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CLIMATE CHANGE AND THE RISING WATER SCARCITY IN CENTRAL ASIA

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Annotation

This article discusses the impact of climate change on growing water scarcity in Central Asia. Rising temperatures, irregular rainfall, and decreasing river flows are putting strong pressure on the region's water resources. The article explains the main causes of water shortages, including inefficient irrigation, population growth, and industrial expansion. It also highlights the Aral Sea crisis as a serious warning for the future. Experts' predictions for 2050 show that without action, water availability will decline and agricultural production will fall. The article offers practical solutions such as modern irrigation technologies, stronger regional cooperation, renewable energy use, and improved water-saving habits. The main goal is to raise awareness about the importance of protecting water resources in a changing climate.

Key words

Climate change; water scarcity; Central Asia; irrigation; agriculture; Aral Sea; environmental crisis; river basins; sustainable water use; renewable energy; regional cooperation.

Climate change is becoming one of the most serious global problems of the 21st century. For Central Asia, a region with limited water resources, this issue is even more urgent. Rising temperatures, changing weather patterns, and reduced river flows are increasing the risk of water shortages.

1. Climate Warming – The Main Threat to the Region

Over the past 50 years, temperatures in Central Asia have been rising faster than the global average. Hot summers, mild winters, and decreasing rainfall negatively affect the Amu Darya and Syr Darya river basins. Snow melts earlier in spring, causing irregular water flow. By summer, river levels drop sharply, creating difficulties for agriculture.

2. Main Causes of Water Scarcity

Climate change is only one part of the problem. Other important causes include:

• Inefficient irrigation systems – Up to 40–60% of water is lost in outdated canals.

• Population growth – Demand for water is increasing quickly.

• Industrial development – Energy and mining industries use large amounts of water.

3. The Aral Sea Crisis – A Warning for the Future

The drying of the Aral Sea is one of the world's biggest environmental disasters. More than 90% of the sea has disappeared, leading to:

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• climate changes in the region,

• the spread of salt and dust by strong winds,

• serious health problems for local residents.

The Aral Sea crisis shows what can happen if water is not used wisely.

4. Future Risks: Is Central Asia Moving Toward a Water Crisis?

Experts predict that if no action is taken:

• water resources may decrease by 15–20% by 2050;

• agricultural productivity may fall by up to 30%;

• drinking water shortages may become more common;

• tensions between countries over water may increase.

These risks show that water scarcity is becoming a major security issue for the region.

5. Possible Solutions

To reduce water stress, specialists recommend:

• Introducing modern water-saving technologies, such as drip irrigation;

• Strengthening cooperation between Central Asian countries;

• Increasing the use of renewable energy — solar and wind power;

• Promoting water-saving habits among the population and farmers.

Climate change is not a distant threat — it is already affecting daily life. Water scarcity in Central Asia is becoming one of the most serious regional challenges. If effective measures are not taken, the consequences may become even more severe. Cooperation, innovation, and responsible water use are key to protecting the future of the region.

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