SECCA
Sustainable Energy Connectivity in Central Asia

Funded by the European Union

Technical workshop: Practical aspects of sustainable energy development in Kyrgyzstan

Promoting small hydropower development in Kyrgyzstan
Bishkek, October 5, 2023

Activities of EU-funded project Hydropower for You in Kyrgyzstan

Bertalan Alapfy, Project Coordinator
TUM Chair of Hydraulic Engineering (Prof. Rüther)

Stantec | intec | ACTED | European University Institute | Robert Schuman Centre for Advanced Studies | FSR Energy Florence School of Regulation

Hydro4U

Demonstrating European small hydropower technology and methods in Central Asia

Bertalan Alapfy
Project Coordinator
TUM Chair of Hydraulic Engineering (Prof. Rüther)

The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101022905.

Overview

Project Type:
Innovation Action

Consortium Partners:
10 from Europe, 3 from Central Asia

Total Budget:
~ 11.5 Mio. €

Duration:
June 2021 – May 2026

Objectives

- Develop, demonstrate and assess two innovative European SHP technologies in CA
- Optimize the climate resilience of SHPs by including climate change scenario analysis
- Implement a GIS-based decision support system to enhance sustainable exploitation of SHP potentials
- Develop a scalable Water Accounting System to share energy and agriculture benefits in a climate-sensitive manner under the WFEC nexus context
- Support the competitiveness and market uptake of European SHP technologies and planning & assessment methods in CA
- Enhance problem awareness and objectiveness of policy makers, implementers, NGOs and the public

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Technologies:
Shaft Power Plant

Application Range:

Modular low-head run-of-river power system with fish-friendly intake

Net Head:

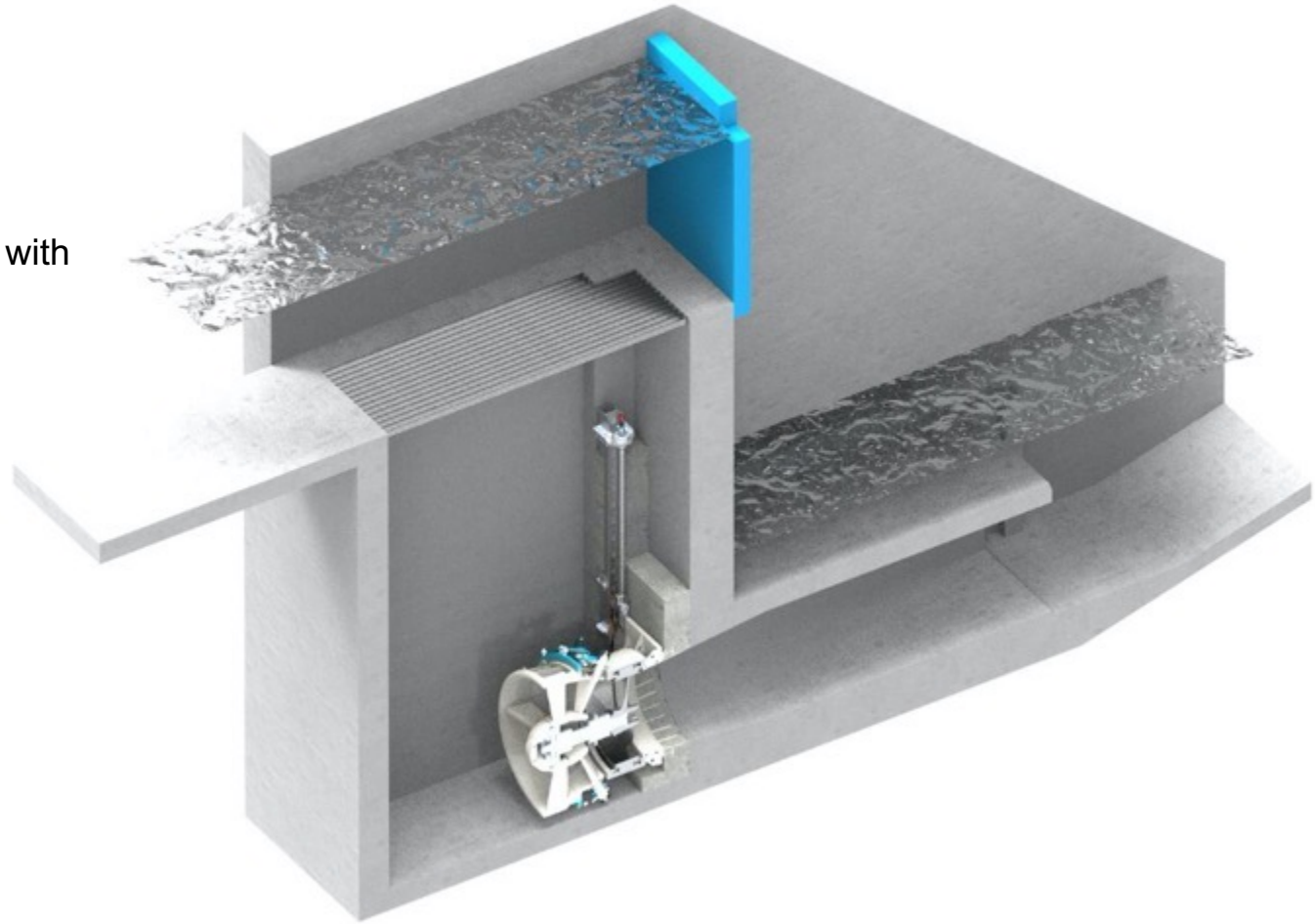
2 - 12 m

Discharge (per module):

1.5 – 20 m^3/s

Power output (per module):

20 kW – 2 MW



Technologies:
Francis Container

Application Range:

Standardised and modular medium head power solution

Net Head:

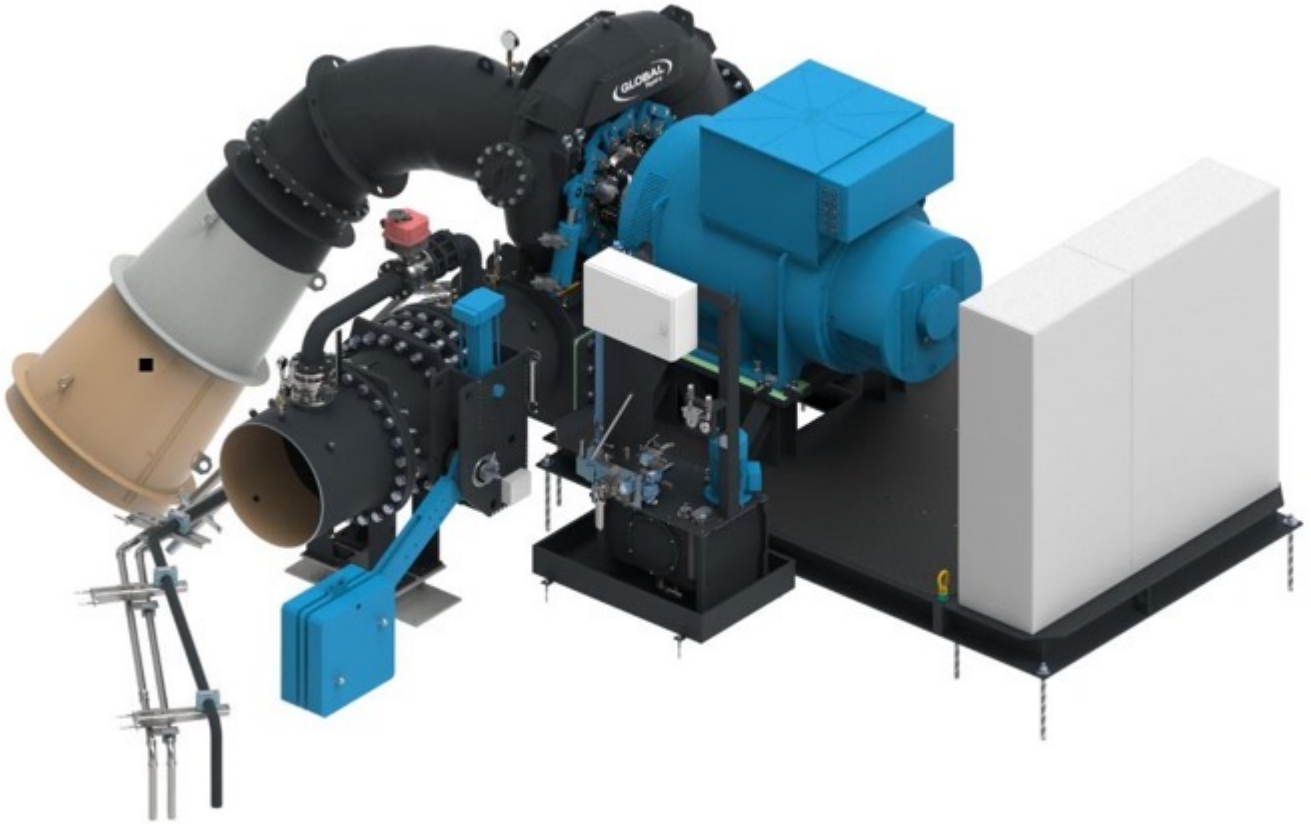
30 - 130 m

Discharge (per module):

0.2 – 2.4 m^3/s

Power output (per module):

100 kW – 1 MW



Tools & Methods: Electrofishing and Radiotelemetry

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Tools & Methods: Drone Surveys

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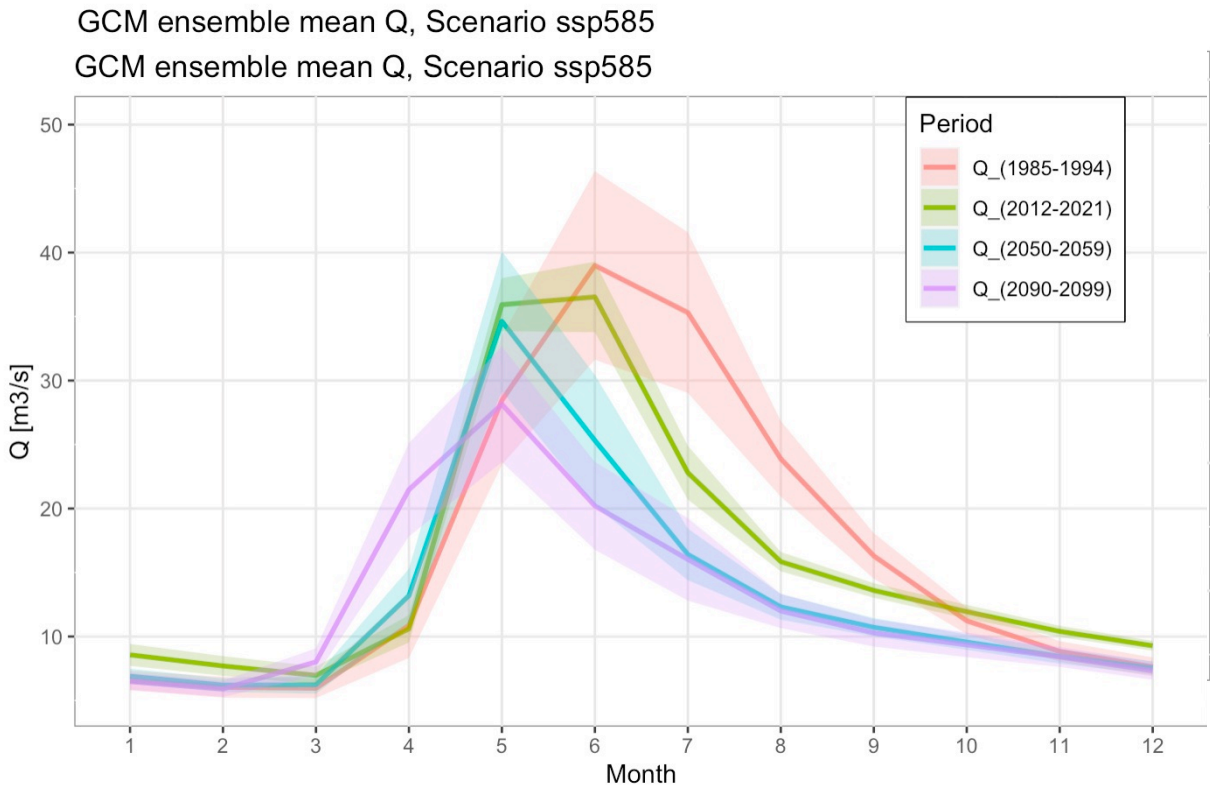
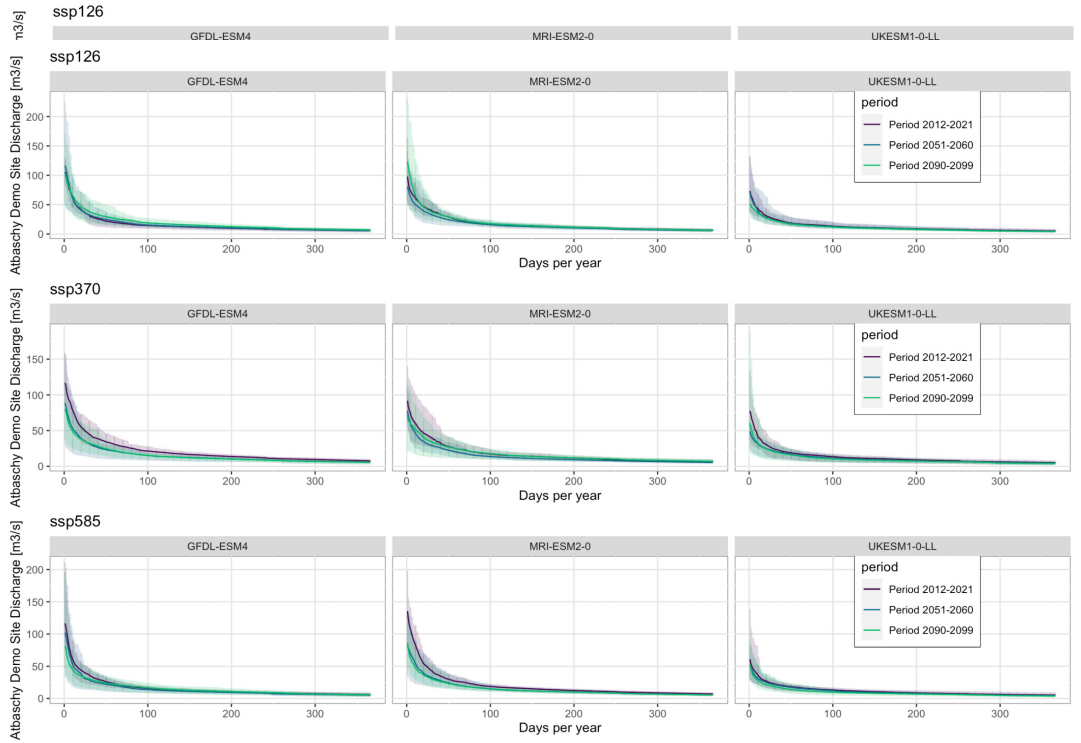
Tools & Methods: Climate Change Impact on Hydrology





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Demo Site – At-Bashi, Kyrgyzstan

- Existing Dam for Irrigation Diversion in need of refurbishment
- 3 gates, suitable for downstream integration of 2 Shaft Power Modules
- H ~ 7-8 m
- Q ~ 18 m^3/s
- P ~ 1.2 MW

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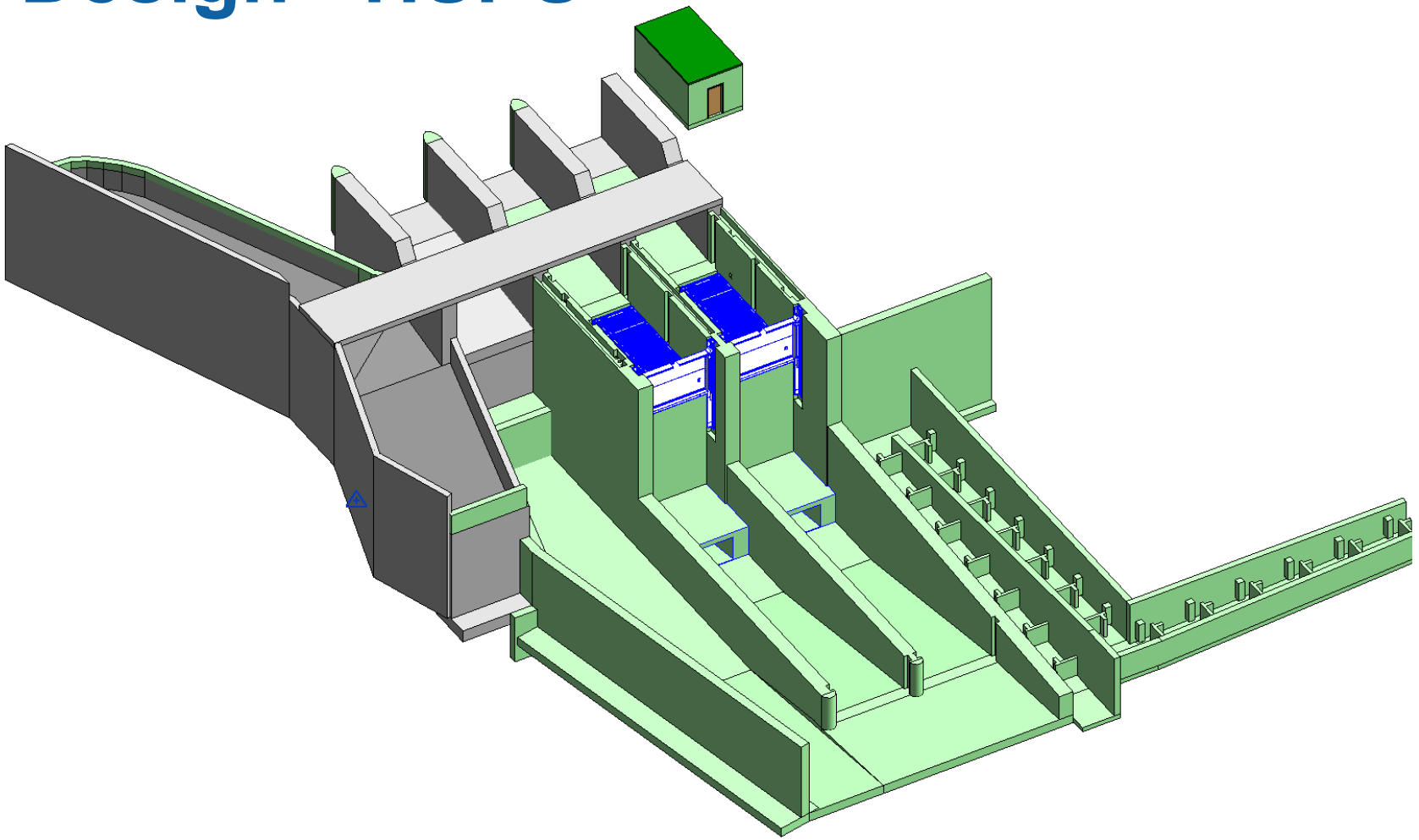
Demo Site Design - HSPS



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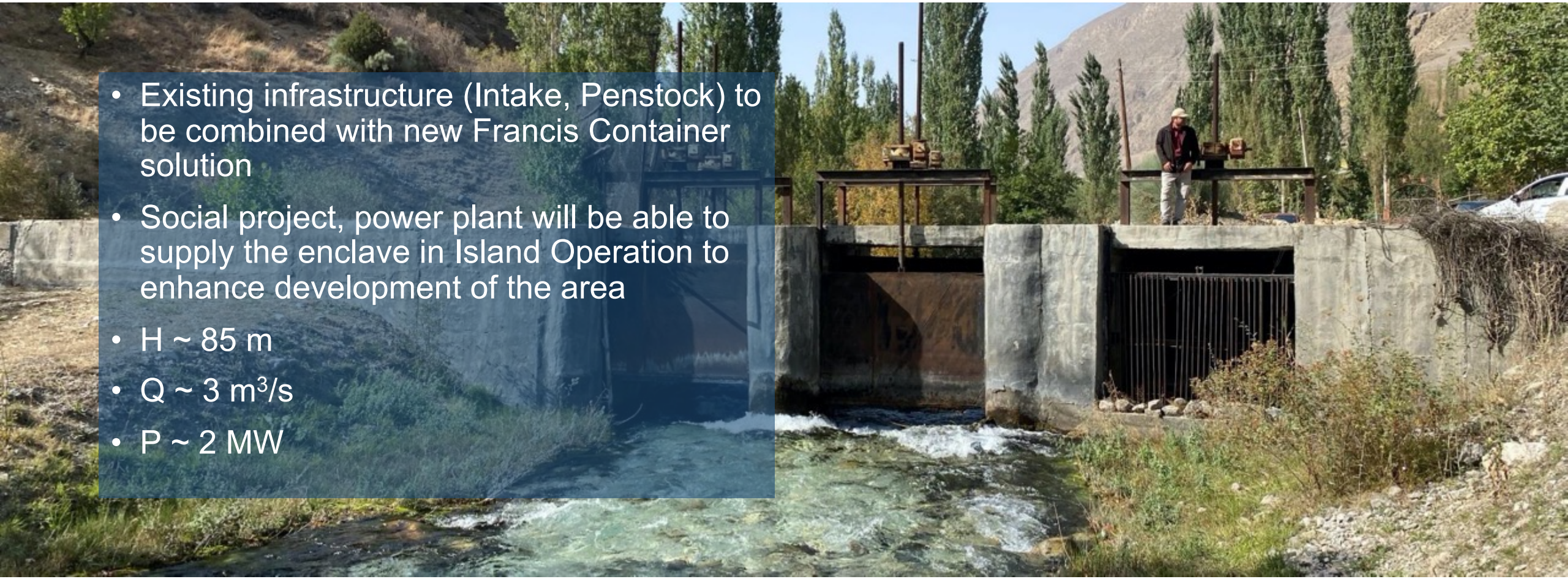
Demo Site – Shakimardan, Uzbekistan



- Existing infrastructure (Intake, Penstock) to be combined with new Francis Container solution
- Social project, power plant will be able to supply the enclave in Island Operation to enhance development of the area
- H ~ 85 m
- Q ~ 3 m^3/s
- P ~ 2 MW

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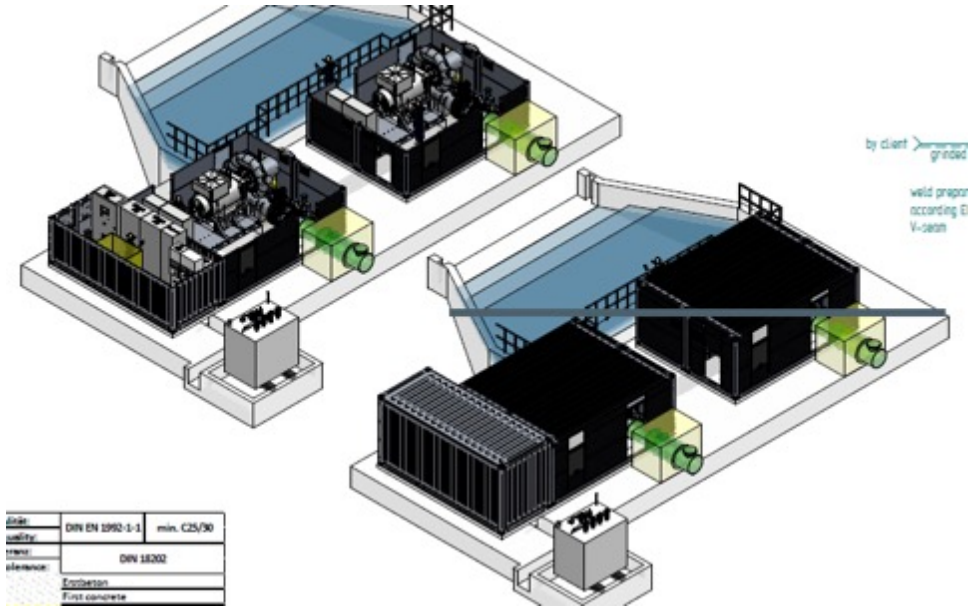
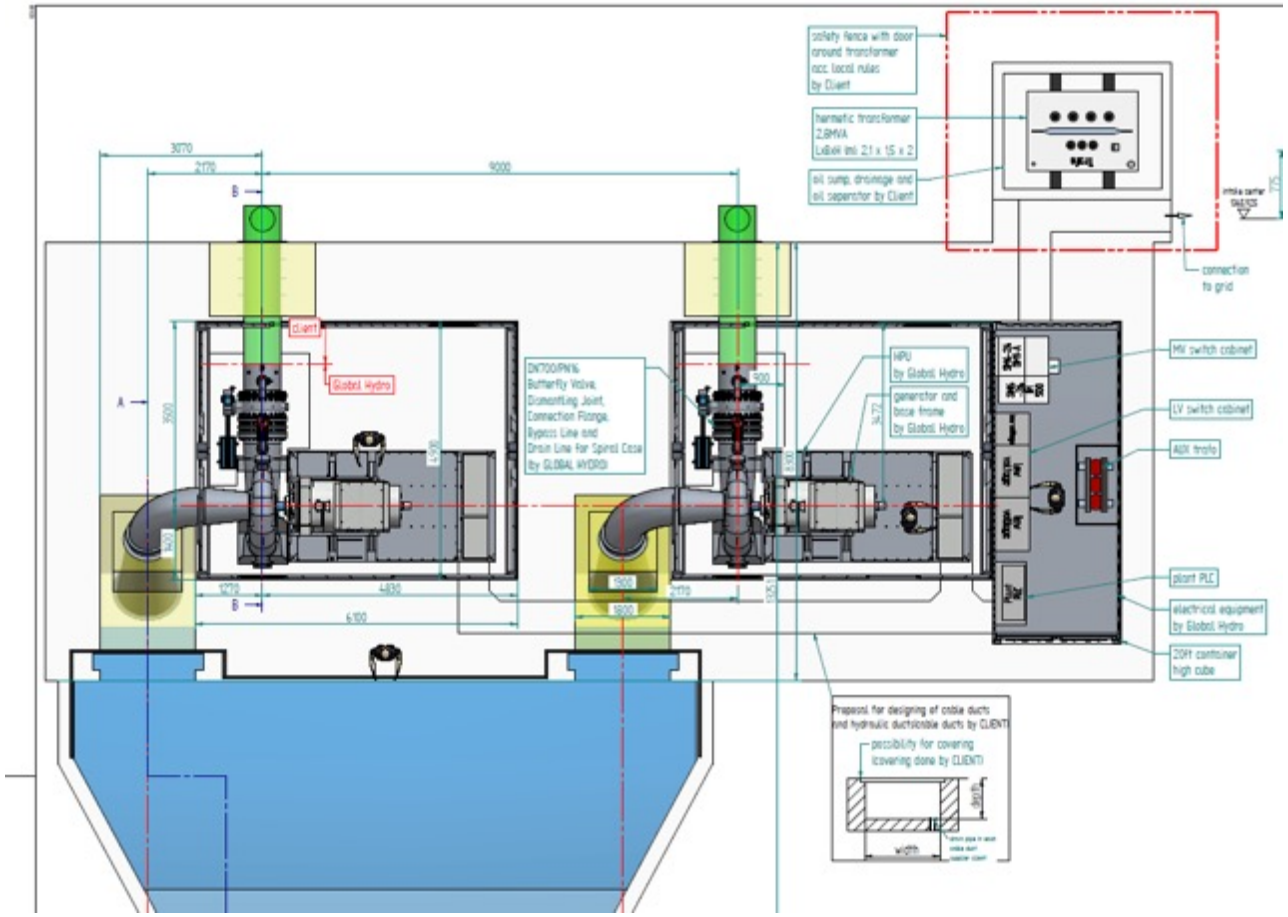
Demo Site Design - FCPS





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Outlook

- FCPS – Demo site to be installed and commissioned in winter 2023/24
- HSPS – Demo site to be installed and commissioned in fall 2024
- 3 further bankable feasibility studies for similar sized projects to be elaborated until 2025 (for subsequent commercial implementation)
- Guidelines and best practices for small hydropower development will be elaborated (replication tool)

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Thank you for your attention!

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