



# Technical Assistance Report

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Project Number: 48147-001  
Research and Development Technical Assistance (RDTA)  
September 2014

## Study for a Power Sector Financing Road Map within Central Asia Regional Economic Cooperation (Cofinanced by the People's Republic of China Regional Cooperation and Poverty Reduction Fund)

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Asian Development Bank

## ABBREVIATIONS

ADB	–	Asian Development Bank
CAREC	–	Central Asia Regional Economic Cooperation
ESCC	–	energy sector coordinating committee
EWP	–	energy work plan
PPP	–	public–private partnership
TA	–	technical assistance

## NOTE

In this report, "\$" refers to US dollars.

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## RESEARCH AND DEVELOPMENT TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data		Project Number: 48147-001	
Project Name	Study for a Power Sector Financing Road Map within Central Asia Regional Economic Cooperation	Department /Division	CWRD/CWEN
Country Borrower	REG Not applicable	Executing Agency	ADB POHQ
2. Sector		Financing (\$ million)	
✓ Energy	Energy sector development and institutional reform	Total	1.50 1.50
3. Strategic Agenda		Climate Change Information	
Inclusive economic growth (IEG)	Pillar 1: Economic opportunities, including jobs, created and expanded	Climate Change impact on the Project	Low
Regional integration (RCI)	Pillar 2: Trade and investments		
4. Drivers of Change		Gender Equity and Mainstreaming	
Governance and capacity development (GCD)	Client relations, network, and partnership development Institutional development Institutional systems and political economy Organizational development Public financial governance	No gender elements (NGE)	✓
Knowledge solutions (KNS)	Application and use of new knowledge solutions in key operational areas		
Partnerships (PAR)	International finance institutions (IFI) Official cofinancing		
Private sector development (PSD)	Conducive policy and institutional environment Promotion of private sector investment Public sector goods and services essential for private sector development		
5. Poverty Targeting		Location Impact	
Project directly targets poverty	No	Regional	High
6. TA Category:		B	
7. Safeguard Categorization Not Applicable			
8. Financing			
Modality and Sources		Amount (\$ million)	
ADB		1.00	
Sovereign Research and development technical assistance: Technical Assistance Special Fund		1.00	
Cofinancing		0.50	
PRC Regional Coop. and Poverty Reduction Fund		0.50	
Counterpart		0.00	
None		0.00	
Total		1.50	
9. Effective Development Cooperation			
Use of country procurement systems		No	
Use of country public financial management systems		No	



## I. INTRODUCTION

1. The Strategic Framework for the Central Asia Regional Economic Cooperation (CAREC) Program 2011–2020,<sup>1</sup> identifies energy as an operation priority with the vision of achieving (i) energy security through balanced development of the region’s energy infrastructure and institutions; (ii) stronger integration of the region’s energy markets to make available adequate volumes of commercial energy in a reliable, affordable, financially sustainable, and environmentally sound manner; and (iii) economic growth through energy trade. In 2012, the CAREC Energy Work Plan (EWP), 2013–2015 was adopted to ensure effective and timely achievement of the strategic objectives laid out in the CAREC Strategy 2020.<sup>2</sup>

2. The Study for a Power Sector Financing Road Map within CAREC, to be prepared under this technical assistance (TA), will assess the capacity and willingness of CAREC countries<sup>3</sup> to finance power infrastructure development from their own resources, and examine other potential sources of financing for both national and cross-border projects.<sup>4</sup> Any legal and regulatory framework in the region that may impede cross-border projects will be reviewed. In particular, the TA will identify power projects with public–private partnership (PPP) potential, and will highlight measures for stimulating private interest in the CAREC region’s power sector. The TA will also review the energy strategy in the CAREC Strategy 2020 and assist the implementation of capacity building and knowledge management activities under the EWP, 2013–2015. The concept paper was approved on 20 March 2014. The design and monitoring framework is in Appendix 1.

## II. ISSUES

3. All CAREC countries have substantial investment needs for power sector development, as indicated by their national development plans and recent studies. According to the 2012 Power Sector Regional Master Plan involving four CAREC countries (Kazakhstan, Kyrgyz Republic, Tajikistan, and Uzbekistan) and completed in October 2012 through Asian Development Bank technical assistance, an investment of about \$36 billion is required over a 10-year period (2013–2022) for the rehabilitation and expansion of power infrastructure in these countries alone.<sup>5</sup> The 10-year plan includes \$32.8 billion of investment in generation and \$3.2 billion of investment in the 500-kilovolt and 220-kilovolt transmission systems. The recently completed Afghanistan Power Sector Master Plan and the National Power System Expansion Plan for Pakistan contain similarly challenging investment projections. For example, the Afghanistan plan has established a total investment requirement of \$10.1 billion, including \$7.3 billion for power generation and \$2.8 billion for power transmission in the country.

4. The power sector financing requirements of the CAREC countries will be beyond the reach of some of these countries and will stretch the financial resources of others. Given the enormity of funds needed and the limited financing for power infrastructure projects coming from the public sector, there is an urgent need to explore other possible sources of financing,

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<sup>1</sup> ADB. 2012. *CAREC 2020: a Strategic Framework for the Central Asia Regional Economic Cooperation Program 2011–2020*. Manila.

<sup>2</sup> CAREC senior officials approved the EWP at the October 2012 meeting in Wuhan, People’s Republic of China.

<sup>3</sup> The study will cover Afghanistan, Azerbaijan, People’s Republic of China (Xinjiang Uyghur Autonomous Region and Inner Mongolia Autonomous Region), Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan.

<sup>4</sup> The TA first appeared in the business opportunities section of ADB’s website on 16 April 2014.

<sup>5</sup> ADB. 2010. *Technical Assistance for Central Asia Regional Economic Cooperation Power Sector Regional Master Plan*. Manila.

including private sector funds. The same sentiment was highlighted in the EWP 2013–2015 and convinced the CAREC Energy Sector Coordinating Committee (ESCC) of the necessity of this TA. Given the lack of a financing road map and the capacity to develop it, the TA will assist the CAREC countries in developing a power sector financing road map that will pinpoint the requirements for access to funds, sustainable financing approaches, and modalities for national and regional power infrastructure development within CAREC.

5. The EWP has six actionable elements to implement sector operational priorities: (i) developing the Central Asia–South Asia Energy Corridor,<sup>6</sup> (ii) resolving regional energy dispatch and trade issues, (iii) managing energy–water linkages, (iv) mobilizing funds to build energy assets, (v) implementing energy priority projects, and (vi) building capacity and knowledge management. The ESCC guides and oversees implementation of the EWP 2013–2015, as well as reviews the conclusions and recommendations of diagnostic work and studies to be carried out in support of the plan. The committee monitors and reports on the plan's progress on a regular basis, shares outputs, and discusses key conclusions and initiatives. ADB, as the lead in the energy sector of CAREC, is responsible for implementing part of element 1 and elements 4, 5, and 6. The implementation of element 1 led by ADB is supported by the processing and implementation of Turkmenistan, Uzbekistan, Tajikistan, Afghanistan, and Pakistan (TUTAP) Interconnection Initiative, while implementation of element 5 is led by the ESCC secretariat through consolidation and regular updating of the working list of projects.

6. This TA will mainly focus on the implementation of elements 4 and 6. The institutional inefficiency and lack of technical skills among CAREC countries need to be improved and enhanced as they are vital for the efficient integration of power systems of CAREC countries. The TA will help bridge the capacity gap in CAREC countries and provide for the implementation of capacity-building programs. The overall energy strategy embedded in the CAREC Strategy 2020 was approved in 2008. It played a critical role in laying the foundation and defining the approach for the regional cooperation and effective development of the energy sector for CAREC countries. The energy strategy would need to be reviewed to consider current and prospective demands, and emerging issues, in the region.

### **III. THE RESEARCH AND DEVELOPMENT TECHNICAL ASSISTANCE**

#### **A. Impact and Outcome**

7. The impact will be mobilized funds for CAREC power sector infrastructure development. The outcome will be an implementable pipeline of projects for CAREC countries with sustainable financing modalities.

#### **B. Methodology and Key Activities**

8. The TA has three outputs: (i) a CAREC power sector financing road map; (ii) revised energy strategy in the CAREC Strategy 2020; and (iii) implementation of the EWP.

9. The CAREC power sector financing road map will provide each CAREC member country with (i) a review of national and regional power sector investment and development plans; (ii) an assessment of the power sector, including industry structure, institutional arrangements, and capacity of the government and state-owned power utilities; (iii) a macroeconomic assessment

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<sup>6</sup> Certain cross-border projects and programs are being implemented or are actively considered for energy transfer from Central Asia to South Asia, all transiting Afghanistan.



and fiscal profiling to include overall government budget and spending on power infrastructure projects, PPP structure, and borrowing capacity; (iv) an overview of alternative sources of finance for power sector development, including donor assistance, sovereign wealth funds, export credit agencies, and commercial and/or private sources; (v) a review of legal and regulatory frameworks in the region; (vi) an assessment of the enabling environment with a list of reforms necessary for promoting private investment in the power sector; and (vii) a catalogue of potential PPP power projects.

10. An individual international consultant will be engaged to: (i) assist in the implementation of element 6 capacity building activities under the EWP 2013–2015, (ii) the review and revision of the energy strategy in the CAREC Strategy 2020, and (iii) provide substantive inputs for the meetings of the ESCC, senior CAREC officials, and the ministerial conference between December 2014 and December 2015.

11. It is a major assumption that CAREC countries' commitment to energy sector reforms and investments, and an enabling environment for power sector investments are in place. Major risks are (i) lack of political support from parties to implement the road map and regional integration of power markets, (ii) weak coordination between interested donors, and (iii) countries' conflicting agenda and priorities for energy sector development. To manage these risks, a working group under the auspices of the ESCC, composed of energy officials from CAREC countries, will be established to (i) provide direction on the deliverables of the TA (ii) ensure support and coordination from their respective member countries, and (iii) agree upon the implementable pipeline of projects with identified financing modalities. Regular updates on the developments under the TA will be reported to the ESCC during its biannual meetings.

### **C. Cost and Financing**

12. The TA is estimated to cost \$1.5 million, of which \$1.0 million will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-other sources) and \$0.5 million will be financed on a grant basis by the People's Republic of China Regional Cooperation and Poverty Reduction Fund, and administered by ADB. The cost estimates and financing plan are in Appendix 2.

### **D. Implementation Arrangements**

13. ADB will be the executing agency, and the Energy Division of its Central and West Asia Department the focal point. The TA will be implemented over 16 months, from September 2014 to December 2015. It will require 45 person-months of inputs from international experts in finance and/or public finance, economics, legal and regulatory, and energy; and 20 person-months of inputs from national consultants in each CAREC country to provide country-specific research and assessments, and to assist in the implementation of TA activities in their home country. The outline terms of reference for consultants are in Appendix 3. A working group comprising energy officials from CAREC member countries will be established to provide direction to the consultants and endorse the deliverables.

14. A firm with a team of international experts and national consultants from each CAREC country will be engaged to conduct the study using ADB's quality- and cost-based selection method (with a technical–financial weighting of 80:20). ADB will also engage an individual international consultant according to its Guidelines on the Use of Consultants (2013, as amended from time to time). The TA will be monitored through monthly progress reports covering all aspects of the study scope. The consulting firm will submit (i) an inception report

detailing the work program and methodology of the study (1 month after engagement), (ii) an interim report summarizing conclusions and recommendations (within 8 months), and (iii) a draft final report (within 10 months). The consulting firm will present the draft final report at a meeting of the ESCC, ADB, and other development partners. Their comments and suggestions will feed into the final report, to be submitted within 12 months of service start. All disbursements under the TA will be in accordance with ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).

#### **IV. THE PRESIDENT'S DECISION**

15. The President, acting under the authority delegated by the Board, has approved (i) ADB administering a portion of technical assistance not exceeding the equivalent of \$500,000 to be financed on a grant basis by the People's Republic of China Regional Cooperation and Poverty Reduction Fund, and (ii) ADB providing the balance not exceeding the equivalent of \$1,000,000 on a grant basis for the Study for a Power Sector Financing Road Map within Central Asia Regional Economic Cooperation, and hereby reports this action to the Board.

## DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b> Funds mobilized for CAREC power sector infrastructure development</p>	<p>New funds for power projects amounting to at least \$50 billion are mobilized by 2020 (2013 baseline: \$10 billion)</p>	<p>Statistical reports of the countries' utilities</p>	<p><b>Assumption</b> CAREC governments' commitment to energy sector reforms and investments</p> <p><b>Risk</b> Lack of political support from parties to implement road map and regional integration of power markets</p>
<p><b>Outcome</b> Implementable pipeline of projects for CAREC countries identified with sustainable financing modalities</p>	<p>Medium-term and long-term project list in energy sector developed and endorsed by CAREC countries, with proposed financing modalities, by 2015</p>	<p>CAREC ESCC progress report</p> <p>Statistical reports of the countries' utilities</p>	<p><b>Assumption</b> Enabling environment for power sector investments is in place</p> <p><b>Risk</b> Weak coordination between interested donors</p>
<p><b>Outputs</b> CAREC power sector financing road map developed</p> <p>Energy strategy in the CAREC Strategy 2020 reviewed and revised</p> <p>Energy work plan 2013–2015 implemented (element 6)</p>	<p>CAREC ESCC endorsed the road map by December 2015</p> <p>CAREC ESCC endorsed the energy strategy by September 2015</p> <p>At least two training programs or study tours completed and 100 staff trained by September 2015</p> <p>At least 100 staff trained by September 2015</p>	<p>CAREC ESCC progress report</p>	<p><b>Risk</b> Countries' conflicting agenda and priorities on energy sector development</p>
<p><b>Activities with Milestones</b></p> <p><b>1. CAREC power sector financing road map developed</b></p> <p>1.1 Engage and mobilize TA consultants (November to December 2014)</p> <p>1.2 Submit inception report on the CAREC power sector financing road map (December 2014 to January 2015)</p> <p>1.3 Submit monthly progress report (December 2014 to December</p>			<p><b>Inputs</b></p> <p><b>ADB</b> TASF-other sources \$1,000,000</p>

<p>2015)</p> <p>1.4 Submit interim report summarizing conclusions and recommendations on the CAREC power sector financing road map to date (June to August 2015)</p> <p>1.5 Submit draft final CAREC power sector financing road map and its presentation at a meeting of the ESCC (August to October 2015)</p> <p>1.6 Submit final CAREC power sector financing road map (October to December 2015)</p> <p><b>2. Energy strategy in the CAREC Strategy 2020 reviewed and revised</b></p> <p>2.1 Review and revise energy strategy in the CAREC 2020 (October to December 2014)</p> <p>2.2 Present the revised strategy to the CAREC ESCC (April 2015), senior officials (June 2015), and ministerial conference (October 2015)</p> <p><b>3. Energy work plan 2013–2015 implemented</b></p> <p>3.1 Conduct consultations on regional energy trade (September 2014 to September 2015)</p> <p>3.2 Conduct training programs or study tours (September 2014 to September 2015)</p>	<p><b>External Sources</b></p> <p>People's Republic of China Regional Cooperation and Poverty Reduction Fund \$500,000</p>
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ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation, ESCC = energy sector coordinating committee, TA = technical assistance, TASF = Technical Assistance Special Fund.  
Source: Asian Development Bank.

**COST ESTIMATES AND FINANCING PLAN**  
(\$'000)

<b>Item</b>	<b>Amount</b>
<b>A. Asian Development Bank<sup>a</sup></b>	<b>1,000.0</b>
1. Consultants	
a. Remuneration and per diem	
i. International consultants (45 person-months)	794.4
ii. National consultants (20 person-months)	53.4
b. International and local travel	100.0
c. Reports, communications, and translations	13.2
2. Miscellaneous administration and support costs	20.0
3. Contingencies	19.0
<b>B. People's Republic of China Regional Cooperation and Poverty Reduction Fund<sup>b</sup></b>	<b>500.0</b>
1. Consultants	
a. Remuneration and per diem	
i. International consultants (45 person-months)	397.2
ii. National consultants (20 person-months)	26.6
b. International and local travel	50.0
c. Reports, communications, and translations	6.6
2. Miscellaneous administration and support costs	10.0
3. Contingencies	9.6
<b>Total</b>	<b>1,500.0</b>

Note: The technical assistance is estimated to cost \$1.5 million, of which contributions from ADB and People's Republic of China Regional Cooperation and Poverty Reduction Fund are presented in the table above. The disbursement will be based on cost-sharing arrangement.

<sup>a</sup> Financed by the Asian Development Bank's Technical Assistance Special Fund (TASF-other sources).

<sup>b</sup> Administered by the Asian Development Bank.

Source: Asian Development Bank estimates.

## OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

### A. Consulting Firm, International

#### 1. International Consultants

1. **Finance specialist and project team leader with expertise in public–private partnerships** (12 person-months). The consultant will review national and regional power sector master plans, road maps, and studies to determine investment requirements for power infrastructure development, and will identify financing gaps relative to budgetary allocations. The consultant will also examine the portfolio of national and regional power sector projects and programs (i.e., those identified in national and regional energy sector master plans, road maps, and studies); categorize each project and program in terms of financing options (i.e., government budget, donor assistance, sovereign wealth funds, export credit agencies, and/or commercial or private sources) and provide the rationale for such categorization; and examine the public–private partnership (PPP) structure at the national and regional levels in Central Asia Regional Economic Cooperation (CAREC) countries.

2. The consultant will have (i) a degree and postgraduate qualifications in economics or finance; (ii) a minimum of 15 years of work experience in structuring and implementing financing plans for infrastructure projects, including PPP projects in the energy sector; (iii) experience in working with multilateral development financing institutions in consulting assignments in Asia and the Pacific, including in team leadership positions in such assignments; and (iv) an understanding of regulatory and legal issues impeding private sector investment in the energy sector in Asia and the Pacific.

3. **Economist** (9 person-months). The consultant will review economic performance over the past 5 years, and assess medium- to long-term economic prospects, particularly in terms of fiscal balance, gross international reserves, and external account for each country.

4. The consultant will have (i) a degree and postgraduate qualifications in economics; (ii) a minimum of 10 years of work experience in analyses of national economies of developing countries, preferably including countries of the CAREC region; (iii) an understanding of factors governing the stability of national economic environments, including the causes and consequences of short-run fluctuations in national income (the business cycle) and of the determinants of long-run economic growth; and (iv) an understanding of the impact of national economic policies on private sector investment in infrastructure development.

5. **Public finance specialist** (9 person-months). The consultant will analyze government budgetary allocations for, and actual expenditures on, social and physical infrastructure development projects and programs over the past 5 years, and identify reasons for surpluses or shortfalls, if any. The consultant will also review budgetary allocations for power infrastructure (generation, transmission, and distribution) development for both national and regional projects and programs, and assess the sustainability of such allocations; examine the structure and financial profile of utility companies in each CAREC country to determine capability to finance projects from own funds, and identify alternative financing options; review assistance programs of bilateral and multilateral donor agencies for power sector projects and programs, including regional projects and programs; and determine the residual financing requirements (i.e., in addition to government budgetary allocation and donor assistance) to be met from other sources, including sovereign wealth funds, export credit agencies, and commercial or private sources.

6. The consultant will have (i) a degree and postgraduate qualifications in finance or economics; (ii) a minimum of 10 years of work experience in analyses of government revenues and expenditures in developing countries, preferably including countries of the CAREC region; (iii) experience of working with state-owned enterprises (SOEs) in the power sector in developing countries, preferably including countries of the CAREC region, and an understanding of the SOEs' financial capacity for power infrastructure development; and (iv) experience in working with multilateral and bilateral financing institutions on power infrastructure projects in developing countries, preferably also in countries of the CAREC region.

7. **Legal and regulatory framework specialist** (9 person-months). The consultant will review the enabling environment for private investment in the power sector of the CAREC countries: (i) policy and legal frameworks; (ii) regulatory framework; (iii) governance; (iv) institutional settings; (v) industry structure; (vi) supporting physical infrastructure; (vii) investment regime, including tax provisions; (viii) credit-worthiness of key stakeholders; (ix) finance sector, including market liquidity; and (x) security environment. The consultant will also recommend specific measures to be taken, including in the areas listed above, to strengthen the enabling environment for private investment in the power sector.

8. The consultant will have (i) a degree and postgraduate qualifications in economics, finance, or law; (ii) a minimum of 10 years of work experience in energy sector policy issues in developing countries, preferably including countries of the CAREC region; (iii) hands-on experience with economic and technical regulation in the power sector, covering both design of regulatory frameworks and regulatory mechanisms; and (iv) an understanding of the legal framework required to underpin regulatory reforms.

## 2. National Consultants

9. **Country researchers** (10 consultants, total 20 person-months). One national consultant will be engaged in each CAREC country with 2 person-months of input. The consultants will provide country-specific research and information, and assist the implementation of TA activities in their home country.

10. The consultants will have at least 5 years of general experience and 3 years of experience in energy research projects.

### B. Individual Consultant, International

11. **Senior energy expert** (6 person-months). The consultant will provide substantive inputs for the energy sector coordinating committee (ESCC) meetings in September 2014 and March 2015, to the CAREC senior officials' meetings in October 2014, and to the ministerial conference in November 2014, and undertake follow-up actions as necessary. The consultant will be based in ADB headquarters. The consultant will also assist in the preparation and implementation of technical assistance activities related to topics specified in the energy work plan, including the capacity development program for CAREC ESCC members. The consultant will prepare the CAREC energy strategy 2020, including a CAREC energy results-based framework.

12. The consultant will have at least 15 years of general experience and at least 10 years of energy-advisory experience. Knowledge of the CAREC region and its members is preferable.