



Technical Assistance Report

Project Number: 39083
November 2005

Technical Assistance Establishment of the CAREC Members Electricity Regulators Forum

ABBREVIATIONS

ADB	–	Asian Development Bank
AZE	–	Azerbaijan
CAREC	–	Central Asia Regional Economic Cooperation
CMERF	–	CAREC Members Electricity Regulators Forum
DISCO	–	distribution company
DRRAC	–	diagnostic review of regulatory approaches and challenges
ERRA	–	Energy Regulators Regional Association
IT	–	information technology
KAZ	–	Kazakhstan
KGZ	–	Kyrgyz Republic
MC	–	ministerial conference
MON	–	Mongolia
MOU	–	memorandum of understanding
PPIAF	–	Public–Private Infrastructure Advisory Facility
PRC	–	People's Republic of China
SOM	–	senior officials' meeting
TA	–	technical assistance
TAJ	–	Tajikistan
UZB	–	Uzbekistan

TECHNICAL ASSISTANCE CLASSIFICATION

Targeting Classification	–	General intervention
Sector	–	Energy
Subsector	–	Energy sector development
Themes	–	Capacity development, regional cooperation, private sector development
Subthemes	–	Policy/institutional/legal/regulatory reforms, private sector investment, institutional development

NOTE

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

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I. INTRODUCTION

1. The Asian Development Bank (ADB) hosted a meeting of the Central Asia electricity regulators forum in Manila in March 2004 to assist members to build the capacity to implement regulatory and structural reforms in their power sectors.¹ Delegates at the meeting requested regular meetings to continue the structured consultation among similar member countries. In consideration of this suggestion, ADB proposed at the CAREC Senior Officials Meeting (SOM) in Almaty, on 13–14 September 2004 a timeline for establishing the Central Asia Regional Economic Cooperation (CAREC) Members Electricity Regulators Forum (CMERF).² The timeline was endorsed by SOM delegates and again at the Third CAREC Ministerial Conference (MC) held in Astana on 1 November 2004. This regional technical assistance (TA) will help implement the proposal endorsed by the SOM and MC. Countries participating in the TA are Azerbaijan (AZE), People's Republic of China (PRC), Kazakhstan (KAZ), Kyrgyz Republic (KGZ), Mongolia (MON), and Tajikistan (TAJ).³

2. Under this timeline, the following activities have already been undertaken: (i) Public–Private Infrastructure Advisory Facility (PPIAF) support has been secured for preparing a diagnostic review of regulatory approaches and challenges (DRRAC), for holding the July 2005 meeting, and, tentatively, for two regional studies to be undertaken during 2005–2006. (ii) The DRRAC report, based on an ADB study tour of all seven CAREC member countries, has been prepared and is expected to be published by ADB in November 2005. It documents and assesses the baseline position of each CAREC country with respect to electricity regulation and industry structure, and helps focus CMERF's agenda. (iii) A CMERF meeting was held on 4–6 July 2005 in Beijing, cohosted by the State Electricity Regulatory Commission of the PRC and ADB. (iv) A memorandum of understanding (MOU) establishing CMERF was drafted. Comments from CAREC member governments have been incorporated, and delegates at the Beijing meeting agreed to forward the MOU to the CAREC SOM to be considered for signing at the Fourth CAREC MC in November 2005. (v) Delegates at the Beijing meeting short-listed five study topics for program year 2005–2006. Three of the studies will be funded under this regional TA. PPIAF funding for the two other studies has been tentatively approved, pending approval of the specific topics chosen.

3. The TA's impact and output, methodology and key activities, cost estimates and financing plan, and implementation arrangements are presented in this paper.⁴ The TA design and monitoring framework is in Appendix 1.

II. ISSUES

4. CAREC members possess significant complementary energy resource endowments. KAZ, KGZ, TAJ, and UZB also possess the common gas and electricity transmission infrastructure necessary to exploit these complementarities, but the poor condition of such infrastructure is an impediment to trade. Currently, most energy trade in the region is on an exchange basis, and external power sources are used only when domestic producers are constrained. Deeper and more economically rational trade will considerably reduce the economic (including environmental) cost of meeting member countries' energy needs. This trade is vital, given the cold winters in all CAREC member countries, the high energy intensities of most members' economies, and the increased industrialization envisioned by their governments. Establishment of transparent power trading among member countries will reduce the perceived political risk associated with investments in large projects that could be implemented for export of energy to neighboring countries.

¹ This meeting was funded by the Public–Private Infrastructure Advisory Facility, a multidonor technical assistance facility, aimed at helping developing countries improve the quality of their infrastructure through private sector involvement.

² Central Asia Regional Economic Cooperation (CAREC) Members are: Azerbaijan, People's Republic of China, Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan, and Uzbekistan.

³ Uzbekistan has not yet confirmed its no objection to inclusion, and will be included when it does so.

⁴ The TA first appeared in *ADB Business Opportunities* (internet edition) on 8 April 2005.

5. Ensuring that these opportunities can be properly utilized will require further improvements in the structure and regulation of individual countries' domestic power sectors, as well as harmonized regulations for cross-border energy trade, transmission, and investment. The economic returns to improvements in cross-border infrastructure will also depend on a resolution of regulatory and structural issues.

6. Almost every CAREC country electricity sector, until recently, was a vertically integrated, publicly owned monopoly.^{5,6} This arrangement has proven inefficient and imposed serious regulatory challenges. There is evidence of gathering regional momentum to tackle the inefficiencies associated with the inherited sector structures. All member countries, except TAJ and UZB, have vertically unbundled their sectors into generation, transmission, and distribution components.⁷ This permits nonperforming companies to be targeted for improvements. AZE, KAZ, and MON have targeted their distribution companies, privatizing management of some of them. KAZ has privatized most of its power generation facilities, and has a competitive electricity wholesale market. The PRC is developing a wholesale market in the northeast region. Some sector officials in other CAREC countries wish to emulate KAZ in developing wholesale markets. Initial reforms in TAJ and UZB took the form of preparatory legal work, which cannot yield benefits without further economic changes.

7. A key problem in most CAREC countries is the high commercial losses and poor billing and collection rates of distribution companies.⁸ In combination with low regulated tariffs, the problem has undermined cash flow in the power sector and crippled many utilities financially. This in turn limits their attractiveness as trading partners and has led to a deterioration of existing infrastructure and inability to finance new infrastructure. The quality of service has suffered, especially in rural and poor urban areas. Dilapidated transmission infrastructure also reduces the benefits of trade.

8. The weak commercial performance of the sector has seriously undermined the regulators. Most CAREC member countries are yet to achieve universal electricity consumption metering. Poor metering, billing, and collection mean that regulated tariffs have lost considerable traction in allocating sector resources, as they are not relevant to consumers who are unmetered, improperly billed, or do not pay their bills. Further, the inadequate cash flows in several members' power sectors are distributed between sector companies or subsidiaries in subjective and unpredictable ways. As a result, tariffs do not provide relevant economic signals to producers or potential investors. While enforcement of proper commercial standards is a responsibility of the utilities' shareholders, the lack of such enforcement presents significant challenges to the regulator.

9. Rigid industry structures and the entrenched monopolies they sustain are stifling the development of competition, both from domestic and international sources. Regional trade is a form of competition, and ADB and member countries have experienced significant setbacks in facilitating power trade when vertically integrated monopoly utilities are involved. Restructuring of these sectors is crucial for deeper regional trade.

10. Even where tariffs do retain traction, institutional weaknesses distort the price of domestically produced energy away from its true economic cost, obscuring the true benefits of energy trade and conservation. In general, the relative price of domestic to imported energy is kept considerably below its true economic value, discouraging power trade. Energy prices are generally maintained at levels too low to support financial cost recovery or optimal deployment of nonrenewable energy

⁵ The following description of issues is drawn from information collected for the diagnostic review of regulatory approaches and challenges (DRRAC) report.

⁶ The exception is the People's Republic of China, which began restructuring its power sector in the 1980s.

⁷ Azerbaijan is somewhat exceptional, having kept transmission and generation in one publicly owned company.

⁸ The DRRAC report found that 30–60 % of power is paid for at regulated prices in most CAREC countries.

resources over time.⁹ Distortionary cross subsidies between different consumer classes are also common. Seasonal prices also do not vary adequately to permit management of seasonal constraints. The distortions demonstrate the need for regulatory improvement.

11. Regulators in the region are committed to tariff rationalization. However, attempts to reform tariffs have been severely constrained by concerns regarding affordability of power. A clear and open debate on the quality of service that the government is willing to support through explicit, nondistortionary subsidies to marginal consumers is required because raising tariffs to permit financial cost recovery or reflect marginal economic costs would cause significant economic hardship for poorer consumers, especially during winter. This debate will require inputs from well-informed and articulate regulators, committed to balancing the needs of consumers and likely future investors. ADB supports a flexible approach to setting multipart tariffs that can facilitate tariff reforms while meeting social goals,¹⁰ which will underpin ADB's advice under CMERF.

12. Member regulators, utilities, and governments are eager to learn from the experiences of their neighbors in the region as they attempt to devise approaches that are suited to their own economic and technical conditions, and objectives. Each approach involves regulatory issues and roles that must be considered carefully by the regulators in light of international and regional experience.

13. Finally, as each of these changes improves the financial position and economic signals operating in the sectors, regional trade will emerge as a least-cost solution to meeting electricity demand, and returns to infrastructure investments will rise. Regulators will be required to facilitate such trade by harmonizing regulations, particularly those regarding use of the regional power grid.

14. ADB has included a loan and grant-funded technical assistance for power sector restructuring,¹¹ billing,¹² and account information management¹³ in TAJ; assisted with the establishment of the State Electricity Regulatory Commission in the PRC;¹⁴ and has included conditionalities regarding tariff reform and receivables in MON¹⁵ and TAJ.¹⁶ ADB has also attempted to stimulate regional power trade through the inclusion of a Power Trade Regional Agreement as a condition on a loan to TAJ and UZB,¹⁷ the UZB portion of which was recently terminated. Experiences involving power trade suggest that domestic structural, commercial, and pricing reforms will be crucial for catalyzing a genuine regional power market.¹⁸

15. The DRRAC report finds that the degree of regulatory independence—defined by the tenure arrangements for regulators, funding for regulatory organizations, mandate to require information from utilities, and freedom to implement regulatory decisions—varies across the region. So does the

⁹ For information on tariff levels, see the DRRAC report. For information on tariff adequacy: World Bank. 2004. *Regional Electricity Export Potential Study*. Washington, DC.

¹⁰ Dole, D., and I. Bartlett. 2004. *Beyond Cost Recovery: Setting User Charges for Financial Economic and Social Goals*. ADB Economics Research Department, Technical Note Series No. 10. Manila: ADB.

¹¹ ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grants to the Republic of Tajikistan for Power Rehabilitation Project*. Manila.

¹² ADB. 2000. *Technical Assistance to the Republic of Tajikistan for Improving Barki Tajik's Billing and Collection System*. Manila.

¹³ ADB. 2003. *Technical Assistance to the Republic of Tajikistan for Improving the Accounting and Financial Management Systems of the Subsidiaries of Barki Tajik*. Manila.

¹⁴ ADB. 2002. *Technical Assistance to the People's Republic of China for Establishing the National Electricity Regulatory Commission*. Manila.

¹⁵ ADB. 1997. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Mongolia for Ulaanbaatar Heat Efficiency Project*. Manila.

¹⁶ ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grants to the Republic of Tajikistan for the Power Rehabilitation Project*. Manila.

¹⁷ ADB. 2002. *Report and Recommendation of the President to the Board of Directors on Proposed Loans to the Republic of Tajikistan and the Republic of Uzbekistan for Regional Power Transmission Modernization Project*. Manila.

¹⁸ Kazakhstan and the People's Republic of China have already made such reforms.

number of objectives that regulatory decisions are required to promote. Regulators that are required to serve the least objectives and have the most independence are generally found to be the most successful in rationalizing tariffs.¹⁹

16. There are three regional regulatory forums to which Asian countries belong: the South Asia Forum for Infrastructure Regulation, an East Asian electricity regulators forum being established by the World Bank, and the Energy Regulators Regional Association (ERRA). ERRA has been instrumental in building regulatory capacity for sector reforms in East and Central Europe. Four CAREC countries (AZE, KAZ, KGZ, and MON) attend ERRA meetings. ERRA facilitates harmonization with the European electricity markets and caters to countries with established regulators. In the long term, as CAREC members establish independent regulators and undertake major reforms, CMERF's capacity-building role could be efficiently handled by ERRA. CMERF would become a coordinating council for developing regional power markets. Within CAREC, CMERF will report to the SOM and serve as a regulatory focal point, permitting other funding agencies to pool inputs by attending CMERF meetings and advising on studies.

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

17. The intended impact of the regional TA is improved power sector regulation and regulatory support to sector reforms and power trade. The intended outcome is improved regulatory capacity in the selected focus areas, reflecting a better understanding of the economic incentives created by regulatory decisions. The key outputs will be analyses of regionally relevant regulatory issues, agreement on principles for coordination on electricity regulation, capacity building, and a website.

B. Methodology and Key Activities

18. A comparison of experiences among member countries and frequent consultation between regulators will enable capacity building. Given the similar circumstances a decade ago in most CAREC electricity sectors, and the diverse reforms undertaken since, proper comparative studies of these reform efforts, interpreted in light of international best practice, offer a tremendous learning experience for regulators. Because governments are actively debating important policy changes to be implemented over the next few years, the scope for such information to stimulate and influence reforms is substantial. Activities under this TA will include preparation of the three regulatory studies, development of the CMERF website, and holding of CMERF's 2006 annual meeting.

19. There are two key assumptions for achieving the desired outcome: (i) governments nominate regulators or policy makers, not utility officials (who are the regulated entities), to participate in CMERF activities; and (ii) regulators have the interest and capacity to expand their strong technical knowledge base to learn about moderately complex economic issues.

20. At the 2005 CMERF meeting, regulators chose five study topics they wish to undertake for the next year, and decided which countries would participate in each study. Three of the studies will be funded by this TA, specifically: designing multipurpose tariff structures (TAJ), privatizing power distribution companies (MON and KGZ), and creating a regional database of power utility costs (all countries participating in the TA). Outline terms of reference for the three studies are in Appendix 2.

21. The quality of the studies will depend on the provision of necessary information by member regulators, and the capacity of the study teams to translate international best practice and academic

¹⁹ Kazakhstan's regulator is the most independent, and claims only one objective—the promotion of competition. Its energy pricing appears to be the most efficient in the region.

expertise to the context of the region. The MOU establishing CMERF was approved by participating regulators in Beijing, endorsed by the CAREC SOM in October 2005, and will be signed by the CAREC MC in November 2005. Key risks in this regard include international tensions, and the possible perception by countries with more developed sectors that CMERF serves those who have pursued reforms less vigorously.

C. Cost and Financing

22. The total cost of the TA is estimated at \$600,000 equivalent, of which ADB will fund \$500,000 on a grant basis from ADB's TA funding program (Appendix 3). The governments participating in the TA will provide office space, counterpart staff time, data, and other miscellaneous expenses equivalent to \$100,000.

D. Implementation Arrangements

23. ADB will be the Executing Agency of the TA. The national regulatory agency from each member country will participate in (i) selecting relevant study topics, (ii) assisting domestic consultants with data gathering, (iii) obtaining data from utilities, (iv) discussing and doing analytical work with study authors, and (v) presenting and discussing study findings.

24. Consulting requirements will include a total of 47 person-months of domestic consultant time to collect and verify numerical data and facts; and 12 person-months of international consultant time to supervise domestic consultants, analyze data in the context of international best practice in economic regulation, and prepare the reports. Detailed time and expertise requirements are in Appendix 2. Individual consultants, including academics with expertise in power sector economics and engineering, will be utilized to ensure high levels of knowledge for the studies on tariffs and privatization of distribution. A firm will be engaged to create the utility database. ADB staff will study materials recommended by the consultants, and monitor the draft study reports. The consultants will be engaged in accordance with ADB's *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB for engaging domestic consultants.

25. Outputs will be disseminated via the CMERF website, and shared directly with relevant government personnel and development partners. Quality will be assessed primarily through member and peer review. The outcome will be observed through the interactions with regulators during and after study preparation, and the quality of regulatory decisions in its wake.

26. Implementation will start immediately after the MOU is signed at the Fourth CAREC MC in November 2005. Studies will be completed for the CMERF meeting in August 2006, and the TA will be concluded in November 2006.

IV. THE PRESIDENT'S DECISION

27. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$500,000 on a grant basis for the Establishment of the CAREC Members Electricity Regulators Forum, and hereby reports this action to the Board.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<p>Impact Improved power sector regulation and necessary regulatory support for sector reforms and power trade</p>	<p>Progress on some of the following:</p> <ul style="list-style-type: none"> • New private investment in member power sectors • Progress with vertical and horizontal unbundling • Greater choice of suppliers—domestic and international • Reductions in the most distortionary subsidies • Real tariff increases toward economically and/or financially justifiable levels • Cross-country harmonization of sector regulations 	<ul style="list-style-type: none"> • Sector monitoring by resident missions • ADB missions • Reports from ADB consultants in the field • Information from development partners and discussions at CAREC meetings • Reports by sector officials at CMERF 	<p>Assumptions</p> <ul style="list-style-type: none"> • Study recommendations are implemented. • Current level of regulatory independence is at least maintained. <p>Risks</p> <ul style="list-style-type: none"> • Policy makers avoid structural changes.
<p>Outcome Improved regulatory capacity in the selected focus areas, due to better understanding of the economic incentives created by regulatory decisions</p>	<ul style="list-style-type: none"> • Greater emphasis on performance-based regulation and other incentive schemes to allocate cash, approve tariffs, and encourage metering • Near-consensus in most countries on the right regulatory principles for power trade and foreign investment 	<ul style="list-style-type: none"> • Government decrees, ongoing interactions with sector officials, ADB missions, reports from ADB consultants in the field, information from development partners • Ongoing interactions with regulators, ADB missions, reports from ADB consultants in the field 	<p>Assumption</p> <ul style="list-style-type: none"> • Regulators show active interest in learning about technical economic issues. <p>Risks</p> <ul style="list-style-type: none"> • Governments nominate utility representatives instead of regulators to join CMERF.
<p>Outputs</p> <ol style="list-style-type: none"> 1. Relevant analyses of important regulatory issues in member countries 2. Agreement to coordinate on electricity regulation 3. Regulatory capacity building 4. Use of CMERF website 	<ol style="list-style-type: none"> 1. Three regulatory studies, with relevant policy/regulatory recommendations reflecting best practice 2. MOU establishing CMERF signed at the November 2005 CAREC Ministerial Conference 3. 24 regulators trained at regional meeting, and 30 officials at three national workshops 4. Number of hits and downloads 	<ol style="list-style-type: none"> 1. Review by peers and members 2. Meeting proceedings 3. Lists of participants. Attendee surveys 4. Internet 	<p>Assumptions and Risks</p> <ol style="list-style-type: none"> 1.1 Governments or utilities release needed information. 1.2 Consultants can translate international experience to the context of the region. 2.1 International political tensions 2.2 Willingness of regulators of more advanced sectors to work with other regulators 3.1 Regulators commit to developing further capacity.

Activities with Milestones	Inputs
<ol style="list-style-type: none"> 1. Studies <ol style="list-style-type: none"> 1.1 Detailed study designs prepared: October 2005 1.2 Consultant selection: November 2005 1.3 Reviews of international best practice and all relevant background information completed: March 2006 1.4 Data collection completed: March 2006 1.5 Data analysis and drafting of studies: April–May 2006 1.6 Dissemination of studies in time for 2006 annual CMERF meeting 2. Deliberations on MOU <ol style="list-style-type: none"> 2.1 Discussion, amendment, endorsement of MOU at CAREC SOM: October 2005 2.2 Signing of MOU at CAREC MC: November 2005 3. Regional regulators meeting and dissemination workshops <ol style="list-style-type: none"> 3.1 Discussion of study results, including database, at the 2006 CMERF meeting: summer 2006 3.2 Three in-country dissemination workshops: immediately after 2006 CMERF meetings 4. Development of CMERF website 	<p>ADB - \$500,000</p> <ul style="list-style-type: none"> • Consultants-\$381,500: international (12 person-months), domestic (47 person-months) • Training and Seminars-\$81,000 • Contingencies: \$37,500 <p>Governments-\$100,000</p> <ul style="list-style-type: none"> • Office space and transport-\$35,000 • Counterpart staff: \$42,000 • Others: \$23,000 <p>Final clearance of PPIAF cofinancing for two additional studies should be received in November 2005.</p>

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation, CMERF = CAREC Members Electricity Regulators Forum, MC = ministerial conference, MOU = memorandum of understanding, PPIAF = Public–Private Advisory Facility; SOM = senior officials meeting.

**CAREC MEMBERS ELECTRICITY REGULATORS FORUM (CMERF)
STUDIES TO BE FUNDED BY THE ASIAN DEVELOPMENT BANK
OUTLINE TERMS OF REFERENCE**

1. Outline terms of reference for three studies to be funded under this regional technical assistance are presented here:

A. 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
participating country: Tajikistan

2. **Background.** Three essential features of electricity markets can be usefully considered together when designing regulations. First, consumers have different capacities to pay for electricity. Second, the electricity and heat systems are unable to meet demand during peak demand periods. Third, consumers also differ with respect to their power system requirements, and tendency to pay their power bills. The first point means that regulators are required to design tariff structures that keep electricity affordable to the poor, while still allowing the system to recover its costs. The second means capacity constraints must be allocated in an orderly fashion for the system to function efficiently.

3. The third feature permits flexible tariff structures to be applied cheaply, while improving efficiency. Specifically, different types of consumers can be offered different contracts, some of which will involve limitations on the wattage or energy they can draw, include clauses allowing them to be cut off more frequently, or may require prepayment for electricity. In return for accepting such restrictions on the quality of supply, consumers could receive discounts or lifeline tariffs. Tajikistan is constrained with respect to the total electrical energy available during winter, resulting in frequent load-shedding. This load-shedding is generally visited upon the same communities, without warning or compensation. Regularizing load-shedding, and permitting residential neighborhoods to opt for cheaper interruptible power schemes could therefore improve circumstances considerably. Similarly, significant problems in rectifying the billing and collection system suggest that prepaid metering, which would largely eliminate the need for billing and collections, might be an attractive option. Leaving aside the engineering details, this study will look at what tariff structures will need to be designed with these schemes.

4. For any scheme to work, that requires consumers to voluntarily sort themselves into consumer groups, the scheme must be simple, and there must be a robust way of ensuring that those who receive cheap electricity actually bear the quality restrictions. The best way to ensure this is to design incentive-compatible contracts, wherein wealthier consumers would not wish to receive the quality of power service on offer through the cheaper contract. The objective of this study is to design incentive-compatible power contracts that will meet social goals, while permitting recovery of some defined level of financial cost and offering consumers incentives to conserve power and electrical energy.

5. Discussions with the World Bank are under way, as the World Bank is undertaking a similar study in Mongolia, and useful comparisons can be drawn.

6. **Outcome and Impact.** The outcome of the study will be a learning experience that will teach member regulators how to segment markets to efficiently and affordably allocate scarce electrical capacity and energy. The impact will be improved capacity to design and review such pricing and market segmentation schemes.

7. **Consulting Inputs.** This study has the following consulting requirements (person-months are in parentheses): international energy economist (3), domestic Tajikistan power sector specialist (5), domestic survey design expert (1), and 4 domestic enumerators for 1 month each (4). The international consultant will have a firm grasp of power system planning, experience in developing countries, especially with working with primary data from developing countries. The domestic power sector specialist will have a clear understanding of relations between Tajikistan's electricity supply companies and consumers, the constraints faced by consumers in utilizing and paying for power, and consumer behavior given these constraints. The domestic survey design expert will have experience in collecting survey information regarding public utilities, and consumers' willingness to pay for services. An advanced degree in statistics, survey research, applied economics, or a related field is required. The enumerators will be fully capable of carrying out completed survey designs, and resolving problems directly with the survey design expert. The consultants will be hired as individuals.

8. **Scope.** The study will examine the possibility of such schemes in Tajikistan. It will proceed in six stages:

- (i) An international consultant, with the assistance of the regulators and domestic consultants, will identify from existing reports the constraints on the power system that need rationing (load, energy, credit). Attention to temporal and spatial variation will be crucial. The Asian Development Bank (ADB) is currently undertaking a staff study to assess the long-run marginal cost of power supply in Tajikistan. Its findings will serve as the basis of discussions for designing Tajik tariffs in this study.
- (ii) The regulators will provide inputs regarding their priorities in terms of social protection, assist the consultants in evaluating alternative schemes and indicate the costs that must be recovered.
- (iii) The domestic survey design expert, in consultation with the international consultant, will design a survey instrument to assess different types of consumers' service needs, and economic willingness to accept service restrictions. The consultants will also identify candidate enumerators. The team of domestic consultants will then design a survey.
- (iv) The domestic consultants will implement the survey.
- (v) The international consultant will produce a report giving practical suggestions for providing tariff support to the poor, while allocating constraints equitably.
- (vi) The international expert will present the findings and recommendations at the 2006 Central Asia Regional Economic Cooperation (CAREC) Members Electricity Regulators Forum (CMERF) conference, followed by a dissemination workshop in Tajikistan.

B. Possibilities and Pitfalls in Privatizing Distribution Company Management, participating countries: Azerbaijan, Kyrgyz Republic, and Mongolia, with assistance from Kazakhstan

9. **Background.** State-owned distribution companies (DISCOs) in most CAREC countries are performing poorly. Auctioning of contracts for the private management of DISCOs has been identified as a potential solution to the problem. Azerbaijan has awarded concessions on all four of its DISCOs to two private companies. Kazakhstan has privatized most of its DISCOs. Mongolia has privatized one DISCO, and is considering further privatizations. The Kyrgyz Republic is also considering privatizing some DISCOs.

10. Any contracting arrangement will have to balance the needs to (i) ensure proper payment of generators and the transmission company, (ii) reduce the risk to investors of regulatory inconsistencies, (iii) obtain a good price for the management contract, (iv) prevent commercial risks being passed on to consumers and the government, (v) leverage improvements in reliability and service quality, (vi) ensure adequate transparency in the auction and contracting procedure, and (vii) predictably manage any necessary tariff adjustments.

11. **Outcome and Impact.** The study will build the capacity to help design and supervise the privatization of DISCOs in the Kyrgyz Republic and Mongolia, drawing on the experience of Azerbaijan and Kazakhstan. Analysis of international experience will also facilitate capacity building in Azerbaijan as it continues to work with its concessionaires to improve service quality and financial responsiveness.

12. **Consulting Inputs.** This study has the following consulting requirements (person-months are in parentheses): team leader–international economist/regulatory/public-utilities specialist (4), international legal expert (1), domestic Kyrgyz Republic power sector specialist (5), domestic Mongolia power sector specialist (5), domestic Azerbaijan power sector specialist (2); domestic Kazakhstan power sector specialist (2). The domestic consultants will have extensive knowledge of institutional, business, and policy arrangements for power sector management in their respective countries. The two international experts will each have considerable experience designing and/or supervising the privatization of monopoly public utilities, including those for energy. The services will be offered by a consulting firm.

13. **Scope.** This study will involve one DISCO in the Kyrgyz Republic and one publicly owned DISCO in Mongolia. It will proceed in five stages.

- (i) An assessment of the commercial performance, management practices, and corporate governance of the selected Kyrgyz and Mongolian DISCOs will be prepared by the regulator and the two respective domestic consultants, with inputs from the DISCO management and the international economist. With the assistance of the domestic consultants, the international legal expert will appraise the legal basis for privatization. Case studies will be prepared covering four or five privatizations of comparable DISCOs, focusing on the regulatory and contractual frameworks utilized. Country studies will include those of Azerbaijan and Kazakhstan, and the respective domestic consultants will obtain necessary information in conjunction with the Azerbaijan Ministry of Energy and Industry, and the Kazakh regulator. The four domestic consultants will also plan study tours for the Kyrgyz and Mongolian regulators.
- (ii) Two regulators each from the Kyrgyz Republic and Mongolia (four persons in total) will undertake a back-to-back study tour to Azerbaijan and Kazakhstan, accompanied by the economist. A session will be held in Azerbaijan at which the economist will highlight lessons learned from international case studies that have implications for Azerbaijan's current problems with its DISCOs. Following the tour, the economist will visit the Kyrgyz Republic and Mongolia, and will hold discussions with regulators and other officials to clarify the scope of their privatization plans.
- (iii) In consultation with the Kyrgyz and Mongolian regulators, the economist will draft a sample road map for privatizing the participating DISCOs. The economist will draft white papers laying out the principles that each privatization will have to follow to balance the considerations listed in para. 10. The white paper should be

suitable for turning over to lawyers who could utilize them to craft actual requests for tenders. The legal expert will advise on the preparation of the white papers to ensure that they are suitable for that purpose. The economist will also write a final report. This report will include the sample road maps, white papers, case studies, and chapters outlining the background, rationale, scope, regulatory arrangements, legal requirements, and economic analysis of privatization plans for the selected DISCOs in the Kyrgyz Republic and Mongolia.

- (iv) The domestic consultants in the Kyrgyz Republic and Mongolia will each organize dissemination workshops in the city where the targeted DISCO is located.
- (v) The economist will hold back-to-back visits to each country to hold these workshops. The economist will attend the CMERF conference in summer 2006 to present and discuss study findings.

C. Costs and Input Requirements of Power Utilities across Member Countries

14. **Background.** Regulators that approve tariffs on reported costs must reach decisions on which costs submitted by the utility are reasonable. It is widely recognized that information asymmetry exists, and utilities do not always report costs accurately. It is also well accepted that publicly managed utilities do not always seek to minimize their costs. It is therefore vital for regulators to have a clear perception of just how much it costs to run a utility, and what kind of fuel consumption, other technical parameters, and electricity losses are reasonable. While consumers should not pay for the inefficiency of utilities, any unreasonable expectation would delay decisions related to tariff increases. Regional comparisons of operating norms at utilities are therefore extremely useful.

15. Introducing the notion of disclosure in most CAREC country power sectors is itself of value.

16. **Outcome and Impact.** This study will provide regulators with vital information that they could use to ensure that utilities are given incentives to reduce costs to reasonable levels. The output will be a searchable database in English and Russian posted on the CMERF website with information relevant to making comparisons of allowable costs. In addition to the numbers, the database will provide detailed information on the specific source of the data; the definitions and methods for calculating each piece of information; and information not disclosed, together with reasons for nondisclosure where possible (e.g.: commercially privileged, national security interest, data unmeasured).

17. **Consulting Inputs.** One international consultant working for 4 person-months will be required. This individual consultant will be a power engineer with experience in power generation, transmission and distribution, and supervising data collection. Experience in Central Asia will be required. Domestic consultants in each member country each working for 3 person-months (21 person-months total) will be required to collect data. Each will have prior knowledge of the power sectors, a strong engineering background, and English proficiency. One Russian- and English-speaking domestic consultant, with sufficient capabilities in information technology (IT), will be required for an additional 2 months to prepare the database and launch it on the internet. The international consultant will be responsible for recruiting the domestic consultants.

18. **Scope.** This activity will involve all six countries participating in the technical assistance. It will include the assimilation of data on the national transmission grid, three DISCOs, and the

10 most important generators in each country. In the People's Republic of China, information can be limited to one regional market only. The study will proceed in four phases:

- (i) From existing documents and studies, the international consultant will familiarize himself/herself with member countries' power sectors. In consultation with the regulators, the consultant will produce a list of measures required to assess reasonable power generation, transmission, and distribution costs. The list will include specific definitions, as well as detailed instructions for domestic consultants, on how to calculate measures and record data. To recruit the domestic consultants, the international consultant will hold telephone interviews to identify, in conjunction with the ADB project officer, suitable candidates.
- (ii) The international consultant will visit the region to hold organizational meetings with the domestic consultants, and assess the scope of the Project. The domestic consultants will then begin collecting data, referring all discrepancies and problems back to the international consultant, who will vet the data and ensure that it is consistent and well documented.
- (iii) The international consultant will supervise the local IT expert who will prepare the database. The consultant will also prepare a brief report presenting the findings regarding the availability and reliability of data, the extent and nature of exceptions to disclosure, and highlighting any comparisons across countries that they, the regulators, or ADB project staff consider noteworthy.
- (iv) The international consultant will attend the 2006 CMERF meeting to present the study findings.

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Total Cost
A. Asian Development Bank Financing^a	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultants	260.00
ii. Domestic Consultants	58.50
b. International and Local Travel	53.00
c. Reports and Communications	10.00
2. Training, Seminars, and Conferences	
a. Facilitators	10.00
b. Training Program	68.00
3. Miscellaneous Administration and Support Costs	3.00
4. Contingencies	37.50
Subtotal (A)	500.00
B. Governments Financing^b	
1. Office Accommodation and Transport	35.00
2. Remuneration and Per Diem of Counterpart Staff	42.00
3. Others	23.00
Subtotal (B)	100.00
Total	600.00

^a Financed by the Asian Development Bank's technical assistance funding program.

^b Counterpart funds will come from governments of all CAREC countries who choose to participate in the studies covered under this TA. Included countries are: Azerbaijan, People's Republic of China, Kazakhstan, Kyrgyz Republic, Mongolia, and Tajikistan.

Source: Asian Development Bank estimates.