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# TAJIKISTAN: CAPACITY BUILDING TO STRENGTHEN THE CLIMATE RESILIENCE OF ENERGY SECTOR ASSETS AND INVESTMENTS

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## NEWSLETTER-IV

June 2017

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### BACKGROUND & ACTIVITIES TO DATE

With support from the Climate Investment Funds and the Green Climate Fund, EBRD has financed the climate resilient rehabilitation of Qairokkum HPP in Northern Tajikistan. In connection to the physical upgrade of the hydropower plant, EBRD has supported Barki Tojik over the past two years in building its capacity to operate its hydropower plants to be more climate resilient. A total of four training sessions have already been completed under the programme, one in Canada and two in Tajikistan. Two further training sessions were carried out in May and June in Tajikistan; one on Dam Safety and the other on Hydropower Generation in a Changing Climate.

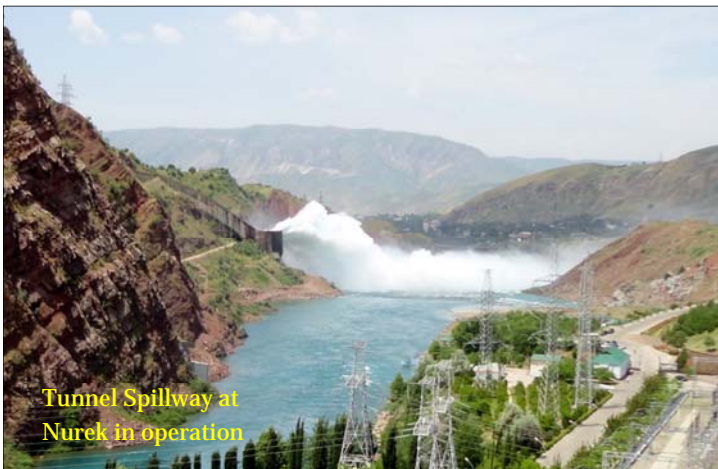
A survey of households and small businesses in Sughd Province was carried out to explore gender differences in energy use and impacts of climate vulnerability. The report was issued to EBRD in March.

### **Dam Safety Training- in Tajikistan- 14<sup>th</sup> May to 19<sup>th</sup> May 2017**

This training mission was run by Derrick Penman Team Leader, a Senior Principal Project Engineer and John Young, a Senior Principal Engineering Geologist, both from MWH. The workshop sessions and follow-up meetings were attended by personnel from Barki Tojik's operations staff at the Baypaza and Varzob HPPs and from the dispatch centre. An introductory presentation was given describing examples of well- publicised dam failures in North America and internationally to emphasize the importance of the dam safety process. The principles of the dam safety process were then presented using the Canadian Dam Safety Guidelines as an example. The dam safety work carried out at Nurek HPP leading up to the current rehabilitation program being implemented under World Bank funding was presented and discussed.

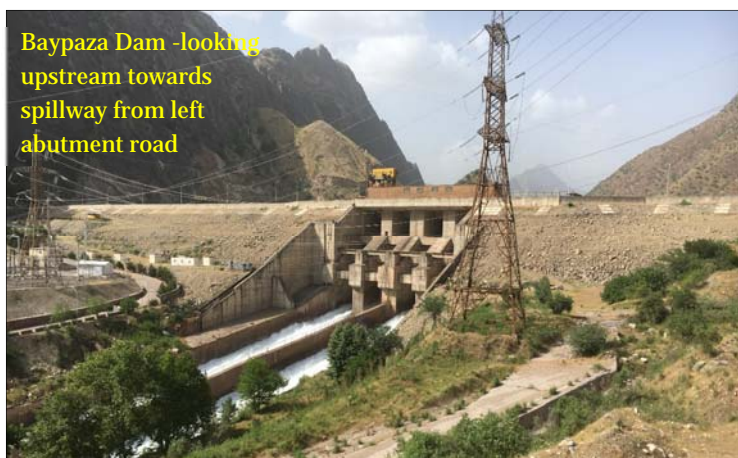
A field trip was arranged to Nurek HPP with members of the team to view certain features of the project from a dam safety perspective.

Following the field visit to Nurek a series of presentations were made on monitoring of geotechnical instrumentation and inspection techniques for dams to detect potential failure modes. The training mission was concluded with a session on Potential Failure Modes Analysis (PMFA). Case studies were presented for a project in the USA and for the Nurek HPP, for which a PFMA was carried out as part of the dam safety study connected to the current rehabilitation work funded by the World Bank.

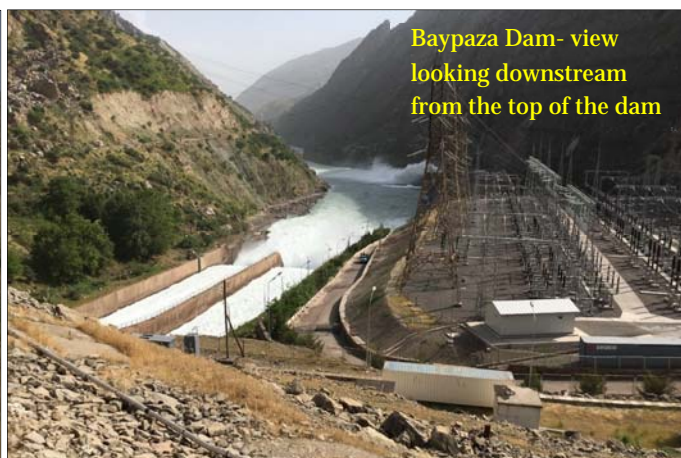


In preparation for the next training session on Dam Safety planned for October of this year, a visit was made by MWH's experts to the Baypaza HPP, where they were shown around the facilities by senior members of the operations staff. It is planned to carry out this next training session at the plant itself so that the operations staff can be intimately involved in site inspections and in the ensuing discussions.





Baypaza Dam -looking upstream towards spillway from left abutment road



Baypaza Dam- view looking downstream from the top of the dam

## Hydropower Generation in a Changing Climate – 12<sup>th</sup> to 14<sup>th</sup> June 2017



This session was facilitated by Dr. Marco Braun from Ouranos, part of the MWH team. Key aspects of climate science were covered, explaining the concept of climate models and their capabilities and drawbacks. The use of climate model data to produce various types of climate scenarios for application in hydropower operations was a key element in the training. The first session on June 12 was a general introduction to climate change and its effects. In addition to staff from Barki Tojik and Tajk Hydromet there were also participants from the PCCR, UNDP, OSCE (Energy Security) and the ADB. Peter Baum, EBRD's Operations Leader for this capacity building project also

attended. The second day focused on the research and measures developed by Ouranos and its hydropower sector members to tackle climate change. It addressed physical and management aspects of adaptation and highlighted studies of climate change impacts on probable maximum floods as well as the integration of uncertain climate futures into decision making processes. The final training day on June 14 was dedicated to the presentation of examples of adaptation to climate change impacts in the hydropower and electricity sector from proactive companies around the world, followed by a discussion of how Barki Tojik could tackle the specific challenges presented in Tajikistan.

## Program for Remainder of 2017

The following program is planned for the remainder 2017:

- Seasonal forecasting, regional & hydro climate & reservoir inflows – week commencing Aug 28
- Dam Safety – October
- Hydro climatic hazard forecasting for the energy sector - August/September
- Hydro-meteorological data reconstruction and repair – September
- Climate Science, Climate Modeling and Scenarios (hands-on training)– September/October
- Hydropower Generation in a Changing Climate (hands-on training) – October
- Hydrological Modeling for Climate Change Impact Assessment - October
- Infrastructure Vulnerability and Climate Change – October



The emphasis of the next training program to be conducted in late August - **Seasonal forecasting regional hydro climate and reservoir inflows** – will be hands-on training and will cover the following topics:

- Quality assuring hydromet data for the Vakhsh upstream of Nurek
- Familiarization with online seasonal forecasting resources and tools
- Conditioning hydro-meteorological data
- Seasonal forecasting role-play exercise

### Final Workshop for Sector Stakeholder

**Workshops and training sessions with international experts described in this newsletter have focused on how improved usage of hydro-meteorological data, climate science and hydrological modelling can be used to optimise hydropower generation and safety planning under the impact of changing climatic conditions. EBRD and Barki Tojik are inviting stakeholders for a workshop on 27 October to present the two-year collaboration, highlighting best practices in climate resilient hydropower operations from around the world and their introduction to Tajikistan. Staff from Barki Tojik will present examples of procedures and skills for better hydropower operations that have been developed under the assignment.**