CAREC Energy Sector Coordinating Committee Meeting (ESCC)
2-3 September 2009, Almaty, Kazakhstan

Energy-Water Linkages

(Backgrounder)

1. Description of Issue

The Central Asia Republics are endowed with significant energy resources which are unevenly distributed across the region. This diversity is development strength, enabling the region to manage across different demand patters, and, by combining thermal and renewable resources, mitigate risks of single-resource dependency. However, it also poses a development challenge, with important hydropower resources concentrated in the upstream republics of Krygyz and Tajikistan.

Given large existing and potential water storage capacity, the role of the hydro resources extends beyond power generation to other sectors such as drinking water and irrigation in both upstream and downstream countries. Agriculture, a mainstay of several economies, requires irrigation water during summer season; however, countries with large hydro potential (and extreme cold climates) have the ability to store water in summer in order to generate for domestic needs for heating and lighting deficits in the winter. Decisions in management of water extend beyond these direct uses, with both domestic and regional implications for water quality, climate change mitigation and adaptation, ecological protection and even water quantity through evapotranspiration.

Water management, especially in the face of climate change, also links back to energy security and system stability through the annual and year-over-year management of reservoirs for ancillary services such as power frequency regulation and reserve capacity. Similarly complex mixes of energy-water issues have been the driving force of regional management and agreements in the Indus, Senegal, Eastern Nile and the Columbia river basins, to name a few. India/Nepal and India/Bhutan are also now exploring their transboundary energy - water connections.

2. Current Activity

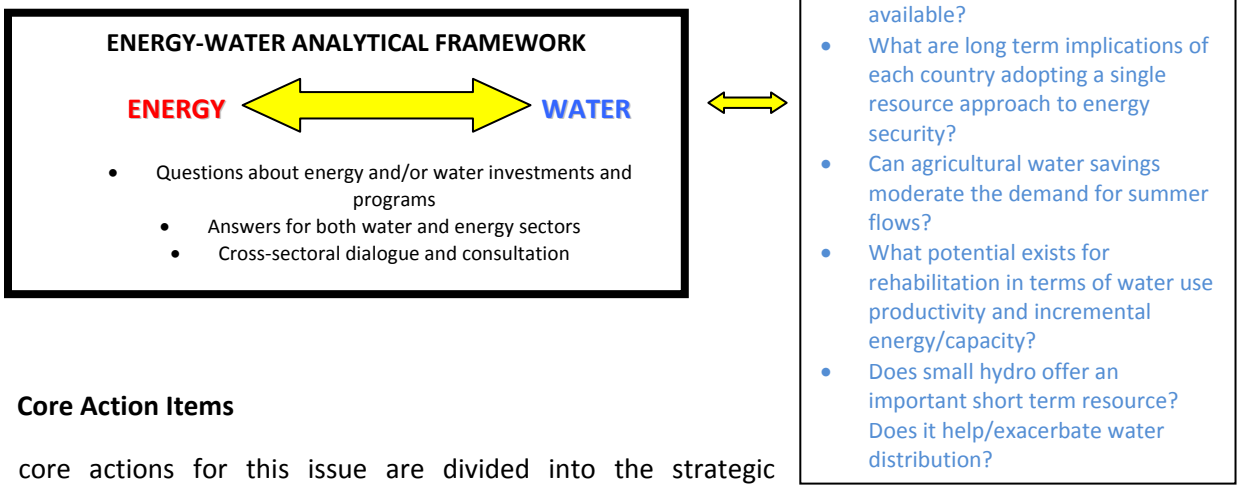
The "energy-water nexus" related to winter energy deficits and summer flows has received considerable attention. In addition to numerous analytical studies, several attempts have been made to work out agreeable solutions for power or water sharing, to replace the old Central planning approach with mechanisms that are appropriate to the new economies and that respect national sovereignty. Most didn't yield desired results and supporting mechanisms continue to elude the region.

One of the reasons for lack of progress could be the practice of treating energy and water as two independent resources for analysis and, consequently, development. The action plan addresses the need to analytically integrate the two resources and model impacts of energy and water projects on a range of users across all countries involved.

3. Objectives of the Action Plan

The objective of the energy-water linkages component of the action plan is to strengthen the analytical framework that integrates energy and water for the region, and ultimately to support regional cooperation in energy/water management. The primary purpose of the framework is to help decision-

makers better understand energy-water linkages. The essential characteristic is that the framework will link energy and water, to enable decision-makers to query options and investments from both the energy and water sectors, with answers (implications) on both energy and water sectors. The objective does not encompass decision-making on water or energy sharing agreements, recognizing these must be made at the national level. Institutionally, the energy-water analytical framework creates a focal point for dialogue based on a widely accepted, credible and understood characterization of each sector, and their co-dependencies.



4. Core Action Items

The core actions for this issue are divided into the strategic elements of the Energy Strategy, with a focus on building a strong knowledge base and regional institutions:

- Expand and strengthen models, analytical tools and shared databases that link energy and water sectors to enable assessment of options and impacts across both sectors and identify priority investment and management actions [Knowledge Base]
- Identify, assess and initiate consensus projects and investments to improve cross-sectoral management in the short term. Such investments could encompass both energy and water sectors including (for example) water productivity in irrigation and rehabilitation of hydropower plants. [Investments]
- Build capacity in Central Asian institutions with regional mandates such as IFAS and CDC, for data sharing, cross-sectoral analysis and modeling, and their use in regional management discussions. [Policy environment and institutions]