



World Bank – Enhancing regional power trade in Central Asia

Project overview and current status

20th CAREC Energy Sector Coordinating Committee Meeting
September 7, 2015, Kuala Lumpur, Malaysia



Goal of the evaluation

Objectives of the project

- **The objective of this assignment is to:**
 - Quantify the potential profits lost from 2010 to 2014 for each country of Central Asia from lack of trade, arising from:
 - Reduced water spillages
 - Reduced OPEX
 - **Reduced costs of imported ancillary services** thanks to the full use of regulating hydropower in Tajikistan and Kyrgyzstan
 - **Reduced requirements** for reserve margin
 - Different time zones
 - Reduced **un-served demand**
 - Update the recommendations for unlocking the power trade potential

Relevant considerations

- During the implementation, the following will be taken into consideration:
 - Tajikistan considered connected to the CA power system
 - The calculation should assume **limited centralized economic dispatching**
 - Obligations of upstream countries with respect to water releases
 - Power transmission constraints between and within countries
 - Investments made should not be taken into account



Summary of the task

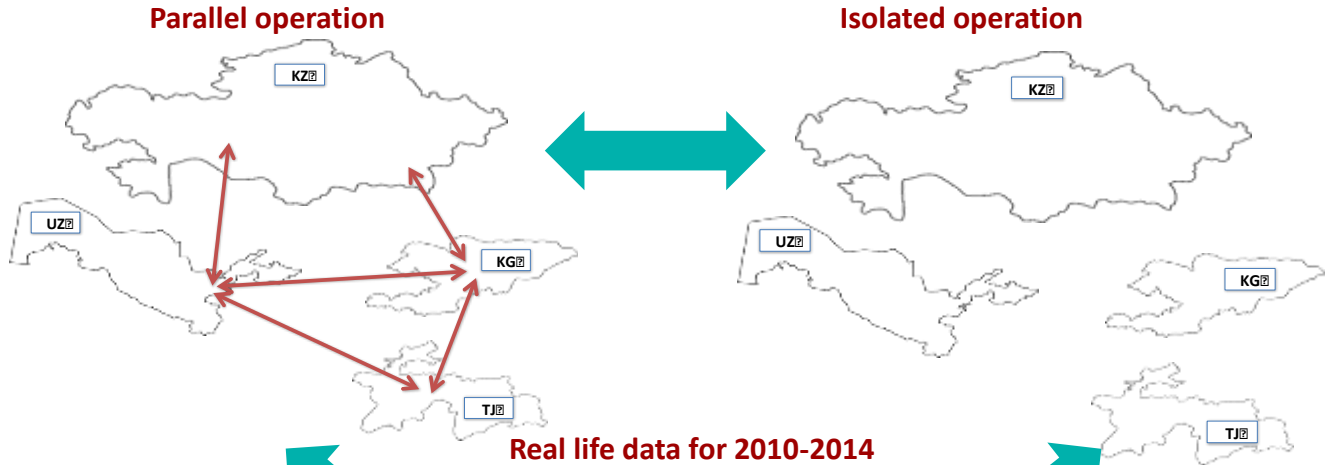
Modelling approach

- The first goal of this task is the preparation of a comprehensive integrated market model
- Representation of the regional power market:
 - Country wise: Kazakhstan (2 nodes: North and South), Kyrgyzstan, Tajikistan (2 nodes: North and South) and Uzbekistan
 - Use of historical demand, generation and exchange data
- Evaluation of the potential benefits achievable through interconnection
 - Costs comparison between the scenarios:
 - All countries isolated
 - All four countries interconnected
 - Real costs of power system operation during the last 5 years
 - General
 - Costs in 2014 USD
 - Calculations from 2010 to 2014, monthly resolution





Modelling approach: 3 scenarios





Work plan

Phases of the project

July
22nd

According to the initial plan, had to be accomplished in 2 w. In real life took much longer (5 w)

20 wd after
reception

10 wd after
comments

On demand

- **Methodology presentation**
Approach to tackle the assigned task
It was distributed and discussed with the WB and with the working group
- **Data request and data collection**
Distributed among working group
- **Model development and simulations**
Results summarized in draft report (up to 10-15 pages)
- **Executive report**
Integrating all outstanding issues, requests of clarification or comments received
- **Final presentation (on demand)**
The results of the study will be presented at a meeting to be held in one of the countries covered by this study

Modelling works

- **Model used depends on available data**
 - **ORDENA:** very flexible in-house developed least cost model, allows representing uncertainty in RES and hydropower generation and adding tailored constraints
 - **SDDP:** specially suited for hydropower, requires detailed information of inflows and historical generation to be worth using



Current status

- The Data Request was shared on 22/07 with the WB and the Working group containing the information requirements for this assignment;
- As on 27/08 information has been collected for:
 - Uzbekistan;
 - Kyrgyzstan (partially, the Consultant is pending to receive the remaining part);
 - Tajikistan (partially, the Consultant is pending to receive the remaining part);
 - Kazakhstan (partially, information on North Kazakhstan is completely missing);
- The Consultant started to develop the model basing on the data collected, developing the list of assumptions to use (to be agreed with the Working Group in the first half of September).



Next steps

- In the mid of September to hold a VC to agree on the assumptions, selected model (depending on the availability of the data) and scenarios with the Working Group;
- Finalise model development;
- Prepare a draft report with 10-15 pages with results of the simulations;
- Upon receipt of the comments prepare and submit the final Executive Report;
- A final presentation will be conducted in the region on demand.

