



Climate-proofing cooperation in the Chu and Talas river basins

Support for integrating the climate dimension into the management of the Chu and Talas River Basins as part of the Enhancing Climate Resilience and Adaptive Capacity in the Transboundary Chu-Talas Basin project, funded by the Finnish Ministry for Foreign Affairs under the FinWaterWei II Initiative

Geneva 2018

The Chu and Talas river basins, shared by Kazakhstan and the Kyrgyz Republic in Central Asia, are among the few basins in Central Asia with a river basin organization, the Chu-Talas Water Commission. This Commission began to address emerging challenges such as climate change and, to this end, in 2016 created the dedicated Working Group on Adaptation to Climate Change and Long-term Programmes. Transboundary cooperation has been supported by the United Nations Economic Commission for Europe (UNECE) and other partners since the early 2000s. The basins are also part of the Global Network of Basins Working on Climate Change under the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) and are among its pilot basins on climate change.

The process of adapting the Chu and Talas basins to climate change began in 2010 with the elaboration of joint climate scenarios and the modelling of possible changes in water resources. This was followed by a joint vulnerability assessment for selected areas and sectors, and the development of a package of possible adaptation measures and relevant procedures for implementation through the Chu-Talas Water Commission.

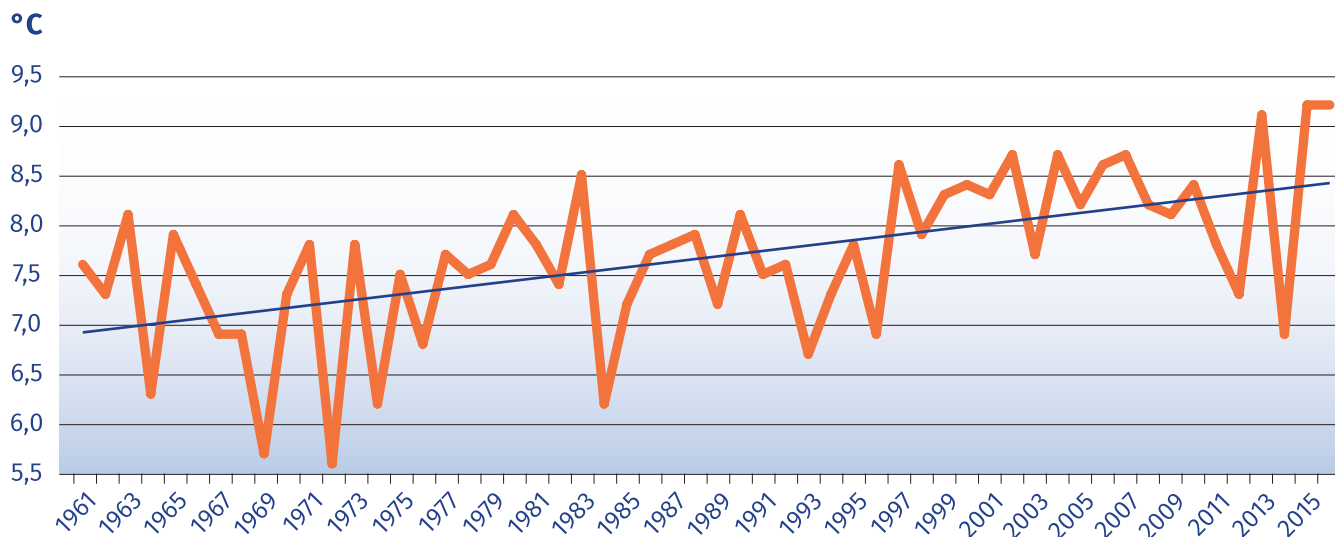
Between 2015 and 2018 adaptation was further supported with the Enhancing Climate Resilience and Adaptive Capacity in the Transboundary Chu-Talas Basin project, funded by the Finnish Ministry for Foreign Affairs under the FinWaterWei II Initiative. Finland also contributed heavily to the international project Enabling Transboundary Cooperation and Integrated Water Resources Management in the Chu and Talas River Basins, financed by the Global Environment Facility (GEF) and implemented between 2015 and 2018 by the United Nations Development Programme and UNECE. This latter project aimed to assess common management challenges in these shared basins and to establish cooperative solutions for them.

By way of an integrated consultative process, the Finnish project enabled a climate-change perspective in the design and activities of the GEF project as a cross-cutting issue. The review of climate impacts was elaborated as a thematic annex to the GEF **Transboundary Diagnostic Analysis**, which also included suggestions for adaptation measures, many of which found their way into the Strategic Action Programme resulting from the project. It has also provided the Commission and other stakeholders with cutting-edge knowledge about climate scenarios, water and health in the context of climate change, adaptation and its financing, as well as modern tools for managing river basins and water scarcity at the national, transboundary and global levels.

Climate highlights from the Chu and Talas Transboundary Diagnostic Analysis

- Average annual temperatures in the territory of the Chu and Talas river basins is expected to increase by between 2 to 3°C by 2050 and by 3 to 4°C by 2100 according to the IPCC's moderate RCP 4.5 scenario. If change in the global greenhouse gas concentration follows the more severe RCP 8.5 scenario, winter and summer temperatures may by the end of the century increase by between 5 to 6°C.
- Under the RCP 4.5 scenario, annual precipitation is expected to increase by between 5 to 10% by 2050 and 10 to 15% by 2100. Under RCP 8.5, winter precipitation will increase by between 20 to 40% (and by 50% and more in mountainous areas), while in summer most of the basin will see less rain than today. The mountainous area subject to rainfall will expand towards highlands with unstable soil and scarce vegetation, which may lead to more mudflows, landslides and floods. Increased rock instability may also affect the safety of dams, dykes, canals, roads and mining waste storage sites.

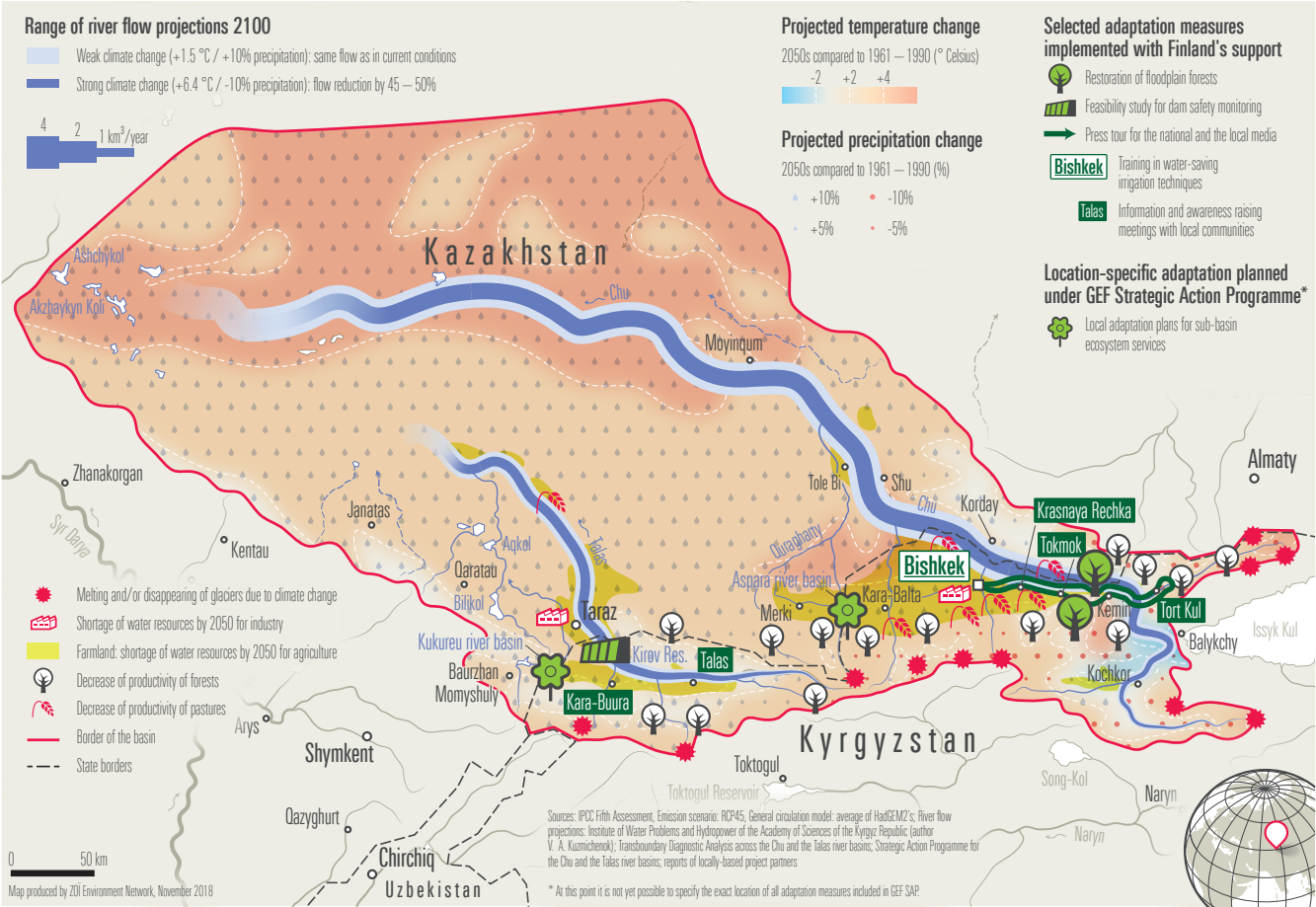
Average annual temperature in the Chu-Talas river basins



Source: Transboundary Diagnostic Analysis across the Chu and Talas river basins

- Glaciers will continue to melt and with high temperature increase, they may become fully depleted by 2100. Under the most extreme scenario, river run-off is projected to increase until the 2020s because of glacier runout, but then to decrease by the end of the century to between 25 to 45% of the current level. At the same time water demand for irrigation, industry and water supply will continue to grow, further aggravating regional water stress and potentially complicating inter-state relations.
- The 2016 flash floods on the Talas river demonstrated the challenges that the basin countries face in their respective capacities for an adequate and coordinated response. Similarly, the low-water crisis in 2014 demonstrated the need for the wider use of water-saving techniques such as drip irrigation, in particular in Kyrgyzstan.
- Climate change impacts are also expected to affect people's health in the basins.

Synthesis of climate projections, impacts and adaptation in the Chu and the Talas river basins



Many of the suggestions in the Transboundary Diagnostic Analysis for adapting the Chu and Talas basins to climate change correspond to the commitments of both Kazakhstan and the Kyrgyz Republic in the 2015 Paris Agreement framework. The majority of these suggestions are governed by the need to modernise water infrastructure and adjust development programmes for economic sectors and regions. However, climate change is not the only driver but often an additional factor that affects the urgency of preventing or mitigating the damage. Consequently, a number of the suggestions found their place in the various – not only climate-specific – goals of the **Strategic Action Programme**.

Goal 1: Quantity of Water. Ensuring the effective use of water resources for sustainability of socio-economic development and ecosystems.

Goal 2: Quality of Water. Improving the quality of water resources and reducing their harmful effects on human health and ecosystems.

Goal 3: Ecosystem Conservation. Conservation and improvement of the state of ecosystems at a level ensuring a balance of ecological equilibrium and socio-economic development.

Goal 4: Climate Change. Reducing the risk of negative impacts of climate change on the population, economy and ecosystems by applying a set of adaptation measures.

Goal 5: Cooperation. Increasing capacity of transboundary cooperation for the purposes of ensuring effective management of the Chu and Talas River Basins.

Goal 6: Monitoring. Ensuring integrated monitoring of the quantity and quality of surface waters, hydrometeorological indicators, distribution of water resources between states, ecosystem status.

The **Climate Change goal** of the Strategic Action Programme, with its four objectives, focuses on ‘softer’ measures to reduce long-term risk of climate-change impacts on the population, economy and ecosystems.

Climate objective 1 (short-term):

Improve the information base, exchange of data and experience for making effective decisions to mitigate the negative effects of climate change:

- exchange hydrometeorological and climate information and forecasts;
- develop a GIS information base on the natural conditions, infrastructure and ecology of the basin, and map climatic risks with due account of regional development plans;
- set up a common system for assessing current and expected climate change.

Climate objective 2 (short-term):

Improve awareness/knowledge of a wide range of stakeholders of adaptation measures, and enhance their resilience to climate change impacts:

- assess climate awareness of different target groups;
- carry out awareness campaigns to increase their resilience to climate change impacts;
- prepare and disseminate popular scientific materials and information products about climate change, its regional impacts and best adaptation practices.

Climate objective 3 (medium-term):

Increase human capacity for adaptation to climate change:

- develop and deliver sector-specific training on adaptation to climate change;
- train local industry specialists in improving resilience to climate change impacts;
- organise visits to specialized international centres and successful projects for advanced training.

Climate objective 4 (medium-term):

Improve mechanisms for sectoral, regional and local socio-economic development planning by integrating in them adaptation to climate change:

- include adaptation in existing and new national and sectoral programmes and plans;
- produce recommendations for including adaptation into investment and international projects;
- make and implement local adaptation plans in pilot sub-basins;
- update or develop flood protection plans at the basin and the local levels;
- improve local warning systems for hydrometeorological emergencies and response coordination;
- develop common water management models to improve seasonal water consumption planning;
- develop insurance schemes for hydrometeorological risks to farmers and water users;
- develop proposals for targeted international financing of specific adaptation measures.

Some of the proposed measures have already been implemented with the support of UNECE and the government of Finland.

Adaptation in action

Restoration of floodplain forests along the Chu river

On International Earth Day in April 2018, Kyrgyz government officials and parliament members, representatives of international organisations, volunteers, journalists and members of the public planted over **5000 trees and bushes** of a variety of fruits, seaberry and other species on **three hectares** of land subject to soil erosion and degradation. The tree planting was organised by the Association of Forest and Land Users of Kyrgyzstan along the Chu river within the Chu Forest Management Enterprise (near the town of Tokmok) and along the Krasnaya river in the Kyrgool hunting reserve. As well as raising awareness about the importance of floodplain forests for climate change adaptation, the objectives of the action were to strengthen the Chu river's banks, to prevent damage from landslides and mudflows affecting agricultural lands and the local population and to help protect the local environment as a whole from the changing climate. The tree planting was widely covered by both Kyrgyz and Kazakh journalists who joined the group as part of a press tour organised by BIOM Ecological Movement in Bishkek.



Feasibility study for monitoring the safety of the Kirov reservoir dam on the Talas river

The **86-metre dam**, which forms the Kirov water reservoir, was built on the transboundary Talas river in the Kyrgyz Republic in **1971**. The initial safety system has aged and no longer meets modern requirements for monitoring, in particular on transboundary rivers where dam failures may cause serious damage to neighbouring states. To prevent failure in case of catastrophic floods that are likely to become more common with the changing climate, the Working Group on Adaptation to Climate Change and Long-term Programmes under the Chu-Talas Water

Commission called for the modernisation of the dam's safety system. The Commission requested a feasibility study and turned for support to the international community. In 2011 a comprehensive assessment of the dam, its installations and monitoring system was organised by UNECE. Within the scope of the current project, the experts further elaborated dam-safety criteria and gave specific recommendations for modernising and automating safety monitoring. Once in place, the system will also enable a timely transfer of data to downstream Kazakhstan.

Information campaign to support climate adaptation activities in the Chu-Talas basin

To help increase public awareness of climate-change issues and adaptation options in the basin, BIOM Ecological Movement produced a set of information materials in **three languages**: Kazakh, Kyrgyz and Russian. The organisation widely disseminated the materials at various meetings and on other occasions in the territory covering the basins. Awareness-raising meetings were also organised for **five local communities** – three in the Chu oblast in May 2018 and two in the Talas oblast in June 2018. The meetings also presented the opportunity for materials to be collected for a photo exhibition dedicated to links between life in local communities, the use of water and climate change.

Complementing general-level awareness, in March 2018 the Association of Forest and Land Users of Kyrgyzstan organised a training workshop in Bishkek on modern water-saving technologies for irrigation. This was designed to help make local agricultural practices more resilient to climate impacts. Among more than **90 people** who attended the workshop were governmental officials, specialists in agriculture, forestry, conservation and water resources, farmers, students and the media. The participants called for similar training sessions to be regularly held at the local level in all regions of Kyrgyzstan.

Climate adaptation remains a priority for the Chu-Talas Water Commission as a cross-cutting issue affecting different sectors, areas and transboundary cooperation as a whole.

The Vision of the Chu and Talas River Basins – 2040:

Effective transboundary cooperation, conservation and sustainable use of water, land and other natural resources, as well as measures on adaptation to climate change ensuring public health and safety, economic well-being and ecosystem resilience in the Chu and Talas River Basins.



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