



Energy Sector: Status Report

**Senior Officials' Meeting on
Central Asia Regional Economic Cooperation
28-29 August 2006
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**Central Asia Regional Economic Cooperation (CAREC)
Senior Officials' Meeting (SOM) – August 28-29, 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.

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.

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 on the national and regional levels 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 enhance 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.

- One is the **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 co-financing from EBRD of the remaining \$15 million was being pursued. Recently, however, at the request of the Tajik Government this project was dropped, the Government favoring the connection of the Tajik grid to the Afghan gas fields near Sheberghan.
- The second project concerns the **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 Kaztransgas, 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 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.*** A stakeholders' meeting 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 well as bilateral meetings between the World Bank and RAO UES in Washington (in April, 2006, and between the World Bank, RAO UES and the Tajik Government in Islamabad (in May 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 is desirous of equity investment from IFIs such as IFC, EBRD and IFI (debt) financing on a project finance basis; and (c) the overarching requirements for IFI involvement in Sangtuda 1 will be met – (i) at least the summer production of Sangtuda I would be exported; and Pakistan is the agreed market to be targeted with transit through Afghanistan; (ii) the Safeguards policies of the IFIs would be complied with; (iii) the highest levels of transparency would be observed in the development, operations and management of the project. (iv) the whole scheme – Sangtuda I development, trade and transmission aspects to Afghanistan and Pakistan – are to be seen as a single integrated scheme.
- Other hydropower projects in Tajikistan for Export. At the same time, AES continues to look for developing additional (new) hydroelectric capacity also for export. These would be developed in partnership with the 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:
 - One is to ***supply power 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, ADB is considering the financing of the 220kV connection between Tajikistan and Afghanistan in 2006. Co-financing for both countries is needed. In this context, the U.S. Trade and Development Agency extended in June 2006 an \$800,000 grant to support a joint company set up between the Tajik government and the U.S. energy company AES to rebuild existing power lines and export excess Tajik power to Afghanistan by the end of 2008. The maximum power that can be

supplied along the NETS to Kabul would be 300 MW, and therefore, the expectations 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.

- The other is to develop **a high voltage transmission link (e.g, 500 kV HVDC or 765kV HVAC) between Tajikistan and Pakistan, via Afghanistan**. This link would be a dedicated link essentially aimed at supplying Pakistan, but could deliver some power to Kabul in the long term. In that sense imports into Afghanistan would 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 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. **Bringing in other Central Asian Countries to Trade with South Asia.** The progress 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 options are needed,.

- One such option is the 500 kV transmission link of 350 km within Tajikistan to link the country's south to its north which would enable the transmission of up to 8 billion kWh of electricity a year. The feasibility study for this link was financed by the Islamic Development Bank. China's Exim (Export/Import) Bank provided in June 2006 more than US\$267 million in loans to Tajikistan for the construction of the line, whose total cost has been estimated at \$281 million. AES and Kazakhstan have also expressed interest to participate in the construction of this line.
- Another link is the 220-kV, 90-km power-transmission line "Lolazor-Obimazor" in the Tajik southern province of Khatlon. with capacity of 4 billion kWh per year, with a total cost of US\$60 million, of which \$56 million is being financed by China. This line will also allow Tajikistan to resolve energy problems facing the Khatlon province along with exporting electricity to Afghanistan.
- A third options is the set of links to directly link Toktogul cascade in Kyrgyz Republic to Tajikistan without going through Uzbekistan – in this context, USTDA has approved a feasibility study in support of a new North-South line in Kyrgyzstan. 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.

7. **Bringing prospects to fruition.** In view of the above opportunities for multilateral inter-regional cooperation between South Asia and Central Asia, the four governments (Afghanistan, Pakistan, Kyrgyzstan and Tajikistan) have begun to work together with the IFIs and the investors to develop the above set of generation and transmission projects, and establish the legal basis for electricity trade. They all met in May 2006 in Islamabad and reached consensus on (i) the merits of electricity exports from Central Asia to South Asia; (ii) the general routing of the transmission system; (iii) the need for a permanent institutional

mechanism; and (iv) the logistical steps to keep the momentum (appointment of an International Consultant, and agreement on a second conference in early October 2006 in Dushanbe.) A multi-country working group (MCWG) was established at the conference.

8. Following the Islamabad meeting, the MCWG with the help of an international consultant has identified the critical assessments required to enable the electricity trade between Central Asia and South Asia. Drafts of the Terms of Reference for these assessments have been prepared. ADB has agreed to fund the techno-economic assessment and the Public Private Infrastructure Advisory Facility (PPIAF) is expected to fund the legal-financial and risk assessments. RAO UES has agreed to fund the due-diligence for the Sangtuda 1 project.

9. A USTDA conference in Istanbul in June 2006 further strengthened the consensus of the key stakeholders to work for the development of a power transmission corridor between Central and South Asia.

Next steps

10. At the next meeting of the MCWG, planned in early October 2006 in Dushanbe, the four countries are expected to agree on commitments from each country for the project preparation, key principles of interaction among the countries as well as key principles of setting up the transmission business. The project studies are expected to be launched in October 2006. A preliminary meeting of the MCWG for the preparation of the Dushanbe conference has been planned in early September.

II. NATIONAL AND REGIONAL BEST SOLUTIONS

11. As regards the electricity sector, 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.

12. 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 CARs, especially Kyrgyz Republic and Tajikistan. Also, gas supplies to Kyrgyz Republic and Tajikistan may be veered to more lucrative markets in Europe and East and South Asia. Therefore these two countries would have to adjust their strategies of meeting winter energy needs through developing thermal generation capacity in Kyrgyzstan (400-500 MW) based on coal (earlier suggestion was to base it on imported gas); and Tajikistan should develop its coal sector to meet winter energy needs.

13. Furthermore, the increasing gas and oil prices make the need for regional cooperation between oil and gas exporters and importers much greater in view of the uneven distribution of these natural resources and the growing demand for their consumption. Also, the role of the oil and gas - rich CAREC countries as a transit route and a source of oil and gas has significantly increased following the growing demand for hydrocarbons in Asia (China, Japan, India), coupled with the volatile situation in the Persian Gulf and Middle East, and Russia's drive to diversify its gas exports because of Europe's

reluctance to increase further dependence on Russian gas. These developments have also allowed the Central Asian countries and Azerbaijan to begin diversifying their gas and oil export networks, which still closely depend on the northbound Gazprom network towards Russia.

- In the above context, the Kazakhstan-China oil pipeline was recently completed and the first batch of oil was delivered to the northwestern Xinjiang Autonomous region in China. The pipeline helps diversify exports options for Kazakh oil and improves security of oil supply to China by reducing dependence on the Persian Gulf. This is the first cross-country oil pipeline for China and it can carry 10 million tons of crude oil per year. China has also signed recently a \$600 million deal with Uzbekistan on developing a partnership in surveying and drilling for oil and gas.
- China is also actively pursuing gas imports to meet the needs of its growing demand for power generation. Negotiations over a host of gas transmission lines from Russia and a pipeline from Kazakhstan continue. An agreement was also signed in April 2006 for the construction of a gas pipeline from Turkmenistan to China. Turkmen gas could be transported to China through an extension to the proposed Kazakh-Chinese pipeline, which will terminate in Xinjiang. Here it will intersect with the western end of China's west-east pipeline, which already transports gas from Xinjiang to Shanghai. One of the main Russian-Chinese gas pipeline options that are currently under discussion, passing to the west of Mongolia on its route from Siberia to China, would also intersect at the same point. Given the lack of alternative Chinese domestic pipeline capacity, it is to be expected that the Turkmen pipeline would terminate in the same place, even if built separately from the Kazakh-Chinese pipeline, turning Xinjiang into one of the most important gas transmission junctions in the world.
- Japan has intensified the dialogue with the Central Asian countries in recognition of their increasing potential to reduce Japan's dependence on the Middle East for the bulk of its energy imports. Japan has proposed the construction of new oil and gas pipelines from Central Asia via Afghanistan to Pakistani and Indian ports from which oil and gas would be shipped to Japan.
- Russia remains actively involved in Central Asian oil and gas. Russia and Kazakhstan signed a joint venture deal in July 2006 to expand the capacity of the Orenburg facilities to process up to 15 billion cub. m. of gas per year from Kazakhstan's giant Karachaganak gas field, operated jointly by BG and ENI. This gas is slated for exports to CIS and Europe. Furthermore, Russia and Kazakhstan are considering financing to increase almost twice the current 44 bln cub.m. annual throughput capacity of the Central Asia – Center gas pipeline, which runs across Turkmenistan, Uzbekistan and Kazakhstan to deliver Turkmen gas to Ukraine and Russia. Russia's involvement in this project will still depend on Turkmenistan reaffirming its gas reserves and Uzbekistan signing a Production Sharing Agreement with Gazprom for gas exploration in Ustyurt in western Uzbekistan.
- The Baku-Tbilisi-Ceyhan (BTC) oil pipeline became operational in May, 2006 when the first oil that was pumped from the Baku end of the pipeline on May 10, 2006 reached Ceyhan on May 28, 2006 after a journey of 1,770 km. and marked the start of export of Azerbaijan's oil via the BTC oil pipeline to world markets

III. PRIVATE SECTOR PARTICIPATION IN ENERGY SECTOR

14. 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.

15. In the 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.

16. Government of Tajikistan (GoTJ) has taken the bold step and has offered that the country's entire hydroelectric potential is open to all interested parties, and the 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 the French company ALSTOM to build a 160 MW hydro scheme on the Zaravshan river in the Sogd region. Similarly, AES has agreed to look into hydropower development in the country in partnership with GoTJ for export.

17. It is also to be noted that the 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

18. Energy efficiency is a priority for IFIs and bilateral donors. Energy consumption per \$ 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 China) 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 under such strategic approach that World Bank recently financed an Energy Loss Reduction Project in Tajikistan oriented towards reducing commercial losses in that country's electricity and gas systems. The preparation of a second Energy Loss Reduction project has been envisaged as well. ADB is also following the same approach in the Tajik South Grid and is considering investing in a rehabilitation program that aims to reduce the technical transmission and distribution losses. 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). Lot more work is needed to be done by the countries to develop these actions in the coming months and years.

19. Since the Kyoto Protocol (January 2005) came into force, the carbon trading market has gathered momentum but uncertainty still remains on whether the Kyoto framework will exist after 2012, the end of the first commitment period. Given this uncertainty and the lead time required to implement investments prior to generating emission reductions, priority should be given to preparing projects under the Kyoto framework with quick payback prior to 2012 that minimize the risk to investors.

20. The World Bank has recently endorsed an assistance program that envisions more active engagement in countries of Central Asia, which have ratified the Kyoto Protocol and have a portfolio with the World Bank. The program is expected to begin in the fall of 2006. At present, Uzbekistan and the Kyrgyz Republic are the most likely participants having ratified the Kyoto Protocol. In Uzbekistan, the World Bank is already supporting the development of a waste management project. The assistance program will focus on raising awareness about the Clean Development Mechanism (CDM) among key stakeholders and developing a potential pipeline of CDM projects. A similar program is already underway in Azerbaijan, where a CDM workshop was held last March.

21. China has the largest portfolio of CDM projects within the CAREC countries, focusing on (hydro fluorocarbons) HFC-23, landfill, coal mine methane and renewable energy. The establishment of the Clean Development Mechanism Fund in China is an illustration of how a country can further maximize the utilization of carbon revenues beyond specific projects to finance future climate-friendly investments. Furthermore, China considers energy efficiency as one of the top priorities for the country, and has recently approved the first energy efficiency project under the CDM at the Nanjing steel mill. The project ensures the recovery of gas in the steel production process and its subsequent use for electricity generation.

V. ENABLING LEGAL AND REGULATORY ENVIRONMENT FOR ENERGY SECTOR DEVELOPMENT

Progress of the CAREC Members Electricity Regulators Forum

22. The Second Annual Meeting of the Central Asia Regional Economic Cooperation (CAREC) Members Electricity Regulators Forum (CMERF) will be held in Almaty, Kazakhstan on 11-13 September, 2006. The 3-day event will bring together regional regulators, industry experts, public and private agencies and international institutions. It will be cohosted by the Asian Development Bank (ADB) and the Agency for Regulation of Natural Monopolies (ARNM) of Kazakhstan.

23. The CMERF was established in 2005 with assistance from ADB and the Public-Private Infrastructure Advisory Facility (PPIAF) to support regional cooperation and integration in the energy sector under the CAREC Program.

24. The CMERF aims to develop the capacity of its members to provide improved regulation and regulatory support of power industry reforms. This will help 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 attract more private investment to the power sectors of the region. The CMERF meeting will adopt a plenary format to allow varied perspectives and experiences to be heard and, thereby, maximize knowledge exchange among participants.

25. During the first annual CMERF meeting held in Beijing in July 2005, the countries defined and selected five study topics for the 2006 workplan. In November 2005, ADB approved a regional technical assistance project to support these studies.

26. In May 2006, ADB began three studies that support the CMERF's ongoing efforts to provide its members with valuable options in managing the energy sector challenges. These studies will look into setting proper tariff structures and options, privatizing distribution company management, and creating a regional database of power utility costs. The findings of these studies will be presented and discussed during the CMERF meeting. The two remaining studies supported by PPIAF began in August 2006.

27. Further information on CMERF can be found at www.adb.org/Projects/CMERF/.
28. The EBRD, in addition to have part-financed the first phase of the North South Transmission line, also provides technical assistance to the Kazakh regulator, the Agency for Regulation of Natural Monopolies which, *inter alia*, will review existing tariff methodologies and recommend further improvements in line with international best practice.