИЕ ВОДНОГО ХОЗЯЙСТВА

ИНСТРУКЦИЯ ПО ЭКСПЛУАТАЦИИ ВОДОВЫПУСКА-СТАБИЛИЗАТОРА РАСХОДА ВОДЫ ИЗ КАНАЛОВ С БУРНЫМ РЕЖИМОМ ТЕЧЕНИЯ

«СОГЛАСОВАНО»
Начальник Тонского РУВХ
_____
Б. А. Алымкулов
«__» _____ 2018 г

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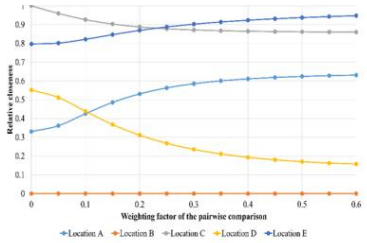
SMART WATER

Publication of scientific articles in the field of water distribution and integrated water resources management



Questions

Procedures

Methods

Results

Application

18th International Doctoral Students Workshop on Logistics, Supply Chain and Production Management

17 June 2025, Magdeburg

Institute for Engineering of Products and Systems

Conference Proceedings

OTTO VON GUERICKE UNIVERSITÄT MAGDEBURG

&

Agriculture and Supply Chain: insights from recent studies for the period of 2020-2025

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Zulfiya Kannazarova[2], Akylbek Umetaliev[1], Asel Mambetkulova[1], Almaz Kaiyrbekov[1], Irina Goncharova[1]
[2]«Tashkent Institute of Irrigation and Agricultural Mechanization Engineers», National research University, Uzbekistan

Abstract

Research focusing on agriculture food and supply chain has become a prominent area of study within the academic community. This paper presents a comprehensive review aimed at understanding the research trends in these areas. Specifically, it analyzes scientific production and published articles on agriculture food, supply Chain from 2020 to 2025. Utilizing the Web of Science database, we collected, reviewed, and analyzed 163 publications that met our selection criteria. Our bibliometric analysis covered various aspects, including publication language, yearly distribution of papers, document types, the most cited papers, leading journals and affiliations by country. Additionally, co-authorship and the co-occurrence of keywords were examined to explore the knowledge components and structure of this research domain, identifying clusters of the most common keywords in the literature. The analysis underscores the need for international research on agriculture food, supply chain to expand scientific exchange on these topics. Furthermore, it highlights the importance of long-term, continuous research and the integration of Sustainable Supply Chain concepts for future

rural to urban areas can be seen as a significant concern (Mohtar and Lawford, 2016). In 2030, 59% of the world's population would be living in urban areas (Desa UN, 2011). Logistics function of supply chain management proves itself as a backbone (Esper et al., 2007) to provide the product by ensuring the all seven R's (Right Product, Right Customer, Right Price, Right Quantity, Right Quality, Right Time, Right Place) to the end customer (Hosseinzadeh Lotfi et al., 2023).

Industry 4.0, also known as the Internet of Things, is expected to significantly impact supply chains, business models, processes, productivity, and lead times (Abdirad and Krishnan, 2021). Kayikci in (2018) reported the transformation of industry 4.0 for organizations in Turkey, enhancing production and logistics. He also explained that sustainability requires vertical and horizontal integration, particularly in FMCG companies and transport service providers. Nowadays, organizations are in transformation phase and trying to implement smart logistics to improve the efficiency of supply chain management and to gain the competitive advantage (Kolasińska-Morawska et al., 2022).

Bibliometric analysis identifies cognitive structures and intellectual relationships by analyzing the performance of documents, authors, countries,

Link to research: https://als.uni-miskolc.hu/index.php/als/article/view/204

Conferences on water recourses






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Further plans:

- Establishing of a training workshop to manufacture irrigation systems at Razzakov KSTU (in cooperation with international organizations), alongside the training of students on design and construction of renewable energy installations and water resources management

- Including of the irrigation complex in the list of green innovations eligible for government support (Agriculture Financing Scheme under the Ministry of Agriculture, the Green Innovation Fund under the Ministry of Economy and Commerce, and regional development funds)

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CAREC Technology Forum

Accelerating Climate-Smart Technologies for Resilient Development

Thank you very much for attention!

7-8 April 2026 | Venue: Hyatt Regency, Bishkek, Kyrgyz Republic

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