

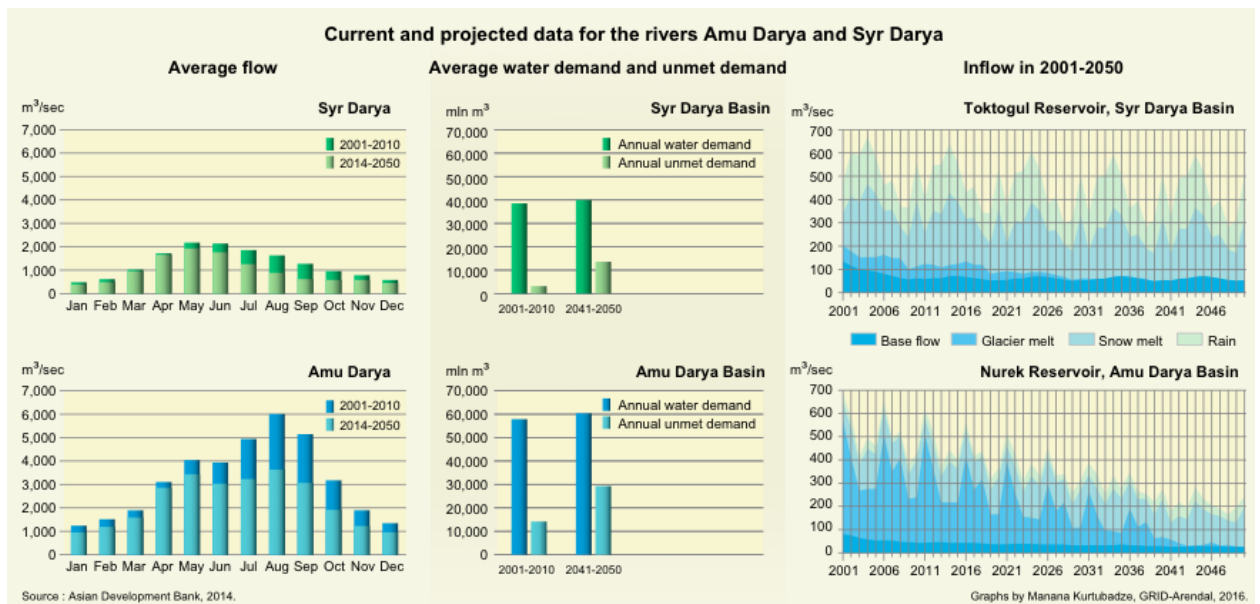
Outlook on climate change adaptation in the Central Asian mountain ecosystems

Central Asia comprises a vast area stretching from the Western Siberian lowlands to the Tian Shan and Pamir mountain ranges and from the Altai to the Caspian Sea. Its topography is characterised by vast deserts and mountainous regions. In total, 20 per cent of the approximately four million square kilometres that make up Central Asia is covered by mountains. Kyrgyzstan and Tajikistan are mountainous countries, with more than 90 per cent of their respective territories covered by mountains. The mountainous regions of Kazakhstan, Turkmenistan and Uzbekistan make up between 5 and 20 per cent of their total territories. The region's location in the centre of the Eurasian landmass, far from humid ocean currents, determines its arid climate and results in a rich diversity of landscapes, with more than twenty different ecosystems. Because of these specific features, the countries of Central Asia – Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan – are among those most vulnerable Executive Summary to climate change, which manifests in a rising annual average temperature. Such raise in temperature will have a mainly negative impact on the region. According to the research conducted by the World Bank in 2009 in 28 countries in Europe, the Caucasus and Central Asia, Tajikistan and Kyrgyzstan have the highest degree of vulnerability to climate change. This is an alarming trend, highlighting the particular vulnerability of the mountain ecosystems of Central Asia to climate change in comparison to other mountainous regions of the Eurasian continent. National and regional research conducted in Central Asia suggests that the region is experiencing an overall warming in climate, with a 0.5°C increase in the annual average temperature over the past 30 years. Precipitation records show greater disparities than temperature data, with significant variations across the region, including in mountainous areas. Global climate change influences glaciers and water resources in the region's mountain areas. It presents an acute and urgent need to research and analyse the impact of climate change on humans, ecosystems and economies of countries in the region, and to consider what climate change related policies these countries should adopt.

The Outlook is one of the outcomes of the “Climate change action in developing countries with fragile mountainous ecosystems from a sub-regional perspective” project, which is being implemented by the United Nations Environment Programme (UN Environment) with support from the Government of Austria. This project seeks to support mountainous countries in five sub-regions (Central Asia, East Africa, South Caucasus, Tropical Andes and Western Balkans) to integrate climate change adaptation issues into their development strategies, plans and programmes. The partners of UN Environment in preparing the Outlook for Central Asia were: Regional Mountain Centre for Central Asia (RMCCA) and GRID-Arendal. The Outlook focuses on the impacts of climate change on people, ecosystems and the economies of the Central Asian countries and proposes that a development of climate change policies in these countries is essential. The Outlook synthesizes the existing information on current trends and challenges in terms of climate change adaptation in mountain regions of Central Asia, based on the most recent academic literature as well as on consultations with various governmental and non-governmental experts from the Central Asian region and beyond. It identifies gaps and concrete needs in terms of climate change adaptation and provides a set of recommendations for concrete policy action.

One of the consequences of climate change is that ecosystem zones (forests, pastures, etc.) move vertically upwards in mountainous regions. At the same time, there is displacement, and changes in composition, abundance and distribution of animal and plant species, which can impact agricultural activity in mountain regions, resulting in changes in pasture and crop rotation practices. The increase in temperature and changes of precipitation patterns lead to changes in the hydrological regime and a reduction in water resources. The projected reduction in water resources is aggravated by rising demand due to population growth.

The importance of mountain ecosystems as ‘water towers’ in Central Asia is growing, particularly in the context of climate change. However, the decline in glacial and snow reserves is also taking its toll on the accessibility of water resources which are essential to energy production and agriculture. This significantly impacts not only mountain communities but also the ones downstream, on the plains - in the steppe semi-desert and desert areas. In addition, all five Central Asian countries are experiencing an increased number of extreme weather events and natural disasters affecting human safety and national economies. Every year these disasters inflict significant damage on settlements, agricultural land and infrastructure. This Outlook recognizes that in some cases climate change also creates new opportunities in certain economic sectors. One of the few examples is agroforestry, which may become more feasible in certain areas due to shifts in climate zones or changes in amount of precipitation. Climate change can also play a catalysing role for the development of adaptation practices designed towards more effective use of natural resources and improved management practices in various spheres of human activity. The countries of Central Asia have recognised climate change as a significant threat to ecosystems and populations, and have demonstrated commitment at the national level to address global climate change. All five countries are members of the UNFCCC, they have ratified the Kyoto Protocol and have signed the Paris Agreement. The latter, however, has only been ratified and entered into force in Kazakhstan, Tajikistan and Turkmenistan. Climate change is also a priority in the context of other international legal mechanisms, such as the Convention on Biological Diversity and the Convention to Combat Desertification, to which the countries of Central Asia are parties. The majority of countries have undertaken commitments to mitigate the consequences of climate change and adapt to them through the Intended Nationally Determined Contributions (INDC) they have submitted to the UNFCCC. At the regional level, three Central Asian countries with alpine ecosystems – Kazakhstan, Kyrgyzstan and Tajikistan – adopted the Bishkek Mountain Platform at the Bishkek Global Mountain Summit in 2002. The Platform provides a framework for further action towards strengthened management of mountain regions and creates an environment for resolving climate change related problems. The pivotal moment was, however, the 2009 Summit of the International Fund for saving the Aral Sea (IFAS). This is when the importance of climate change issues was recognized at the regional level. Prior to 2010 the main focus of IFAS and its subsidiary bodies (the Interstate Commission for Sustainable Development (ICSD)) was the use of water resources and environmental protection without taking into account climate change issues. Today in Central Asia, the negative consequences of climate change have been recognised to affect the water sector, agriculture, human health, the health of natural ecosystems, energy, transport and disaster risk management. However, over the last decade, increasing priority has been given to mitigation measures of climate change. This thematic focus continues to be reflected in the greater number of realised mitigation projects compared to adaptation initiatives.



Adaptation to climate change is not only of concern to ecologists, it touches upon all aspects of human activity and will therefore have an impact on every economic sector in the region. This report highlights the close interrelationship between ecosystems and sectors of the economy (energy, agriculture, mining, tourism) which are vulnerable to climate change, as well as health issues in the context of the impact of climate change. Some countries in the region are attempting to develop sectoral programmes and action plans to mitigate and adapt to climate change. The implementation of such programmes and plans however, remains at an early stage. Specific strategies and programmes with concrete recommendations and practical measures for adaptation have emerged only in the last few years. However, they still face the problem of integration into national and sectoral development programmes. Moreover, some Central Asian countries do not have effective cross-sectoral coordinating bodies to provide general guiding principles for policy, determine the priority areas for action, allocate sufficient resources and monitor the coordinated and systematic implementation of policies, programmes and investment as part of climate change adaptation and mitigation work. Moreover, the low coordination and synergy between existing institutional structures pose a serious challenge for national and regional cooperation in the area of climate change adaptation. Although climate change issues concern a wide range of relevant ministries and agencies of the Central Asian countries, decisions on climate change adaptation and mitigation most often fall under the remit and responsibility of state environmental protection authorities. Taking into account the limited influence that these authorities have on overall development policy compared with other state bodies, climate change issues do not receive sufficient attention from decision-makers involved in development matters. Another important issue identified in the Outlook is the lack of specialised climate change laws in environmental legislation and the failure of bylaws to cover climate change issues, particularly those concerning adaptation.



Hissar Range, Uzbekistan

This Outlook reveals a low level of awareness among local communities and farmers with regards to both climate change and adaptation. Awareness raising initiatives often prove insufficient to convey fully to rural communities the significance of climate change issues and the need to introduce agricultural practices which are better adapted to a changing climate, particularly in mountain regions. The report also points out the inadequate attention paid by governments to supporting rural populations in adapting to climate change. Rural communities need new methods, technologies and investment to have access to agricultural crops suited to local conditions and capable of increasing returns even when water supply is less dependable and consistent. In addition, mechanisms for crop insurance are needed to protect farmers from the devastating economic losses caused by adverse climate conditions. The main burden of maintaining households in rural areas most often falls on women. This is due to the outmigration of the working population, primarily men, in order to earn money in other cities and countries. Consequently, rural women in the region have to take on an active role as smallholder farmers. This role helps to ensure food security for their households. As a rule, however, these women do not have the right to a voice in the decision-making process. At this point, it is essential to recognise, support and increase women's role in decisionmaking, and include them when defining the priorities for agricultural research and development.

The Central Asian countries will meet in April, 2018 for further practical actions based on recommendations of the Outlook, including development of Strategic Guidance which will propose an approach for regional cooperation on adaptation in Central Asian mountainous areas. In particular, it will include a list of possible programmatic priority actions that are necessary to reduce the risks as well as to seize the opportunities created through climate change. The Strategic Guidance aims to overcome adaptation gaps and should provide added value to existing initiatives in this field. In addition, the Strategic Guidance aims to create the basis for a solid and detailed Action Plan on climate change adaptation in mountainous regions of Central Asia, to obtain as well as strengthen the commitment of the Central Asian governments to elaborate such a plan in the framework of a future project. The Strategic Guidance will also provide strong input to the Central Asian Regional Environmental Action Plan (REAP) update process.

Dr. Bulat Yessekin,

Global Water Partnership for Central Asia, Mongolia and Caucasus,
Vice-Chair of Advisory Board of Central Asian Regional Environmental Centre (CAREC),
Green Economy Expert Council of Kazakhstan
Bulat.yessekin@gmail.com