INTEGRATED MODELING OF THE ILI – BALKHASH WATERSHED

Transboundary water cooperation in the Central Asia

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An increase of the average air temperature by 1.3°C during the century that region is already facing is two times higher than the global warming value (Ibatullin 2009).

The global warming consequences aggravate the deficit of water resources in the arid part of the Central Asia (Gessner et.al., 2013).

Most of the river catchments in Central Asia dominate by meltwater runoff and hence are sensible to warming climate.
Aral Sea disaster

Upstream countries increased uptake. As a result:
• Lake shrinking
• Pollution
• Environmental degradation
Unique lake Balkhash

- The second largest lake in Central Asia
- Saline eastern and freshwater western part
Transboundary watershed
Possible Aral Sea disaster repetition. Balkhash lake may lose up to 86 percent of its water reserves by 2045.
Economic Development

The border line between Kazakhstan and China
The aim of the research is to assess the fate of the Balkhash lake based on the regional development including social and environmental changes.
Methods

The research included:

- Archival research
- Policy analysis
- Climate change analysis
- Land use change analysis
- Integrated modeling
- Remote Sensing
Results

Comparison of the Balkhash Lake volume under nine scenarios
Emerging questions

- Energy-Food nexus, hydropower, irrigation
- Minority oppression, migration, urbanization, population change
- Bilateral agreements, joint commission, international legislation
- Integrated Water Resources Management (IWRM), a basin level management.
- Institutional differences, political will
Thank you for your attention!