

# **Interrelationship between Hydrological Cycle and Human Activities**

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## **Abstract**

Overcoming regional water problems requires an understanding of both natural conditions and social and historical changes in regional water policy. Hydrological cycle and climatic condition control human activities. However, in some cases, human activities could lead to irreversible environmental destruction and hydrological change.

For example, Central Asian nations face serious water problems, and we here review the circumstances surrounding water resources in the Syr Darya and Amu Darya River basins in terms of water management changes and climatic trends. Under the Soviet Union's "planned economy" policy, many dams and other irrigation facilities were constructed in the two river basins, due to the Communist Party's prioritization of cotton and rice cultivation in downstream Uzbekistan and Kazakhstan. The huge increase in water diverted to irrigated areas dramatically decreased water flowing into the Aral Sea, disturbing the balance between water inflow and evaporation from the lake, drastically reducing the lake area and rapidly raising the saline concentration from 10‰ to 35‰. The combination of these processes has triggered many problems, including the disappearance of fisheries from the Aral Sea, the contamination of basins by agricultural chemicals, the damage to health of local inhabitants including a lower life expectancy, and the deterioration of the environment and basin ecosystems.

Almost all causes of water problems in this region are due to human activity and water resources management, and will be difficult to solve. However, these problems must be solved step by step using the scientific, engineering and political approaches. I recommend concrete measures for appropriate irrigation and better basin water management.