Goal of Approach:

Research and monitoring of glaciers, rivers and lakes; providing open exchange of truthful information; supporting national and international experience exchange on good practical approaches for management will strengthen capacity building of countries' governances on climate change related risk reduce and mitigation.

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Main elements of the implementation strategy

There are hundreds of mountain lakes that appear and disappear during snow and glacial melt in the Central Asian mountains. GLOFs research and monitoring is a popular scientific adventure and numerous groups (including non-experts) started studying these events. Fragmentary information and incomplete assessments made decision making difficult. Capacity building and cooperation in the region through the information, data and good experience exchange could help in adaptation measures effectively.

Targeted beneficiaries

Taking into account which groups/economy sectors are endangered by glacier lakes and snow melting, the main beneficiaries are:

1. Population groups in the mountain villages and downstream cities
2. Mountain enterprises (i.e. mining, hydropower, agriculture etc.)
3. Local economies

Any significant lessons learned

Lessons learned for mining: there are several active and prospective mining enterprises in Central Asia located nearby glaciers. The operational plants for mining enterprises were designed almost 20 years ago and didn't take into full consideration climate change impacts in high mountains. The process of glacier melting and retreat has strong impacts on mountains and mining: rocks are not so stable, they become loose and prone to landslides and glacial lakes formation. The planners didn't consider enough details about current and future mine operations including post-closure life of mines. As a result, industrial safety was jeopardized, so was the condition of mining waste and tailings. The mine planners have to modify recently requirements for infrastructure and mine operations to improve safety.

Lessons learned for hydropower sector: about 90% of power generation in Kyrgyzstan and Tajikistan depends on water flow after glacier and snow melt. All hydropower stations were built more than 30-50 years ago when climate change issues were not well studied and appreciated. Higher temperatures affect melting of glaciers and seasonal snow cover - so they start melting early and the water flow pattern is likely to change in the coming decades. The hydropower stations' infrastructure will have to deal with different pattern of water flow as well as different water demand by downstream users - for example irrigation and peak flow in the main rivers is likely to shift from mid-summer to late spring and early summer. There are still open questions: how to change the regime of operations for hydropower plants and keep downstream users not negatively affected by this change? How to take into consideration new patterns of water supply and demand?

Resource requirements

Kazakhstan and Uzbekistan as more industrialized and economically advanced countries have sufficient resources for monitoring and preventive measures. They may need donor support for experience exchange, know-how, new technologies and modern approaches as well as improving their equipment. Tajikistan and Kyrgyzstan with fewer resources and lesser economic capacity mostly deal with hazards in cases when they appear inevitable or have to deal with their consequences. They need further support from donors for monitoring and risk reduction.

Potential for replication or scaling-up
Central Asia countries have extensive experience, powerful research base and practical projects to show. This experience could potentially be interesting for other countries.
Any additional information
http://www.ppcr.tj/ http://www.mountainhazards2011.com/