ENERGY ACTION PLAN PILLAR 3: ENERGY WATER LINKAGES

PHASE 1A: ANALYTICAL AND MODELING ARCHITECTURE

Issues in Energy-Water : Results from National and Regional Discussions in Central Asia

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Session Agenda

I. Overview of Energy Action Plan Pillar 3
II. First-generation model Phase 1B
III. Institutional platform
IV. Overview of Phase 1A
V. Approach to national and regional discussions
VI. Key issues from discussions
VII. User Interface for dialogue
VIII. Next steps for Phase 1A
IX. Session discussion

IV. Overview of Phase 1A

1) Objective of Phase 1A:
   a) Define, through a consultative process, a joint view on decision-support needs for energy water analysis and modeling in Central Asia
2) Specifically Phase 1A:
   a) establish a common understanding for priority data needs and data sharing;
   b) identify model architecture, most appropriate modeling platform and interface (basis of a decision support system, DSS)
   c) strengthen institutional confidence to identify national issues within a regional modeling and analytical platform,
   d) formulate an appropriate institutional framework for ongoing use, maintenance and sharing of models and analytical tools
3) Outcomes of Phase 1:
   a) A joint view on modeling and analytical needs for energy and water as input to the decision support system (DSS)
   b) Confidence in an analytical and institutional platform for dialogue on regionally significant issues related to energy and water

V.Approach to national & regional discussions

1) Builds on the discussions initiated from the September, 2009 and subsequent ESCC meetings
2) National & regional meeting in Central Asia August 21 to September 21, 2010
   a) the objective to listen to the water and energy counterparts to acquire a better understand of the national and regional level needs for an analytical and modeling framework for a decision support system
3) Discussed the three fundamental elements of a decision support system architecture:
   a) the database, information and knowledge base,
   b) the available tools (i.e. the models),
   c) the user/institutions (i.e. the user interface)
4) Met individual national planning and design, institutes, Hydromet, and academy of sciences, and in some cases ministerial counterparts
   a) National technical level Bishkek, Kyrgyzstan; Astana and Almaty Kazakhstan; Dushanbe Tajikistan, and Tashkent, Uzbekistan;
   b) Regional level with EC-IFAS, ICWC, and CDC;
   c) Political level counterparts – Uzbekistan and Tajikistan
   d) Recognize the importance of Afghanistan, and will continue efforts with Turkmenistan

VI. Overview of key issues

The key issues, this is what we heard:

a) Scope of effort
b) Common perceived needs
c) Data sharing and transparency
d) Effective resource management
e) Understanding the range of tradeoffs and opportunities
f) Understanding the economic and commercial aspects
g) National interests and regional benefits
h) Institutional framework

VI. (a) Scope of effort

1) Afghanistan must be taken into consideration both technically and institutionally

   a) Afghanistan is an important riparian in the Panj, Kokcha and Surkhab sub-basin with aspiration to develop the water of these sub-basins for irrigation and hydropower development – studies of key projects are underway and in some cases recently completed,

   b) The capability of Afghanistan's Ministry of Energy and Water to participate din CAEWDP in a substantive way is increasing – it's newly established Water Resource Planning Unit (WPRU) is working with a DSS of the Kabul River Basin and is in the process of establish a DSS for the Kokcha and Surkhab.

VI. (b) Common perceived needs

1) The countries expressed tempered optimism (recognition of complexities and past failures), but uniformly welcomed the initiative
2) To date, none of the modeling of the basin that has been done in the past have addressed the critical question of energy and water together at a broader transboundary scale and in a manner agreed to by all the countries.
   a) There have been a number of initiatives and models done for Central Asia, none have been effective or usable or address fully the needs
   b) There is no common understanding of the energy/water issues – some analysis is needed
   c) There is no mechanism to understand energy/water jointly

VI. (b) Common perceived needs…cont

3) Agreed to a common goal to develop an independent, more transparent and technically acceptable integrated energy-water model as the core analytical tool to better understand current and future problems
4) When asked, the Bank noted that there was no pre-conceived notion on the institutional framework for this effort
5) Counterpart recognized needs for a functional and respected national and regional institutional mechanism for model implementation and dialogue

VI. (c) Data availability, openness in sharing, and transparency

1) National Hydromets are the source of meteorological and hydrological data
   a) The Hydromet services play a critical role in monitoring and forecasting water availability, and they are the process of upgrading their technology and skill to do a better job
   b) There is no shortage of historical water resources data for Central Asia (i.e. from 1860's)
   c) Real time data to better support operations is generally not available a present
   d) Programs to convert existing Hydromet data to digital media for faster and better processing, utilization and dissemination has begun but is hampered by the shortage of funds and staff
      i. Critical snow monitoring and forecasting of snowmelt runoff is hampered by high costs but new technologies are increasingly being used
   e) There is some data sharing between countries but not commonly practiced

VI. (c) Data availability, openness in sharing, and transparency... cont.

2) Considerable discussions on the need for data sharing among countries but there are issues:
   a) Confidence in the data, i.e. verification of information
   b) Transparency of data
   c) Quality assurance on water needs/uses (e.g., whether irrigation norms up to date)

3) Data use
   a) Within each country, the data is used for forecasting, and extensively for planning and design
   b) At the regional level for operations, the BVO (Syr Darya Basin Organization) and Central Dispatch Center (CDC)

4) A few steps identified to improve data collection, sharing and use:
   a) World Bank Regional Hydromet Program
      i. Strengthen data collection program
      ii. Strengthen institutional capacity
   b) Develop more robust data sharing standards and protocol, and a commonly accepted methodology

VI. (d) Effective resource management

1) Need for a better understanding of the water resources in the basin
   a) Use/needs analysis (i.e. water and energy)
   b) Water productivity (i.e. water/energy, water/irrigation)
2) Water allocation issues are in the forefront of tensions, there was concern expressed about the extreme conditions
   a) debilitating risks from floods
   b) increased volatility from unplanned releases for energy operations
   c) recurring droughts and floods, and the increased frequency of these events (i.e. most recently the drought of 2008 and the summer floods in 2010)

VI. (d) Effective resource management…cont.

3) Effective management of storage appears to be an option that might resolve problems of jointly managing energy and water

a) currently, there no agreement on the location and no basis to explore possible agreements, on the size or operating modalities for needed storage among the riparian countries

b) joint management appears essential to define, where and when to build, the size and characteristics, how to operate, and who should control the management of the storage

c) economic value of storage uses in a variety of sectors not well understood (especially in the context of climate change)

VI. (e) Understanding the range of tradeoffs and opportunities

1) In defining and evaluating priorities, trade-offs and opportunities, and possible options, it is imperative that the widest range of options and opportunities be analyzed even though they are not presently favored by all countries
   a) The Consultants note that the model should be able to simulate a variety of options. A decision support system enables participants to explore options from a variety of perspectives; by iteratively analyzing and modifying original assumptions and especially where there are opportunities to enhance benefits and moderate trade-offs

VI. (f) Understanding the economic and commercial aspects

1) The decision support system must be able to describe options in economic and commercial (financial) terms.
   a) Countries expressed concern that they cannot afford uneconomic choices that do not promote growth and contribute to the solution of national development issues and priorities in the context of regional resources; and
   b) Options should address core aspirations and needs of the individual basin countries, and the options should yield significant benefits to each country rather than benefits to some at the expense of others

VI. (g)National interests & regional benefits

1) Counterparts assessment of the national politics of resource management in Central Asia:
   a) A rise of national aspirations and development needs
   b) The emergence of new and distinctive political cultures
   c) The drive for energy and water self-sufficiency
   d) Breakdown of regional water and energy mechanisms borrowed from Soviet times
   e) Difficulties have promoted an increasingly inward looking rather than regional and transboundary perspective
   f) Bilateral agreements are not respected, and rules between riparians are not followed

VI. (g)National interests & regional benefits….cont.

2) Counterparts recognize the changing regional dynamics

a) The balance of water allocation priorities between water for agriculture and water for energy appears to be shifting

b) Currently there is no means to analyze options that would ease this shift and ensure regional benefit and meet national needs to support growth in each of the region's countries

c) While considerable attention has been focused on the need to meet present and future energy demand growth, other important changes are taking place that have implications for these tradeoffs:

i. For example: transformations are taking place in the important agriculture sector that will lead to changes in cropping systems and possibly water demand and water supply reliability requirements

VI. (h) Institutional framework

1) The Bank Consultants clearly articulated:
   a) that there was no preconceived institutional arrangements
   b) the national and regional institutional platform will be with inputs from national counterparts and have national technical and policy ownership
   c) As each country mobilizes, multi-sector teams should include both senior experts and young professionals
2) The Bank consultants heard:
   a) There is collaboration and mutual respect at the technical level between institutions and between technical counterparts in different countries
   b) It was not obvious how technical information is translated to the decision-makers
   c) The confidence in the regional institutions has waned

VI. (h) Institutional framework…cont.

3) Counterparts agree there is a need for a joint regional institutional framework for energy and water

a) policies and rules of the former Soviet period are not applicable in today's circumstance and economic world

b) a widespread view that the current institutional arrangements should be reformed and strengthened, and made more transparent and effective

c) The counterparts identified a possible model, the Energy – Water Consortium (proposed in 1999) was expressed as generally a good idea, but pre-mature for its time

d) National and regional counterparts will need contribute to defining the framework and operations of the institutional platform, a joint view will support effectiveness

VII. User interface for dialogue

1) The concept of the “user interface” encompasses the mechanisms for dialogue; this was not specifically discussed but is an important and critical part of the process.
2) The user interface is:
   a) the interface between technical specialist and the policy makers
   b) the mechanism to translate technical information to useable policy decisions
   c) the decision support system platform

VIII. Next steps for Phase 1A

October 2010

- What: Confirm inventory of existing national and regional models
- Why: better understanding of the benefits and limitations of available national and regional models in Central Asia; identify and possibly build upon base models/modules for regional energy-water model

January 2011

- What: National cross-sectoral workshops
- Who: National technical specialist and policy makers from water, energy, environment, agriculture, others.
- Why: discuss (a) model architecture and focus on output variables, (b) user interface, (c) possible institutional platforms, and (d) explore scenarios from first-generation model (Phase 1B). Also, explore national participants for the proposed sub-committee, and capacity building priorities.
- How: Input from preparatory work prepared by participants

Spring 2011

- What: Regional Workshop
- Why: Formulate common understanding of model architecture, output variables and institutional platform; and draft Roadmap for energy-water model development

Late Spring 2011

- Complete Terms of References for Phase 2 Analytics and Model Development and Institutional Strengthening

Thank you

What we have heard……..

1) The national level discussions touched upon the three primary parameters in defining a transboundary/regional decision support system
   a) Obvious need for confidence in data verification and data sharing,
   b) Common perceived need for energy and water analytics and modeling
   c) Effective user interface, both technical and decision-maker the users/institutions
2) The issues and constraints for effective resource management can be identified but there is not a common understanding to the range of possible tradeoffs and opportunities; nor are the economic and commercial underpinning, understood
3) The value of national interests with regional benefits is recognized
4) The institutional organization, the model architecture (including output variables and data sharing and the user interface to decision making) will need national level ownership and regional coordination.

IX. DISCUSSION