Energy Sector Status Report

Senior Officials' Meeting on
Central Asia Regional Economic Cooperation
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Central Asia Regional Economic Cooperation (CAREC)
Senior Officials Meeting (SOM) – April 10-11, 2006
Report on Energy

1. The purpose of this Report, prepared by the World Bank with contributions from other IFIs involved in CAREC activities, is to capture the developments since the last Senior Officials Meeting in October 2005. This Report is organized along the Terms of Reference of the Energy Sector Coordination Committee (ESCC) which is attached for reference.

I. REGIONAL ENERGY PROJECTS

2. The **220-kV transmission line between Batken in Kyrgyz Republic and Kanibodom in Tajikistan** has been operational**.** The purpose of the project is to partly meet the power demand in the northern part of Tajikistan through import of 900 GWh per year from southern Kyrgyz Republic. The countries themselves have financed this transmission link, at an estimated cost of US$9 million. However, there have been difficulties for actual power flow on this line, owing to issues related to the control of power flows by Uzbekenergo and the Unified Dispatch Center (UDC) in Tashkent.

3. The second phase of the **North South Transmission Line Project in Kazakhstan** has been approved in October 2005, together with a US$100 million loan from the World Bank. In addition EBRD approved in November 2005 a loan of $88 million for this phase (over and above the US$60 million financed for the first phase). This second phase includes the construction of a new 475 km, 500 kV single circuit overhead electricity transmission line from substation Ekibastuz (1,150/500 kV) to substation Agadyr (500 kV), including a fiber optic communication line. The primary objective of the new line is to address energy and peak supply deficit in southern Kazakhstan. The project also supports regional integration with respect to optimizing the use of energy resources through electricity trade. The project aims to promote competition both at the national and regional level, by allowing low cost producers in Kazakhstan, Tajikistan and Kyrgyzstan to compete on the broader regional market.

4. ADB is assisting with the preparation of a **Regional Gas Transmission Improvement Project** to improve the quality and reliability of supply of natural gas from Uzbekistan to the Kyrgyz Republic and southern Kazakhstan, i.e., the Almaty area, and also from Uzbekistan to Dushanbe in Tajikistan. The final reports were completed in September 2005. As a consequence of these and further bilateral discussions, two main project proposals have been finalized:

- ***Rehabilitation of the Tajik section of the Uzbekistan to Dushanbe pipeline***, which would cost about US$25 million. For this purpose, ADB had originally programmed a loan of US$10 million to Tajikistan for 2006 and cofinancing from EBRD of the remaining $15 million was being pursued. Recently, however, at the request of the Tajik Government this project has been deferred to 2007. For this project also considerable work has been done by ADB with regard to the assessment of the financial status and performance of Tajikgas and the development of a multi-year gas sale and purchase agreement between Uzbekistan and Tajikistan.

- ***Rehabilitation of the Kyrgyz section of the Tashkent-Bishkek-Almaty (TBA) pipeline,*** for which about US$100 million is needed. A joint venture between Kyrgyzgas and Kaztrangas, i.e., KyrKazgas, has been formed to operate the Kyrgyz section of the TBA pipeline and Kaztransgas has provided an interest-free loan of $17.5 million to KyrKazgas for the rehabilitation of the same. To fit the available financing, the Kyrgyz authorities have decided that the rehabilitation of the

western part of the Kyrgyz section of the TBA pipeline (63 kilometers from the border with Kazakhstan to Bishkek) has priority and to ensure uninterrupted gas supplies to Bishkek. This would cost US$58 million, for which ADB is seeking allocation of US$20 million to Kyrgyz Republic for 2007-2008. It is looking for co-financing from other multilateral, bilateral, and private sector financiers, including possible public private partnerships/concessions and privatization of Kyrgyzgas.

5. **Central Asia - South Asia Electricity Trade Projects.** This set of projects include **Sangtuda I Hydroelectric Project** in Tajikistan, **other medium sized hydro projects** also in Tajikistan, and **transmission projects** in Tajikistan, Afghanistan and Pakistan.

- ***Sangtuda I Hydropower Project in Tajikistan,*** as reported to the October SOM, the meeting of all the stakeholders took place in Moscow last October and there have been subsequent meetings in Washington (in December among IFIs and investors) and with all stakeholders in Dushanbe in January, 2006. As a result of these meetings, it has been agreed that: (a) RAO UES and Government of Tajikistan will jointly develop the Sangtuda I hydropower project; (b) RAO UES would like equity investment from IFIs such as IFC, EBRD and IFI (debt) financing on a project finance basis; and (c) importantly, at least the summer production of Sangtuda I is dedicated for export to Afghanistan/Pakistan.

- ***Other hydropower projects in Tajikistan for export.*** At the same time, AES is looking to develop additional (new) hydroelectric capacity also for export. These would be developed in partnership with Government of Tajikistan, and both AES and Government of Tajikistan are quite keen on IFI financing for these projects as well.

- ***Available surplus electricity in Tajikistan.*** Tajikistan has summer surpluses and when these surpluses are combined together with the above projects (Sangtuda I and new hydro capacity development) at least 5,000 GWh of electricity could be made available to export markets, in the next three to four years.

- ***Transmission Links for electricity exports.*** Afghanistan has expressed interest to import electricity from Central Asia, and some low level imports are already happening from Tajikistan and Uzbekistan (and also Turkmenistan) under annual contracts. Pakistan has expressed its strong interest to import Central Asian electricity, in particular from Tajikistan. Under the auspices of the Central Asia South Asia Electricity Trade options power supply to these markets are to occur at two levels:

    - ***Power supply to Afghanistan at 220 kV level from Tajikistan and Uzbekistan*** (and perhaps Turkmenistan), with the aim of supplying power to all the towns and other population centers from the northern borders of Afghanistan to Kabul (e.g., Kunduz, Maza-e-Sharif, Phul-e-Khumri, etc). Afghanistan is developing the necessary transmission system – Northern and Eastern Transmission System (NETS) – to bring this power, with the help of IFIs (ADB and World Bank) and bilateral donors (Germany, India, US). Correspondingly, Tajikistan is undertaking an assessment of transmission links needed to supply this power with help from consultants financed by ADB. The maximum power that can be supplied along the NETS to Kabul would be 300 MW. Expectations, therefore, are that Tajikistan would supply 300 MW of electricity in summer to Afghanistan, whereas an equivalent amount of winter power would come from Uzbekistan. The objective is to develop this trade along commercial lines and to follow international practices. World Bank is providing legal and financial advisory assistance to

Afghanistan and Tajikistan (under separate projects) to realize this objective. Efforts are aimed at realizing this trade by 2008.

- ***A high voltage transmission link (e.g, 500 kV) between Tajikistan and Pakistan, via Afghanistan***. This link would be a dedicated line essentially aimed at supplying Pakistan, but delivering some power to Kabul. Imports into Afghanistan would therefore occur at two levels, 220 kV and 500 kV. This dedicated transmission link would be developed in conjunction with the hydro projects in Tajikistan mentioned above, which are expected to comprise three sub-projects, one each in Afghanistan, Pakistan and Tajikistan. The same investors (AES, RAO UES) are planning to take part in the development of this transmission link in a joint venture with the respective governments, and IFIs are to play a key role in development, financing, and risk mitigation aspects of these projects.

6. Therefore the three governments (Afghanistan, Pakistan and Tajikistan) have begun to work together with the IFIs and the investors to develop the above set of generation, transmission projects, and establish the legal basis for electricity trade. The next event is a meeting scheduled to be held in Islamabad Pakistan on May 9 and 10, 2006, to reconfirm the interests of the importing countries and move towards techno-economic feasibility studies and creation of legal/financial bases to undertake these project.

- ***Bringing in other Central Asian Countries to Trade with South Asia***. The progress to date in the above Tajikistan-Afghanistan-Pakistan trade discussions, especially the presence of the investors such as AES and RAO UES, has given impetus for other Central Asian Republics to also export their electricity to South Asia. Kyrgyz Republic also has summer surpluses, and these can be exported via Tajikistan to Afghanistan/Pakistan. To do so, additional transmission links are needed, and efforts are underway to prepare the techno-economic feasibility studies for these. One is the ***500 kV transmission link within Tajikistan to link the country's south to its north*** – and the study is being financed by Islamic Development Bank. There have been investment interests from China and Kazakhstan to build this South North Line in Tajikistan. The other is the set of links to ***directly link Toktogul cascade in Kyrgyz Republic to Tajikistan without going through Uzbekistan*** – USTDA is financing the feasibility for this. In addition, given the vast thermal resources, especially coal and gas, there is a ***good possibility for thermal energy based exports from Kazakhstan***. The key to realizing all these opportunities is to make the initial trade deals work and work well.

II. NATIONAL AND REGIONAL BEST SOLUTIONS

7. The Regional Electricity Export Potential Study (REEPS) carried out by the World Bank in 2004 defines the national and regional optimal solutions for the four Central Asian republics both from national and regional points of view. The key findings of this study have been reported to the April 2005 SOM, and the results of the consultations with the countries and other stake holders (investors, other countries, IFIs and bilateral donors) to the October 2005 SOM. The Central Asia – South Asia Electricity Trade Projects discussed in the earlier section are a direct result of consultations based on the REEPS.

8. While the strategic directions laid out in REEPS remain fully relevant, there are key developments that need to be factored in. One is the tightening of the gas supplies worldwide, and a concomitant rise in gas prices. As a result, prices for gas imports have increased to the CARs, especially Kyrgyz Republic and Tajikistan. Given the projected

increases in demand for gas, the CARs are more likely to see further increases in gas prices. In addition, the gas importing CARs are likely to face a supply risk because the suppliers are likely to prefer to supply the more lucrative European markets via GazProm, as opposed to their neighbors. Therefore, the gas importing CARs should modify their strategic responses to meeting their electricity demand especially in the winter. For example Kyrgyz Republic should develop its thermal generation capacity (400-500 MW) based on coal (the earlier suggestion was to base it on imported gas); and Tajikistan should develop its coal sector to meet winter energy needs.

9. More broadly, given the sustained rise in global oil and gas prices, the member countries of CAREC face both threats (especially by importing countries like Afghanistan, China, Kyrgyz Republic, Mongolia and Tajikistan) and opportunities (oil and gas exporting countries of Azerbaijan, Kazakhstan and Uzbekistan; as well as hydro rich countries such as Tajikistan and Kyrgyz Republic). All of this means that the need for regional cooperation is much greater. Therefore, in response to the IMC's (2005) decision to include oil and gas in the work of the CAREC ESCC, World Bank has prepared and shared with the ESCC a discussion note on the 'Options for Movement of Primary Energy Commodities from Central Asia'.

10. The discussion note highlights the following challenges: (a) there is a substantial resource base in several of the countries, but one that is not fully delineated; (b) many of them are landlocked countries with a preponderance of gas (even Kazakhstan), and gas is more expensive to transport; and (c) countries face a monopolist in Russia for their access to markets. In terms of opportunities, China and South Asia are showing greater interest in being importers of these commodities from Central Asia. Therefore, the discussion note argues for an in-depth analytical study that would focus on: (a) economic feasibility of alternative export routes for both oil and gas; (b) understand the demand side of the equation; and (c) in doing the economic feasibility for exports, importantly, what to export should be looked at: in oil, either crude oil can be exported or oil products (refinery outputs) can be exported; in gas, natural gas or Gas-turned-to- liquids can be exported; and in coal, whether to export coal or coal derivative, electricity.

11. *It is recommended that, after reviewing the discussion note (which will be accompanied by a presentation to be made by the World Bank), the ESCC recommend to the SOM to endorse carrying out the proposed study of the Options for Movement of Primary Energy Commodities from Central Asia'.* The IFIs and bilateral donors would identify sources of financing of the study together with a timetable for it.

III. PRIVATE SECTOR PARTICIPATION IN ENERGY SECTOR

12. Private sector participation in the development and implementation of energy projects in its member countries has always been a priority for CAREC. Kazakhstan leads the way in terms of share of private participation in the energy sector, while Azerbaijan and China too have considerable involvement. In Tajikistan, the Pamir Private Power Project is a successful example of private sector participation in very poor and remote areas, and is being successfully implemented; and there are plans for a Second Pamir Private Project under preparation.

13. In recent months, private participation has been enhanced particularly in multi-country projects such as the Central Asia – South Asia Electricity Trade Projects, with the involvement of RAO UES of Russia and AES of US in these projects.

14. Government of Tajikistan (GoTJ) has taken the bold step of offering the country's entire hydroelectric potential to be open to all interested parties, and investors and financiers can choose to participate in the development of specific schemes. It is in this manner that

GoTJ has secured the interests of RAO UES in Sangtuda I, Government of Iran in Sangtuda II, and RUSAL in Rogun Stage I. GoTJ also has concretized interest of French company ALISTON to build a 160 MW hydro scheme on the Zaravshan river in the Sogd region. Similarly, AES has agreed to look into hydropower development for export, in partnership with GoTJ.

15. It is also to be noted that private equity investors are willing to invest only in partnership with the local governments and with the financial and risk mitigation involvement of IFIs. Therefore, for the near future at least, the development of large projects, especially regional ones are likely to be public-private partnerships.

IV. ENERGY EFFICIENCY AND OPPORTUNITIES OFFERED BY CLEAN DEVELOPMENT MECHANISM

16. The IMC has also asked CAREC to give priority to efforts and projects to improve energy efficiency, and to develop opportunities afforded by the Clean Development Mechanism of the Kyoto Protocol.

- Energy efficiency is also a priority for IFIs and bilateral donors. Energy consumption per dollar of GDP is very high in most of the CAREC member countries, and there are therefore opportunities in this regard. In fact many of the early investments financed by IFIs in CAREC countries (other than PRC) were oriented towards efficiency improvement. Moreover, the strategic approach to the national and regional best solutions for meeting electricity demand developed under REEPS gives first priority to energy efficiency and rehabilitation investments. It is on this basis that World Bank recently financed an energy loss reduction project in Tajikistan oriented towards reducing commercial losses in the country's electricity and gas systems. Similar efforts are planned for other countries as well. However, the problem remains huge and while the supply side efficiencies (rehabilitation, loss reduction in supply, etc) can be tackled with a bit more ease, improving the consumption side efficiency is a far greater challenge, and requires a combination of policy, legal, regulatory and investment actions (by the consumers). A lot more work is needed to be done by the countries to develop these actions in the coming months and years.

- The Kyoto Protocol has created a significant opportunity for developing countries to leverage investments in clean technologies and the environment through the sale of greenhouse gas (GHG) emission reductions. To meet commitments under the Kyoto Protocol by 2012, industrialized countries have a demand for around 3 billion tonnes of emission reductions, with a market value of about US$ 20 - 25 billion. There are six greenhouse gases covered under the Kyoto Protocol: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), per fluorocarbons (PFC), hydro fluorocarbons (HFC), and sulphur hexafluoride (SF_6). These greenhouse gases can be found in the energy, waste, municipal and agricultural sectors. CAREC member countries have the potential to generate millions of dollars in carbon revenues over the next three to five years by leveraging investments in the energy, waste, municipal and agricultural sectors that reduce GHG emissions.

- To be able to participate in the Kyoto Protocol's flexible mechanisms, a country must ratify the Kyoto Protocol and designate a National Authority (DNA)[1]. Azerbaijan, China, the Kyrgyz Republic, Mongolia, Turkmenistan and Uzbekistan have done both

[1] The National Authority's role is primarily regulatory in nature. It requires that the DNA: (i) issue written approval for a given project stating that participation is voluntary; and (ii) confirm that the project assists in achieving the host country's sustainable development objectives.

and are thus eligible to participate in the Clean Development Mechanism (CDM). Ratification of the Kyoto Protocol is necessary before Afghanistan and Tajikistan can participate in project based transactions and before any payment could be made through an emissions reduction purchase agreement under one of the World Bank's carbon funds. Kazakhstan would need to resolve its status under the Kyoto Protocol before it could engage with one of the World Bank's carbon funds.

V. ENABLING LEGAL AND REGULATORY ENVIRONMENT FOR ENERGY SECTOR DEVELOPMENT

A. Establishment of the CAREC Member Electricity Regulators Forum (CMERF)

17. The CAREC Members Electricity Regulators Forum (CMERF) was formally established in November 2005 at the 4th CAREC Ministerial Conference in Bishkek to support regional cooperation and integration in the energy sector under the CAREC Program. ADB and the Public Private Infrastructure Advisory Facility (PPIAF) managed by the World Bank provided support for the CMERF establishment. The members of CMERF comprise the electricity/energy regulators from each of the CAREC member countries.

18. CMERF aims to develop the capacity of its members to provide improved regulation and regulatory support of power industry reforms. This will help to promote more efficient production and use of energy domestically, and will be crucial for supporting the development of electricity trade in the CAREC region. Improved regulation will be vital for attracting more private investment to the power sectors of the region.

19. All countries in the CAREC region are still developing their institutional frameworks for electricity regulation, policy formulation, utility management and shareholder oversight. The member countries have diverse experiences and have undertaken different approaches to solving common sector problems. The potential to learn from each others successes and failures is therefore substantial.

20. The first annual meeting of the concerned electricity regulators was held in Beijing on 4-6 July 2005, and ADB released the study "Electricity Sectors in CAREC Countries: A Diagnostic Review of Regulatory Approaches and Challenges", which provides an overview of the economic conditions and challenges facing power sector regulators in region. The study intended to help CMERF define its agenda and identify future areas for study, discussion and training.

21. At the meeting the members have agreed to focus CMERF on improving economic incentives in their power sectors, and acting as a regional focal point on regulatory issues. The members identified the following topics to study under CMERF:

(i) Designing and Approving Efficient and Adequate Tariff Structures Appropriate to Different Consumer Categories, and Involving Lifelines, Reliability Premiums, Discounts for Prepayment, and/or Wattage Limitations (Tajikistan)
(ii) Possibilities and Pitfalls in Privatizing Distribution Company Management. (Azerbaijan, Kyrgyz Republic and Mongolia, with assistance from Kazakhstan)
(iii) Costs and Input Requirements of Power Utilities. (All Member Countries)
(iv) Appropriate Pricing and Provision of Ancillary Services. (People's Republic of China)
(v) Risk Sharing Under Power Purchase Agreements. (Kazakhstan, Kyrgyz Republic)

22. In November 2005, ADB approved the regional technical assistance for supporting the first 3 studies. The remaining 2 studies will be funded under PPIAF. The studies are

expected to begin in May 2006 and completed by December 2006. The initial findings of the studies will be presented and discussed at the second annual CMERF meeting expected to be held in Kazakhstan in September 2006.

23. The EBRD, in addition to having part-financed the first phase of the North South Transmission line, also provides technical assistance to the Kazakh regulator, Agency for Regulation of Natural Monopolies which, *inter alia*, will review existing tariff methodologies and recommend further improvements in line with international best practice.