

DAMAST-Transfer – Dams and Induced Seismicity – Transfer of Technologies

CLIENT II – International Partnerships for Sustainable Innovation

Earthquakes and sedimentation threaten the safety of dams worldwide. In the Caucasus in particular, there is a lack of clear regulations and specialised personnel to manage these risks. This is where the DAMAST-Transfer project comes in by improving the safety and operation of dams through innovative monitoring technologies and training. A competence centre is being set up in Georgia to serve as a central point of contact for training and knowledge transfer in order to ensure safe planning and operation in the region.

Capacity building and competence centre for safe dam operation in the Caucasus

The operation of dams is crucial for the water supply of the population and agriculture in the Caucasus region. However, climate change introduces new challenges. The DAMAST Transfer project aims to further develop the expertise from the predecessor project DAMAST through capacity building and to train specialists in the construction and operation of dams together with the partners. In addition, the training of students in geosciences and engineering in the Caucasus region and in Germany is to be strengthened.

In order to overcome the special challenges posed by the many dams in the Caucasus, a competence centre will be set up to provide a central point of contact for training and research activities. The structure of the centre, a local base and the training programmes are being developed as part of the transfer project, as such a facility does not yet exist in the region.

The DAMAST project has already collected unique data showing that induced earthquakes do not only occur in the direct reservoir area. Another problem is the increasing sedimentation in the reservoirs, which is reducing the storage capacity and service life of the facilities worldwide. Extreme sediment displacement over short periods of time has been observed at Enguri Dam. Geodetic measurements and photogrammetric analyses document how the movements of the dam change due to fluctuating water levels.

Knowledge is transferred by recording, analysing and providing data from the fields of seismology, geodesy, photogrammetry, water management, geomechanics and hazard analysis.

Qualified specialists, including engineers, technicians and geoscientists, are needed for the future tasks of energy and water supply. These experts are currently lacking for the preliminary investigation, planning, authorisation and operation of water storage facilities.

The competence centre archives relevant basic data, collects and analyses new monitoring data and carries out training programmes. In addition, recommendations for the safe construction and operation of reservoirs are developed. This enables politicians, the public and project operators to plan and operate dams sustainably and safely.

In addition to providing theoretical and practical training, the organisational structure of the centre is being developed as part of the project with the involvement of the most important stakeholders. A local base for monitoring and data archiving forms the basis for the establishment of the competence centre.



Geodetic station for the acquisition of data from the fields of seismology, geodesy, photogrammetry and water management, geomechanics.

Development of expertise and infrastructure for a dam competence centre in Tbilisi

The expected results include the development of expertise among dam operators and at Tbilisi Technical University and Ivane Dzhavakhishvili State University in Tbilisi. In addition, the research infrastructure is being improved through the transfer of technical equipment. Furthermore, processes and structures for quality assurance are being developed and a local base is being set up as the basis for a competence centre. The partner institutions and Ilia State University are involved in data collection and analysis, the training of young scientists and the establishment of the centre of excellence.



The 277 meter high arch dam of the Enguri Dam in Georgia.

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