EU HORIZON 2020 PROJECT

HYDROPOWER FOR YOU - Sustainable small-scale hydropower in Central Asia

Acronym: **Hydro4U**

Horizon 2020 call for proposals: LC-SC3-RES-34-2020 Demonstration of innovative and sustainable hydropower solutions targeting unexplored small-scale hydropower potential in Central Asia

Innovation Action, maximum EU contribution € 9.93 million, total project budget: € 11.49 million.

Coordinator: Technische Universität München (TUM)

Size of the consortium: 13 partner from 8 countries.
Besides European academic and industrial partners, the project includes beneficiaries in Kyrgyzstan (Kyrgyz State Technical University) and Uzbekistan (TIIAME) and local partners in Kazakhstan and Uzbekistan.

Objectives

Hydro4U will bring together industry, politics, science and stakeholders from both Central Asia and the European Union with the aim of contributing to a sustainable and climate-resilient future for the region by demonstrating European small hydropower equipment & technologies, considering legislation similar to the EU Water Framework Directive and the EU Renewable Energies Directive, and by using sustainable technologies developed by the European hydropower industry.

Specific objectives (SO) of the project:

SO 1: Bringing together industry, politics, science and stakeholders from Central Asia and the EU to develop visionary SHP solutions for a climate resilient and sustainable future of Central Asia

SO 2: Demonstration and assessment of two sustainable, innovative European small-scale hydropower technologies (FCPS and HSPS) in Central Asia

SO 3: Optimizing the sustainability impact of small hydropower plants (SHP) through a more holistic approach by focusing on long-term solutions in a climate-sensitive, transboundary Water-Food-Energy-Climate nexus context

SO 4: Implementation of a GIS-based decision support system covering all Central Asian countries to explore unexploited SHP potential and determine site-specific hydropower plant sustainability

SO 5: Development of a scalable water accounting system to manage water resources in a sustainable way and to share energy and agriculture benefits in a climate-sensitive manner under the Water-Food-Energy-Climate nexus context in Central Asia, thus contributing to regional cooperation

SO 6: Supporting the competitiveness and sustainable market uptake of European small hydropower technologies in Central Asia and globally

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

SO 7: Enhancing problem awareness and objectiveness of policy makers and implementers, NGOs and the public

Figure 1: Hydro4U levels

Planned technical demonstrations

1) Low-head run-of-river (up to 500 kW) small hydropower plant using the innovative hydro shaft power solution (HSPS) at Badam (Kazakhstan)

2) Medium-head approx. 2 MW small hydropower plant using the Francis-container power solution (FCPS) at Shakhimardan (Uzbekistan)

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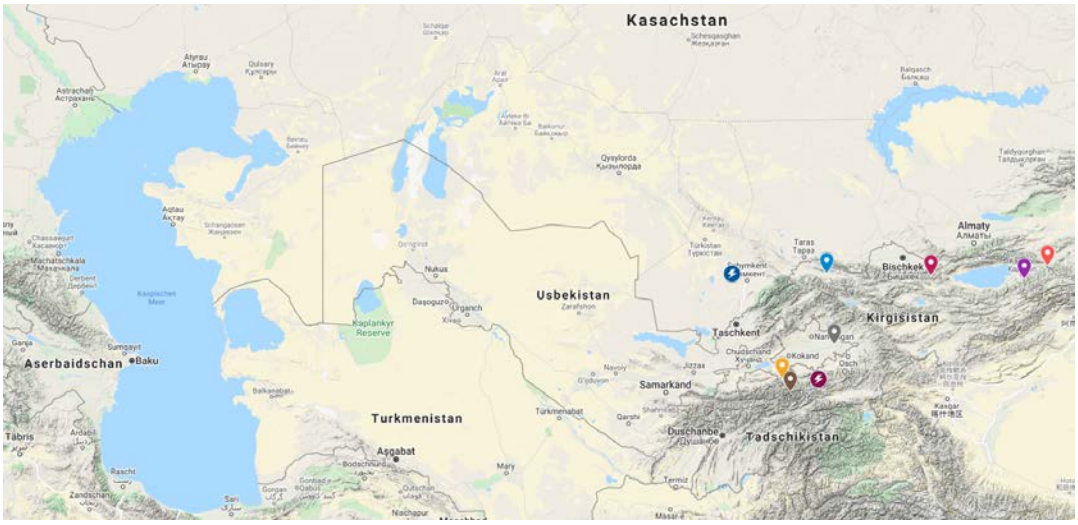

Figure 2: Overview of the location of the DAs (circles) and possible PAs in Hydro4U

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Specific Challenge

The challenge is to demonstrate innovative solutions targeting unexploited small-scale hydropower potential in Central Asia that will contribute to solving the specific cross-border water and energy management challenges in the region. Therefore, the hydropower technological solutions will need to be socio-economically and environmentally sustainable and embedded in a forward-looking cross-border Water/Food/Energy/Climate nexus concept for this region.

Scope of the call

Projects will demonstrate innovative hydropower equipment exploiting unexplored small-scale hydropower potential in Central Asia up to 10 MW installed capacity by means of sustainable and cost-effective small-scale hydropower solutions. The demonstration will provide solutions for realising innovative and sustainable hydropower, based on synergies between innovative European hydropower technology, research and industry partners, and the Central Asian hydropower sector. Therefore, the demonstration activities shall take place in Central Asia (Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan or Uzbekistan), with participation of local partners.

The project should also fulfil the highest standard in terms of socio-economic and environmental sustainability and impact, and engagement of local civil society. It should also demonstrate how it will contribute positively to the regional cross-border Water/Food/Energy/Climate nexus and refer to embedded sustainable hydropower auxiliary services.

Expected Impact

The action is expected to support the competitiveness of the European hydropower technology sector as a responsible actor in global markets in the long-term, with a strong focus on overall sustainability of the provided hydropower solutions within the Water/Food/Energy/Climate nexus in Central Asia. The expected outcomes will strengthen the worldwide leadership of the European hydropower industry in providing innovative and sustainable hydropower solutions and will support international cooperation with developing countries. Expected are outcomes which are in line with UN sustainable development goals

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