

# Central Asia Regional Assessment of Energy Sector Vulnerability to Climate Change -- Update

20<sup>th</sup> CAREC Energy Sector Coordinating Committee Meeting  
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## Objective:

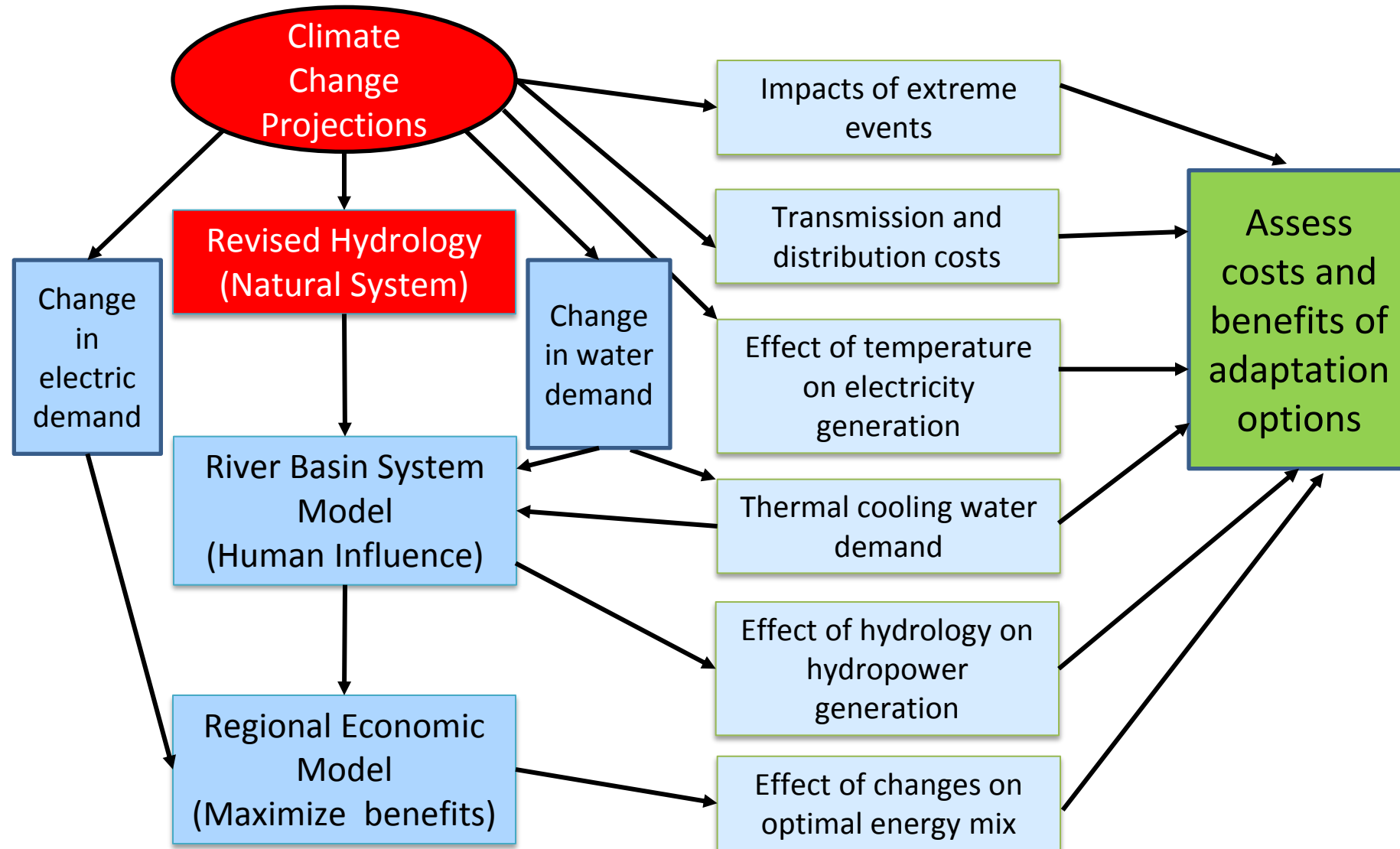
The overall objective of this project is to support countries in the region in understanding climate change-induced energy sector vulnerabilities, and building resilience through both national and regionally coordinated adaptation policies. The assessment will help guide current and future decision-makers on options for investments and management of power generation and transmission, and better understand cross-sectoral implications

# Three components:

## 1. HAZARD-IMPACT MODELS

## 2. IMPACT METRICS FOR ENERGY SYSTEM

## 3. ADAPTATION ANALYSES



# Preliminary Results

## Hazards

- Climate change forecasts for temperature show some convergence, unlike precipitation forecasts which disagree considerably.
- Hydrologic impacts are highly uncertain, with little convergence on predictions of magnitude, direction, or timing of change, and with possible differences even within a basin.

## Impacts

- Overall warming will reduce energy demand in winter; changes in summer demand will depend on uptake of air conditioning and demand for irrigation given changes in hydrology, especially in downstream countries.
- Hydropower investments may either benefit or experience reduced/more variable generation, reflecting the uncertainty in hydrology. Furthermore, these impacts may change over time.
- Higher temperatures are likely to marginally reduce efficiency of transmission systems, although extreme events may increase risk of weather outages.
- The frequency of flood events that substantially damage energy infrastructure (generation, transmission and distribution) across the region is likely to increase, especially in wet climate scenarios.

## Adaptation with regional benefits

- Energy efficiency and energy trade reduce climate risk while offering “no regrets” economic benefits at both national and regional scales.
- Climate uncertainty requires a shift in investment and operations management, to integrate a robust decision-making approach that selects investment paths to minimize risks across a full range of climate scenarios.
- Investments in ability to understand and track climate change, and thereby support robust decision-making such as new information technologies and analytical capacities are needed.
- Coordination on small reservoir operations as well as basin-wide water management reduce risks and increase adaptation benefits will help manage the more volatile and possibly reduced availability of water.

# Next Steps

- Completion of draft report: November-December
- Presentation and discussion of the study outcomes: next ESCC meeting
- Finalization of report: next ESCC meeting +1 month