

GEOSS

Asian Water Cycle Initiative

# “Climate Change Adaptation and Water Nexus”

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For Uzbekistan the water is especially important component. The ongoing global climate change may lead to changes in the existing balance of system "climate - water". Under these conditions, water resources assessment, formed within the Central Asian region and their changes under the influence of climatic and anthropogenic factors of particular relevance.

Uzbek economy and its environmental sustainability significantly depend on availability and quality of the water resources. As with many countries in Central Asia, there are three major challenges related to water supply:

- ✓ ensuring that the usage fully reflects the value of water as a scarce resource;
- ✓ rising of water table, leading to land degradation;
- ✓ pollution of drinking water sources.

The fundamental reason for rural and urban water problems is the failure to recognize it as a precious resource.

That time has come to use *integrated water resources management* to face the challenges.

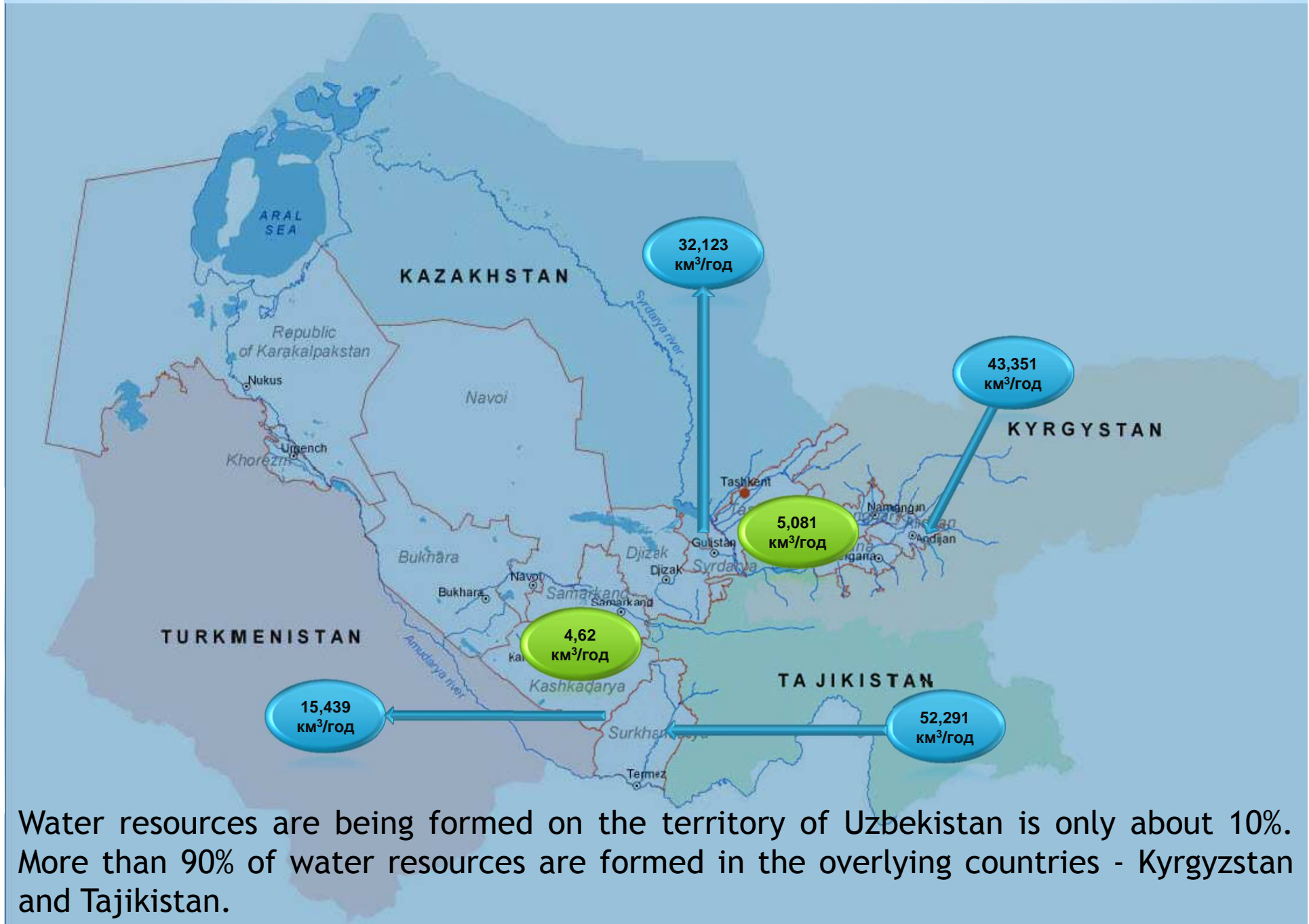
Effective regional cooperation over water resources, as well as proper national water management practices, are likely to await sustained growth with economic diversification and deepening.

Uzbekistan is the most vulnerable because:



- ✓ it possesses the largest irrigated land area - 4.3 million ha;
- ✓ a large rural population - more than 16 million people;
- ✓ and the highest density of population - 54.6 people/km<sup>2</sup> with a maximum of 520.5 people/km<sup>2</sup> in the Andijan region.

## The structure of the natural water resources of the Republic of Uzbekistan



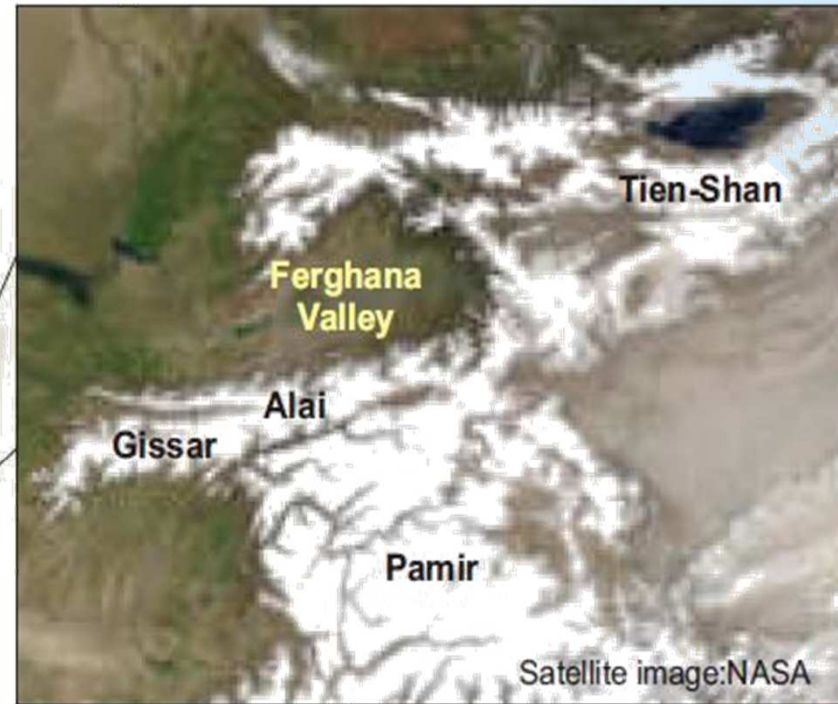
Water resources are being formed on the territory of Uzbekistan is only about 10%. More than 90% of water resources are formed in the overlying countries - Kyrgyzstan and Tajikistan.

Practically all water resources of the region originate from the year-round snows and glaciers in Kyrgyzstan and Tajikistan.

Central Asia



Mountain glacier regions



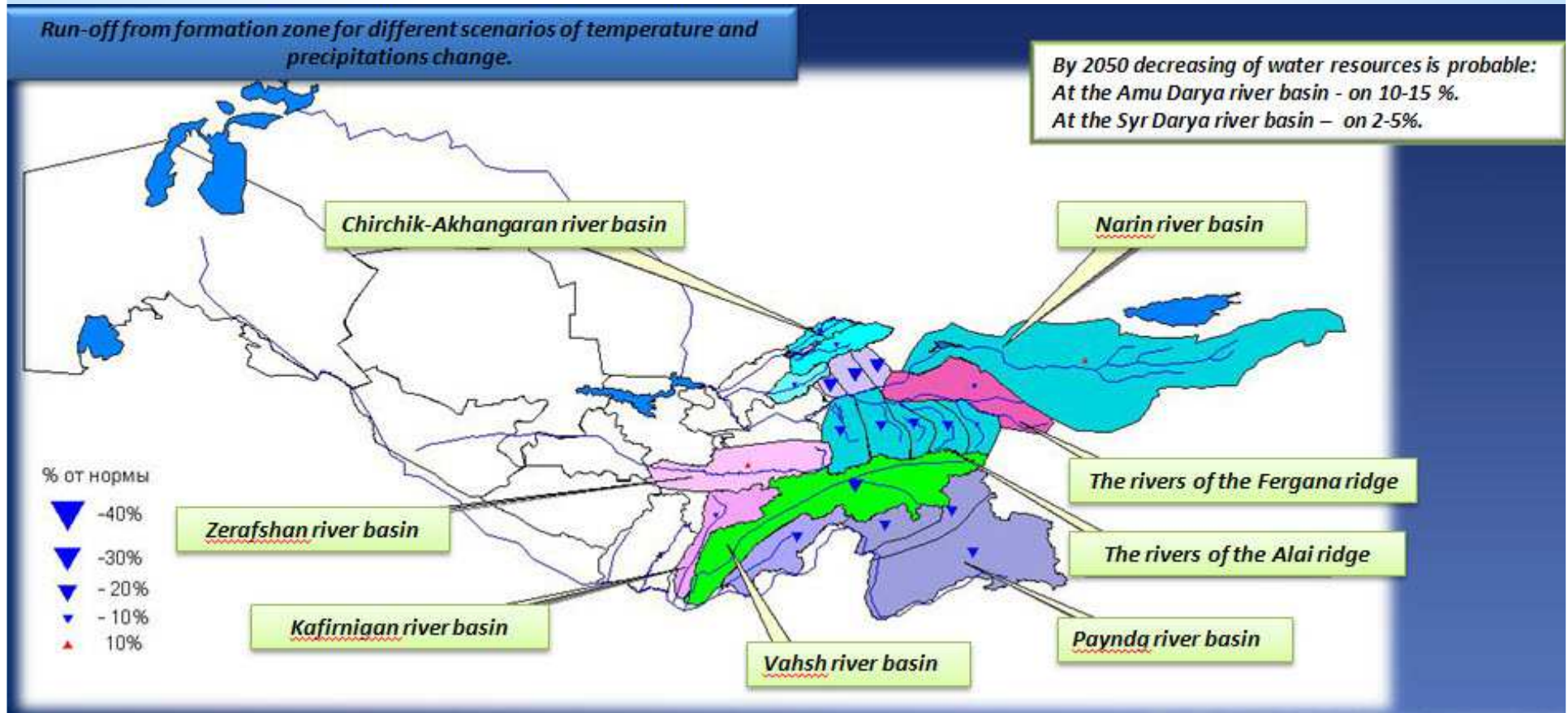
Assessment of the recent data shows that there has been a general reduction in glacier area. Glaciers have already lost 115.5 km<sup>3</sup> of their reserves ("104 km<sup>3</sup> of water). This is approximately 20% of the total reserve at the level of 1957. It is assumed that the current rate of reduction in glacier area (approximately 1% per year) will continue in the future.



Reduction of glacier area will lead to the creation of numerous moraine lakes that will in turn increase the probability of breakout floods and mudflows.

Based on the foregoing, it should focus on assessing the impact of climate change on glaciers and their dynamics using modern GIS, satellite data and models.

According to some assessments based on different climate scenarios, the Syrdarya and Amudarya river basins may see a reduction in water volume of 30% and 40% respectively. Other forecasts suggest that such a substantial reduction in volume is unlikely.



However, in all the models the demand for water grows faster than its supply. The expected growth in economic activity will cause increasing pressure on river runoff and global climate and moisture circulation, and problems associated with water deficiency in the arid and semi-arid regions of Central Asia will become more and more critical.

**UNDP analysis shows that national bodies are still poorly prepared to deal with natural disasters and their aftermath.**

**The severity of the possible impact necessitates:**

- ✓ a better understanding of the problem;**
- ✓ assessment of vulnerability;**
- ✓ the improvement of the system for monitoring water resources at the regional level.**

**Only the combined efforts of all the Central Asian countries can achieve this extremely important task of ensuring reliable water management within changing ecosystems**



## Water Resources Monitoring and Information Systems

- ✓ Uzhydromet's observation network comprises 78 meteorological, 131 hydrological, 89 agro-meteorological and 2 avalanche stations.
- ✓ Uzbekistan does have the capacity to develop a sustainable information system for the management and use of water, hydropower and land resources.
- ✓ The country's managerial structures are well developed
- ✓ The national organizations develop the specialized databases on water resources
- ✓ Introduction of GIS and remote sensing makes it possible to identify changes in ground cover and land use under the influence of the existing water use practice at various levels.

- ✓ Specialized databases do not relate to each other in terms of methodologies, systems and programs, and have been developed for specific tasks
- ✓ Besides, access to this information for stakeholders is restricted, and complete information about the databases is not widely available.
- ✓ Lack of funds and poor coordination of studies impede the broad introduction of these technologies at oblast and local levels

**Climate change is one of the major risk factors that affect the economy of the Republic of Uzbekistan in the first place, its most important industry - agriculture.**

**Long-term climate change scenarios and climate projections should be the basis for current and future planning services in order to make optimal use of water resources, to reduce the negative impacts of climate change and maximize the positive. In most cases it is the only way to increase agricultural productivity is to rationalize the use of these resources.**

**This clearly shows that the study of modern climatic situation, the state of water and agroclimatic resources, severe weather phenomena is of great scientific and practical value for the country.**