



Central Asia Regional Economic Cooperation Program

Reference Document  
For Session 2 of the Senior Officials' Meeting  
November 2014

# **Energy Sector Progress Report and Work Plan**

**13th CAREC Ministerial Conference  
Senior Officials' Meeting  
Central Asia Regional Economic Cooperation  
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## I. KEY DEVELOPMENTS IN THE ENERGY SECTOR

### A. Sector Implementation

1. The coverage of this progress report includes activities undertaken since the Senior Officials' Meeting (SOM) and Ministerial Conference (MC) held in Astana, Republic of Kazakhstan in October 2013. During these meetings, the progress in the implementation of the Energy Work Plan (EWP) 2013–2015 was noted including: (i) advances made in the complex preparation activities for the Central-Asia – South Asia Regional Power Trade and Cooperation; (ii) capacity development activities under the Regional Energy Security, Efficiency and Trade (RESET) Program of the USAID, through the CAREC Institute, or in partnership with specialized institutions; and (iii) the proposed study seeking to analyze the financing gap and measures on financing investments for energy assets.

2. The EWP 2013-2015 is envisioned to help achieve the goals of: (a) providing a roadmap for the translation of the vision articulated in the Energy Action Plan (EAP) Framework into reality; (b) providing a mechanism for identifying and developing projects and programs that have potential(s) for regional integration and trade; and (c) promoting establishment/construction of national generation facilities with the objective of exporting outputs to second and third countries.

3. Progress of work in the energy sector is currently measured through five indicators: (i) increased energy generation capacity (megawatt), (ii) transmission lines installed or upgraded (kilometers); (iii) rehabilitated generation capacity (megawatt), (iv) new substations (megavolt-ampere), and (v) upgraded substations (megavolt-ampere). These indicators are intended to capture how CAREC's physical infrastructure expansion and rehabilitation operations contribute to energy security, energy efficiency, and the CAREC region's ability to enhance power trade as a result of completed projects.

4. The baseline year for the indicators is 2013 and will be included in the 2014 CAREC Development Effectiveness Review (DEfR) process. The energy sector output indicators are presented in the following table:

**Energy Sector Output Indicators**

Indicator	2013 Baseline Value	2014	2015	Projected Outputs by end 2015*	Progress
Transmission lines installed or upgraded (km)	612				
Increased energy generation capacity (MW)	300				
Rehabilitated generation capacity (MW)	0				
New substations (MVA)	250				
Upgraded substations (MVA)	400				

\* As part of ongoing DEfR methodology review, the criteria and the calculation method for the target figures are being finalized. CAREC member countries have been required to provide their pipeline project lists based on which the total target will be derived.

## **B. Addressing Actions Proposed in the 2012 CAREC DEfR and Ongoing Key Issues**

### **I. Priority Actions in the CAREC Program for the Energy Sector (Implementation of the EWP 2013-2015)**

5. The EWP 2013-2015, formulated to ensure effective and timely achievement of the strategic objectives laid out in CAREC 2020, has six actionable elements to implement sector operational priorities. Implementation of the EWP 2013-2015 is tracked and reported biannually at the Energy Sector Coordinating Committee (ESCC) meetings, and reviewed at the SOMs and MCs.

#### **Element 1: Developing the Central Asia – South Asia Energy Corridor**

6. **Action Initiated:** At present, the implementation of Element 1 is supported by two complementary initiatives, namely: (i) Central Asia – South Asia Electricity Transmission and Trade Project (CASA-1000) supported by the World Bank; and (ii) Turkmenistan, Uzbekistan, Tajikistan, Afghanistan and Pakistan Interconnection Project (TUTAP) supported by the ADB.

7. CASA-1000 Project. The World Bank Board of Directors approved US\$526.5 million financing for the CASA-1000 Project on 27 March 2014. The European Investment Bank has now approved Euro 140 million and USAID US\$ 15 million in grant for the CASA-1000 project. The Afghanistan Reconstruction Trust Fund has also approved US\$ 40 million for the community support programs of the CASA-1000 project for Afghanistan. CASA-1000 member countries (Afghanistan, Pakistan, Kyrgyz Republic and Tajikistan) are working with other financing partners to attract funding to cover the balance cost of the project. It is noted that Uzbekistan is not participating and opposing the CASA-1000 project. CASA-1000 project is scheduled to start pre-construction soon and to be completed during the winter of 2017–2018. The CASA-1000 Power Purchase Agreement, Master Agreement and Coordination Agreement have been substantially agreed and price negotiations are on-going. The CASA-1000 Member Countries' Joint Working Group has agreed on the cost sharing principles for transmission costs and community support during operation. Legal, procurement and finance committees for the CASA-1000 project have been working on implementation of the project. The procurement of converter stations and operator for the CASA-1000 project; High Voltage DC line for Afghanistan and Owners' engineers are progressing.

8. TUTAP. The Tajikistan/Afghanistan and Uzbekistan/Afghanistan 220kV interconnections exist and are in operation supplying the network in Afghanistan. The Turkmenistan/Afghanistan 500 kV interconnection (to be initially operated at 220kV) is under implementation with Turkmenistan 500kV line under construction (to be completed soon) and bids for the Afghanistan component under evaluation with contract awards expected within the next 6 months. Within Afghanistan, implementation of the North-South 500kV project is underway after ADB approval of the project in November 2013. Financing of the first 500MW high voltage direct current back-to-back converter station and extension of the 500kV Afghanistan-Turkmenistan interconnection, with full interconnection then to be operated at 500 kV, is planned for the ADB Board consideration in 2015.

9. The concerns raised on how both initiatives, CASA-1000 and TUTAP, will affect the Afghanistan power system configuration has led to the consideration of an addendum to the Afghan Power Sector Master Plan to synchronize the power system requirements of Afghanistan. The addendum considered the impact of CASA-1000 on future development needs of Afghanistan. It also considered the: (a) impact of interconnection with Turkmenistan, (b)

capacity of Tajikistan-Afghanistan line rating corrected to 600MW, and (c) options for Afghanistan to synchronize with neighboring countries. A presentation on the final report by the consultant, Fichtner, is to be made to Afghanistan and donors in November.

10. **Next Steps:** Both the World Bank and ADB will continue to report on project updates in subsequent meetings of the ESCC.

## **Element 2: Resolving Regional Energy Dispatch and Trade Issues**

11. **Action Initiated:** USAID through RESET also commissioned a study by Energy System Researches LLP,<sup>1</sup> which examined the conditions of parallel operation of the power systems of South Kazakhstan, the Kyrgyz Republic and Tajikistan taking into account the proposed construction of new transmission facilities within the CASA-1000 project and their impact on steady-state and transient stability of the Central Asia Interconnected Power System. The report containing the conclusions of the study and recommendations for measures to mitigate any potential problems was completed in late March 2014.

12. The World Bank Technical Assistance activity “Enhancing Central Asia Regional Power Trade and Cooperation” aims to promote energy and/or power trade and integration between Central Asia countries with a view to increase efficiency of their respective power systems, enhance reliability and security of electricity supply, reduce power shortages, and avoid greenhouse gas emissions. The consultations, fact-finding and data analysis phase of the activity has been completed. It helped identify key technical and methodological barriers facing regional power trade in Central Asia. These include metering, protection systems, transit methodology, and pricing for power, capacity and other ancillary services. The next phase will focus on supporting the Central Asian countries in removing the identified barriers. It will be implemented by sharing international knowledge and experience through workshops, preparation of notes on regional trade issues of interest to the Central Asian countries, and possibly study tours. As part of this second phase, the WB team, at the ESCC meeting held on September 4, 2014, arranged for sharing of experience and lessons learned on regional trade and cooperation in Balkan countries, which was appreciated by the participants of the meeting.

13. The USAID conducted training seminars until the conclusion of the RESET program on 30 September 2014, including co-sponsorship of the Energy Efficiency Training Seminar in Kuala Lumpur, Malaysia on 28–30 May 2014, held in partnership with the CAREC Institute and ADB.

14. **Next Steps:** At the last ESCC meeting, held on 4 September 2014, it was agreed to propose to the Central Asian countries to hold a workshop on regional power trade issues on the margins of the next Central Asia Coordination Electricity Council meeting to be held in Dushanbe, Tajikistan. To this end, Tajikistan is to consider the idea of the workshop in a program of the event and seek consent from other countries.

## **Element 3: Managing Energy-Water Linkages**

15. **Action Initiated:** Several activities, including energy sector vulnerability to climate change, energy-water modeling training and Central Asia energy water knowledge data portal and network, are being initiated by the World Bank. At the ESCC meeting in September 2014, a presentation on the Energy Vulnerability study was given.

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<sup>1</sup> A LLP is a limited liability partnership in which some or all partners have limited liabilities.

16. The Energy Vulnerability to Climate Change study aims to support Central Asian countries in building an understanding of climate change-induced energy sector vulnerabilities, and also in building resilience through the development of coordinated adaptation policies. The project consolidates a vulnerability assessment of the impacts, risks and adaptive capacity of the energy sector. The study runs both hydrologic and economic models specified to Central Asia which are well suited to articulating changes in the components of flow (glacier melt, snow, and precipitation) and provide insight into energy sector adaptation policies. The assessment will help to guide current and future decision-makers on options for investments in and management of power generation and transmission/distribution assets with a particular focus on challenges and opportunities for effective regional coordination of climate change adaptation.

17. **Next Steps:** Further updates on ongoing activities will be presented by the World Bank in subsequent meetings of the ESCC. All development partners were encouraged to make available data/studies on energy vulnerability to climate change and related topics through the CAREC website. The World Bank will send requests to identify appropriate individuals at institutions which would be in the best position to review the results of the Energy Sector Vulnerability to Climate Change Study.

#### **Element 4: Mobilizing Funds for Building Energy Assets**

18. **Action Initiated:** The October 2013 CAREC Senior Officials' Meeting endorsed the proposed ADB technical assistance (TA) of the CAREC Power Sector Financing Roadmap covering all 10 CAREC member countries. The TA aims to assess the capacity and willingness of CAREC countries to finance power infrastructure development from their own resources, and examine other potential sources of financing, for both national and cross-border projects. The project concept was approved and funding requirement of US\$1.5 million resourced from ADB TA Special Fund and the People's Republic of China Regional Cooperation and Poverty Reduction Fund. CAREC members were informed of the required inputs from countries for TA implementation. TA was approved on 26 September 2014.

19. **Next Steps:** ADB has commenced work on the engagement of consultants and will work on fielding experts by January 2015. Regular updates on the TA will be presented in subsequent ESCC meetings. The draft final report of the study will be presented at a meeting of the ESCC attended by CAREC member countries and development partners. Physical completion of TA is targeted by December 2015.

#### **Element 5: Implementation of Energy Sector Priority Projects**

20. **Actions Initiated:** During the 17<sup>th</sup> ESCC meeting, it was agreed that the ESCC Secretariat will consolidate inputs from CAREC member countries to come up with a priority project list that will be compiled and regularly updated, based on the national investment plans of the member countries. This document will be an ESCC working document, and will not be discussed at the higher levels of the Overall Institutional Framework of the CAREC program. Aggregate figures will be derived from the list to capture how CAREC's physical infrastructure expansion and rehabilitation operations contribute to energy security, energy efficiency, and the CAREC region's ability to enhance power trade as a result of completed projects. The updating exercise shall be an annual ESCC activity for monitoring purposes.

21. ADB provided updates on the status of the working list during the 18<sup>th</sup> ESCC meeting in Beijing on 4-5 September 2014 with a reminder for countries that have yet to submit inputs and for countries that have submitted but may have additional projects for inclusion in the list.

22. **Next Steps:** The CAREC Secretariat will continue updating the list of energy projects with inputs/information from CAREC member countries. Initial figures will be derived from the information in the list of projects to be used as benchmark data for the next Development Effectiveness Review. The next update on the working list of projects is scheduled for mid-2015 with updates to be presented at the 2<sup>nd</sup> ESCC meeting for the said year.

### **Element 6: Capacity Building and Knowledge Management**

23. **Action Initiated:** The October 2013 CAREC SOM endorsed the proposed energy sector capacity building and knowledge framework program for 2013–2015 under the umbrella of the CAREC Institute, wherein one substantial event is envisioned per year for 2014–2015. The CAREC Secretariat also committed to implement improvements on the CAREC website energy page and transform the page into a platform for maintaining and disseminating available information on the energy sector.

24. During the 18<sup>th</sup> ESCC Meeting, USAID updated CAREC member countries on the procurement status of its forthcoming Energy Links Project, which is estimated to cost US\$20–25 million and will last for five years. Energy Links will replace the RESET project, which concluded in September 2014. Activities under the new project will continue to support the CASA Secretariat, promote leadership on energy trade initiatives, provide technical workshops and trainings to government officials and energy companies and will also support ESCC capacity building activities.

25. ADB, as the ESCC Secretariat, reported on the implementation status of the CAREC Energy Sector Capacity Building and Knowledge Framework Program 2013–2015 and encouraged member countries to inform the Secretariat of their training and capacity building needs for consideration in future activities under the Program.

a) Capacity Building and Knowledge Sharing – ADB has implemented the following capacity building activities and incorporated knowledge sharing activities in ESCC-related events in the last two years, 2013-2014:

- Visit to the Kapchagai Solar Power Station, September 2013, Almaty, Kazakhstan;
- Presentations on renewable energy initiatives in CAREC countries during the 16<sup>th</sup> ESCC Meeting, September 2013, Almaty, Kazakhstan;
- Presentations on the electricity market development in Kazakhstan and status of the energy system in Kyrgyz Republic during the 17<sup>th</sup> ESCC Meeting, April 2014, Bishkek, the Kyrgyz Republic;
- Energy Efficiency Training Seminar: Central and West Asia Region, 28–29 May 2014, Kuala Lumpur, Malaysia;
- Regional Energy Trade Workshop, 8–9 September 2014, Manila, Philippines;
- Visit to the Green Energy Office, Malaysian Greentech Corporation, 30 May 2014, Kuala Lumpur, Malaysia;

- Visit to the Changping HVDC Demonstration Project and Sihui Electric Bus Charging/Battery Swapping Station, 5 September 2014, Beijing, People's Republic of China;
- Visit to the Philippine Wholesale Electricity Supply Market, 9 September 2014, Manila, Philippines.

b) Improvement of Energy Page in CAREC website

- Uploaded reference documents and diagnostic studies
- Updated energy page and directory of ESCC sector focals

26. The UNECE, UNESCAP and UNDP also made a presentation on their respective energy initiatives and Energy Charter Secretariat (ECS) provided a briefing on regional cooperation in the framework of the Energy Charter. An overview of the following ECS studies was also presented: (i) Electricity Transit Pricing Methodology, and (ii) Power Sector Reform. Links to the results of these studies, once available, will be made available in the energy page of the CAREC website.

27. **Next Steps:** USAID will continue working on Element 6 beyond the completion of the RESET program in September 2014, coordinating its activities with the CAREC Institute, under the Energy Links Project. ADB will initiate preparations for possible energy sector capacity building activities and knowledge transfer program for 2015 under the umbrella of the CAREC Institute, and improve on coordination with other agencies for possible partnerships on capacity building and energy sector knowledge events. The ESCC will continue to incorporate capacity building and knowledge sharing activities in future meetings to encourage information dissemination and sharing of best practices among member countries. ESCC will continue to strengthen its cooperation with other energy entities such as the Energy Charter, International Energy Agency, International Hydropower Association, etc. especially on improving capacity building and knowledge management events for CAREC countries.

## II. KEY ISSUES FOR GUIDANCE BY THE SOM

28. **Commencement of work on developing EWP 2016–2020.** A roundtable discussion among member countries on the ESCC Work Plan 2016–2020 was facilitated, guided by the countries' identification of three priority areas they would want the ESCC to focus on and the ways to eliminate obstacles in these priority areas and/or revision of sector strategies. It was noted that this discussion was the first of several sessions to develop the EWP 2016–2020, in parallel with the Sector Strategy revision. The ESCC Secretariat will draft a discussion paper on the development of a 2016–2020 Work Plan for the energy sector under the CAREC Program incorporating comments from member countries for distribution prior to the next ESCC meeting.

## III. CHANGES TO SECTOR ACTION PLAN

29. No changes are proposed.