ENERGY ACTION PLAN PILLAR 3: ENERGY WATER LINKAGES

PHASE 1A: ANALYTICAL AND MODELING ARCHITECTURE

Issues in Energy-Water: Summary from National Discussions with Energy and Water Stakeholders

May 2011, World Bank

Session Agenda

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II. Pillar 3: Activities to date
III. Overview of Phase 1A
IV. Approach and design to national discussions
V. Main outcomes from discussions
VI. Other key messages from discussions
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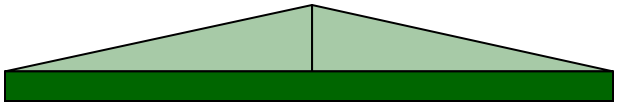
I. Background on Energy-Water Linkages



Energy-Water Linkages

Action Plan Objective

To strengthen cooperation by integrating energy and water analysis.

Why

- **Hydropower contributes to the reliability, stability and affordability of an energy system**
- **Transboundary water management** is critical to maximize the value of hydropower to the region's energy sector.

Energy Action Plan: Three Strategic Themes

How

Investment	Identify consensus projects to improve the rational and effective use of energy and water
Capacity Building & Knowledge Sharing	Enhance integrated energy-water models, analytical tools, and shared databases
Policy measures	Strengthen Central Asian institutions to lead the dialogue and analysis on rational use of energy-water resources

II. Pillar 3: Activities to date

September 2009
- Energy Action Plan
- Energy-Water Workshop

→ **Action Plan Objective: To strengthen cooperation by integrating energy and water analysis.**

March 2010
- Preliminary diagnostics
- Proposed Phase 1 initiative

→ **Opportunities exist for: Data; Modeling; Engagement (especially needs of decision-makers); Transparency and training**

→ **"ESCC discussed and endorsed the proposed phase 1 initiative on energy-water Modeling and Decision Support Activities (EWDSS) "**

July 2010
- Update
- Sub-committee
- Work program

→ **ESCC discussed endorsed the TOR of a sub-committee to play a significant role in the Phase 1 activities, reiterated the need to take advantage of previous work and confirmed the need for involvement of multiple disciplines.**

September 2010
- National & regional reconnaissance and scoping in Central Asia

→ **Listened to the water and energy technical counterparts to acquire a better understand of the national and regional level needs for an analytical and modeling framework for a decision support system**

III. Overview of Phase 1A

1) Objective of Phase 1A:
   - Define, through a consultative process, a joint view on decision-support needs for energy water analysis and modeling in Central Asia

2) Outcomes of Phase 1:
   - A joint view on modeling and analytical needs for energy and water as input to the decision support system (DSS); and
   - Confidence in an analytical and institutional platform for dialogue on regionally significant issues related to energy and water.

IV. (a) Approach and design to national & regional discussions

1) Builds on the priorities identified from the September, 2009 ESCC and the reconnaissance-scoping consultations in August-September 2010 across Central Asia
   - It is important to note that these discussions were informal discussions with national technical energy and water experts, NGOs and civil society, and in no way reflects the official positions of the governments.
2) The reconnaissance-scoping consultations found:
   - a need to directly involve a wide range of experts at the national level in the design of the DSS's model architecture,
   - a need to build a comprehensive and transparent analytical tool to enable a clear exposition of the facts and alternatives, linkages, and tradeoffs upon which the countries can technically agree, and
   - past efforts to model the Central Asia water system were made, but existing basin models have not found common agreement nor widespread use.
3) The proposed approach, of national engagement in formulating a DSS through multi-sectoral national discussions in each country, was endorsed by the ESCC representatives at the Bishkek meeting, then later presented and approved at the CAREC Senior Officials Meeting (31 October, 2011) and later at the 9th Ministerial Conference of CAREC (2 November, 2010).

IV. (b) Approach and design to national & regional discussions

1) The national discussions took place in a workshop format in Afghanistan, Kazakhstan, Kyrgyz Republic and Tajikistan during 25 February- 26 March 2011.
   - Discussions will be held in Turkmenistan and Uzbekistan at the disposition of each Government

2) The aim of these discussions was to bring together a multi-sectoral group of national technical experts to focus on building a DSS for energy-water for Central Asia. The range of participants included :
   - senior officials from the energy and water ministries as well as the technical institutes associated with these ministries,
   - officials from other concerned ministries and agencies,
   - officials from independent research institutes,
   - academia and the Academy of Sciences and NGOs;
   - also both young and senior professionals from diverse disciplines.

IV. (c) Approach and design to national & regional discussions

1) Definition of a DSS:
   - A DSS is an analytical tool and mathematical model that utilizes a class of computer-based information systems including knowledge-based systems that support decision-making activities.

2) The model architecture of a DSS has three fundamental elements:
   - the data, a knowledge base and information system
   - the tools, a set of analytical tools and mathematical models with which the data can be analyzed; and
   - the user, an output-user interface to display the results in a form that informs and supports decision making.

IV. (c) Approach and design to national & regional discussions

3) The objective of the DSS discussions were to:

- identify and discuss, **national priorities** for water and energy in terms of key issues and identify **criteria** for the model architecture;
- review and discuss **several case studies** (Kabul basin, BC Hydro)of DSS application to different planning problems; and
- additional hands-on training was provided for the World Bank's ***Basin IT,*** demonstration training software.

V. Main Outcomes of Discussions

The main outcomes of the discussions were:

a) Common perceived needs exist;
b) Yet there are also unique national priorities;
c) Involving downstream countries is vital; and
d) National technical specialists needed to be engaged, a six-country Modeling and Decision Support Technical Sub-Committee should be formed.

V. (a) Common needs exist

1) There was a remarkable common thread of issues on energy and water security, the environment and agriculture, and social concerns; and there was considerable agreement among the countries about the importance of these issues and the criteria by which objectives are defined and alternatives measured

2) These criteria included:
   - Safe domestic water supply
   - Water quality
   - Agricultural productivity
   - Winter energy security

V. (a) Common needs exist…cont

3) All participating countries prioritized food security and achieving higher agricultural production and productivity

4) Priority concern for the environment is present in all countries but it takes on a different dimension depending on the overriding issues

5) There are also social issues that on the surface seem distinct with each country, but would likely be found to be more common among the countries after more detailed discussions, linked by concerns of reducing poverty and increasing GDP and economic growth.

V. (b) Yet there are also unique national priorities

1) Yet, there were also unique priorities, which varied from country to country; for example :

- While both Kyrgyz Republic and Tajikistan are concerned about winter energy deficits and overall energy production, Tajikistan is also additionally focused on exports.
- Afghanistan's concerns are typical of a country of which the electricity system is very inadequate and every aspect has to be improved including achieving production levels sufficient to achieve self-sufficiency.
- Kazakhstan was very much concerned about the restoration of the Northern Aral Sea

V. (c) Involving downstream countries

1) It is recognized that these outcomes from these national discussions are partial and a high priority is put on expanding the outcomes to include perspectives from Turkmenistan and Uzbekistan. These two countries are critical downstream riparian and are likely to express needs and priorities within their own national context.

V. (d) A six-country Modeling and Decision Support Technical Sub-Committee should be formed

1) Individual national technical teams should be formed to include appropriate technical energy, water specialists:

   - The composition varied, to the extent that Kyrgyz Republic participants expressed a desire to extend the engagement to a broader context to include representatives from civil society, legal community and other relevant specialists.
   - In all countries, the participants stipulated that any technical team that is formed would require the involvement and support of senior government officials.

2) There is value for a six-country Modeling and Decision Support Technical Sub-Committee, with the purpose to advise on and recommend refinements to energy-water DSS. Each country acknowledged the importance of a regional entity.

3) Any institutional arrangements must be supported by and endorsed by senior government officials.

VI (a). Other key messages from discussions

1) The countries generally reiterated the key message from the August-September, 2010 scoping meetings:
   - a new effort and approach is warranted to understand water and energy issues in the basins, in the formation of a transparent analytical tool (DSS) for the basins.
2) Participants welcomed the proposed initiative.
   - at all the discussions, the participants endorsed the value in convening multi-sectoral professionals; this approach is extremely beneficial to better understand the differences and commonalities in the energy and water sector.

VI (b). Other key messages from discussions…cont.

3) The participants also valued these discussions as a networking opportunity

- Participants stressed the importance of building confidence and trust among the countries encouraged this type of multi-sectoral engagement.

4) Participants also stressed the importance of building confidence and trust among the countries encouraged this type of multi-sectoral engagement.

VII. Next Steps

1) The World Bank has distributed to the participants at the national workshops, draft copies of the national consultation reports and the summary report for stakeholder comments.

2) The World Bank will finalize each national report upon receiving input from national stakeholders.

3) The World Bank looks forward to engaging in consultations in Uzbekistan and Turkmenistan at the disposition of the individual Governments. For Afghanistan, at the request of the Government, the Bank will support an additional effort to discuss transboundary principles and issues and DSS, to compensate for the reconnaissance-scoping consultation.

VII. Next Steps

4) The World Bank will continue an in-depth evaluation of existing basin models in preparation for a regional workshop.

5) Fall 2011:The World Bank will facilitate a regional workshop, to complete the Phase 1 energy-water linkages program. The workshop would bring together national technical teams from the six countries to explore options for developing a framework for the regional DSS.

Annex- Objectives and Criteria to Support the Development of a DSS for the Amu and Syr Darya *(It is important to note that these discussions were informal discussions with national technical energy and water experts, NGOs and civil society, and in no way reflects the official position of the government)*

Kazakhstan	Kyrgyz Republic	Tajikistan	Afghanistan
Restoration of northern Aral Sea • maintenance of water levels, • maintenance of water quality	Water quality risks	Ecosystems • Glaciers • Deforestation • Natural reserves	Environment
	Energy • production • distribution (especially in winter)	Energy • Exports • Winter energy security • Security of hydro facilities	Energy • Production • Reliability • Access • Self-sufficiency & security
Domestic Water Supply • Safe • Available • access	Domestic Water Supply • Safe • Available • access	Domestic Water Supply • Compliance with sanitary norms • Quality & access • MDGs	Domestic water supply and sanitation • Improved access and coverage • Safe supply • Improved sanitation
Agriculture • Food security • Agriculture production • Fisheries • Farm-household income	Agriculture • food security, • agricultural productivity and production • expansion of irrigated agriculture • Soil quality	Food security • Rehabilitation and upgrading of irrigation systems • Conserving and improving land quality	Agriculture & husbandry • Food security • Production • Reduced agriculture imports • Livestock • Fisheries
Mgmt of energy and water in a well functioning legal framework	Flooding and water logging	Other • Climate change • Water tourism • Joint monitoring of water resources	Economic Growth • Poverty reduction • Household income • Employment • GDP growth • Stability
Water security • improved agriculture water use and efficiency	Cost and revenues for operation and maintenance of water infrastructure		Security • Social • economic

Workshops for Turkmenistan and Uzbekistan will be held at a later date

Thank you

Session Discussion