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## **Capacity building for climate change adaptation in Tajikistan**

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The Geological Survey of Finland (GTK) and the Main Department of Geology under the Government of the Republic of Tajikistan (GUG) have a development cooperation project "Strengthening the mastering of natural resources for national welfare in Tajikistan" funded by the Ministry for Foreign Affairs of Finland covering the period of August 2014-December 2018.

The overall objective of the cooperation is to improve the standards and living conditions for the population by supporting the efforts for strengthening of the national economy of Tajikistan through sustainable use of mineral resources and ensuring a safe living environment. The project purpose focuses on developing the institutional capacity of GUG for better risk management in respect of geohazards, efficient monitoring of changes in groundwater resources due to climate and environmental changes accompanied by modern geodata collection, storage and dissemination.

The cooperation can be divided into three subgroups, all interacting but to some extent sectors of their own: 1) Climate change and modern techniques applying modern techniques like satellite images, remote sensing, geophysics and hydrogeological methods 2) Strengthening of the geoinformation chain and distribution including digital products and modern information management, intranet applications, the Central Asian geo-portal and GIS training for experts related to geohazards and groundwater 3) Regional aspects and administration including improved cooperation between GUG head office and selected substantial expeditions, inter-agency and inter-project cooperation, marketing and promotion, literal project management and presentations on better governance practices.

Tajikistan has faced major natural disasters in recent years from torrential rains, rapid spring melts, and loss of glaciers and snowpack in its mountains. Landslides and mudflows, in particular, can to some extent be anticipated and the economic consequences and damage to infrastructure mitigated – not to mention loss of life and public health issues. Work focuses on acquisition and interpretation of geoinformation gathered in the field and through new techniques such remote sensing (satellite data), geophysics and hydrogeology.

The availability of pure water forms a problem in Tajikistan and the first step in improving the situation is better monitoring of groundwater resources. Presently some quality controls are carried out regarding certain chemical elements in the groundwater but proper monitoring requires relevant base line data including information about the amount of surface water mixed with groundwater. Especially the global climate change affects this matter because melting glaciers and increased rainfall will add the ratio of surface waters to groundwater. An increase in the amount of surface water is a warning of the soil becoming waterlogged which increases the risks of land and mud slides (and flooding.)

Geophysics is a good tool for groundwater, environmental and geohazard surveys especially in detection of waterlogged ground. During the project geophysical measurements on embankment of water channel of hydro power station will be conducted in the outskirts of Dushanbe. The geophysical electrical measurements will be monitored in order to detect the exact place of waterlogged area in the embankment which is above a village in order to avoid risk of disaster.

As part of efforts to develop hydrogeological techniques in the Survey also multiple water sampling sites have been selected for pilot studies to demonstrate current techniques in characterization of drinking water supplies, as well as determination of groundwater recharge rates, groundwater composition and risk of contamination. A new round of selected well sampling and comparison of sample analyses will be performed at GUG's national laboratory and in Finland to calibrate analytical results and ensure the quality of conducted analyses.

