



Technical Assistance Report

Project Number: 39327
June 2006

Energy Sector Strategy and Development

Asian Development Bank

ABBREVIATIONS

ADB	–	Asian Development Bank
APFEE	–	Asia-Pacific fund for energy efficiency
CO ₂	–	carbon dioxide
CoP	–	community of practice
CSP	–	country strategy and program
DMC	–	developing member country
ERD	–	Economics and Research Department
ERMF	–	Macroeconomics and Finance Research Division
IEA	–	International Energy Agency
NGO	–	nongovernment organization
kWh	–	kilowatt hour
RSDD	–	Regional and Sustainable Development Department
RSID	–	Energy, Transport, and Water Division
TA	–	technical assistance

TECHNICAL ASSISTANCE CLASSIFICATION

Targeting Classification	–	General intervention
Sector	–	Energy
Themes	–	Sustainable economic growth, environmental sustainability, regional cooperation

NOTE

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

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I. INTRODUCTION

1. The Asian Development Bank (ADB) has been involved in the energy sector of its developing member countries (DMCs) since the early 1980s. The first energy policy was approved in 1981¹ just after the second oil crisis of 1979. This defined ADB's role in the energy sector of DMCs and recommended major investments in infrastructure and maximizing the use of indigenous sources of supply. The second energy policy paper,² approved in 1995, identified major sectoral issues and concerns which centered on (i) defining an appropriate role for governments; (ii) enhancing the efficient production, transportation, and end use of energy; and (iii) integrating environmental considerations in all energy sector activities to enable sustainable development. It recommended tariff rationalization, full cost recovery, reduction and removal of subsidies and cross-subsidies, setting up independent regulatory mechanisms, corporatization and privatization of state-owned utilities, and regional cooperation in energy development.

2. The 1995 policy was further reviewed in 2000 (2000 Review).³ This confirmed that the framework was appropriate and sound. However, realignment was necessary to focus on the revised operational priorities: (i) reducing poverty in the region, (ii) promoting private sector involvement, (iii) addressing social and environmental impacts, and (iv) promoting regional cooperation. Within these priorities, the 2000 Review supported sector restructuring, private sector participation, rationalization of tariffs, efficiency improvements, poverty reduction, social development, governance, information technology, energy conservation, cofinancing, and capacity building.

3. Although overall assistance during 2001–2005 in the energy sector was reduced to \$3.2 billion from \$4.1 billion during 1996–2000, substantial progress was achieved in the transmission and distribution sectors, sector reforms, transparent tariff setting, reduction in subsidies, and environmental and social aspects. ADB supported these initiatives through sector development program support, systems improvement, regional cooperation, metering, regulatory mechanisms, and enhanced investments and ordinary capital resources lending for private sector projects which increased from \$200 million during 1996–2000 to \$683 million during 2001–2005. However, the current rise in fuel prices has impacted energy security and hence focus will need to shift toward efficient uses of energy, clean energy development, energy security, and use of indigenous sources of fuel. Greenhouse gas emission levels are reaching alarming levels, which highlights the need for sustainable uses of energy. Studies by the United Nations⁴ and other agencies have concluded that energy accessibility is an important component to achieve the Millennium Development Goals. Therefore, it is now imperative that ADB's energy strategy is reviewed to align its operations to provide meaningful support to DMCs. The 2000 Review also recommended a review in 2005. Accordingly, the Regional and Sustainable Development Department (RSDD) requested the Operations Evaluation Department to conduct an independent evaluation of the 2000 Review to assess its relevance and effectiveness in directing and guiding ADB's operations in the energy sector. This study is currently ongoing and initial findings are expected in August 2006. The Energy, Transport, and Water Division (RSID) of the RSDD will build upon these findings and develop a sustainable strategy that should guide ADB's energy sector operations for the next 5 years.⁵

¹ ADB. 1981. *Role of the Bank in the Energy Sector in the Region*. Working Paper No. 2-81. Manila.

² ADB. 1995. *The Bank's Policy Initiatives in the Energy Sector*. Manila.

³ ADB. 2000. *Energy 2000: Review of the Energy Policy*. Manila.

⁴ United Nations. 2005. *The Energy Challenges for Achieving the Millennium Development Goals*. UN-Energy: New York.

⁵ The TA first appeared in *ADB Business Opportunities* on 16 February 2006.

II. ISSUES

4. Asia's current annual energy consumption of over 2.100 billion tons of oil equivalent is expected to more than double by 2025. In the same period, annual electricity demand is expected to grow from 2.6 trillion kilowatt hours (kWh) to 6.3 trillion kWh.⁶ The energy sector remains an important area of ADB's operations, representing about 15% of total lending during the last few years. As the energy sector is evolving across DMCs, the current pattern of energy sector growth is becoming unsustainable from both the security and environmental perspectives. For instance, greenhouse gas emissions in the region are expected to rise from 6 billion tons to 12 billion tons of carbon dioxide (CO₂) equivalent by 2020, accounting for 32% of global emissions from the energy sector (footnote 6). DMCs face threats to energy security because of their heavy dependence on increasing imports of oil and natural gas, whose prices are rising rapidly. Most policy makers in Asia have also begun to realize that a business-as-usual scenario is clearly not sustainable. However, long-term strategies for adopting cleaner technologies—such as energy efficiency, renewable energy, and clean coal technologies—have been limited, far below their actual potential.

5. DMCs require a stable and assured supply of energy (i) to promote higher economic growth; and (ii) for the effective delivery of social services like education and health care, which are essential for poverty reduction. Some DMCs have high savings rates that are directed toward energy supply additions but others need external borrowings. Nearly all DMCs import primary energy. Investments in the energy sector are no longer viewed as strategic (to be controlled directly by the government); private enterprises have been established in most countries to implement projects and manage the business.

6. Globally, it is now recognized that the increase in CO₂ induced by human activity results in climate change, the greenhouse effect, and changes in atmospheric behavior. Possible impacts are global warming, changing precipitation, more intense storms, arctic ice melting, sea level rise, and ocean warming. One way to address climate change effects is to contain the increase in the production of greenhouse gases, such as CO₂. This would entail the use of cleaner energy technologies. ADB's Energy Efficiency Initiative (EEI) addressed this aspect of ADB's future operations and proposed lending levels of \$1 billion annually for clean energy projects within the next 2–3 years. ADB's energy strategy will build on this initiative.

7. Although substantial progress has been achieved in power sector restructuring, much remains to be done. Reforms have been slow, mainly due to overambitious expectations, and the associated hesitancy in the political and economical changes. The reform process is ongoing and will continue slowly. Efforts need to be focused on independent regulatory structures and pricing mechanisms.

8. Privatization is also slow. Some DMCs went ahead but there has been some backtracking or a slowdown in new private sector projects. Investing in private power projects is not an attractive option. Interest rates have risen, even when projects are supported by sovereign guarantees. Allegations of overpricing and take-or-pay type of agreements have made DMCs more careful in handling private sector proposals. On the other hand, lack of adequate transparency in selecting promoters, nonavailability of level playing fields, and renegotiation of power purchase agreements have made promoters reluctant to invest in such projects. Despite these problems, ADB's support to private sector participation in the energy sector has increased substantially. ADB's presence reassures stakeholders. Further focus should be on supporting financial markets, regulatory regimes, power purchase agreements, assistance in reducing project risks, and encouraging transparency.

⁶ International Energy Agency. *World Energy Outlook 2002*. Paris.

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

9. The expected impact over time of this regional technical assistance (TA) is to substantially increase the use of clean energy and provide energy security in the region.

10. The intended outcome of this TA is to develop and recommend strategies that ADB needs to adopt in its lending operations to further enhance the effectiveness of its energy sector assistance to DMCs along the four priority areas highlighted in the 2000 Review.

B. Methodology and Key Activities

1. Energy Sector Strategy

11. The study will assess the reasons for the recent decline in ADB's energy sector operations. It will address a broad range of growing challenges in the sector (e.g., increasing vulnerability to oil dependency and imports), and linkages to environmental risks as well as incentives—such as the clean development mechanism, mainstreaming private sector participation, expanding the role of renewable energy, energy efficiency, and demand side management. It will also recommend possible solutions in the context of lending modalities and approaches in ADB's energy sector operations in the medium and long term, particularly 2007–2012. These solutions may include or extend beyond innovative credit enhancement mechanisms already adopted by ADB, such as partial credit and political risk guarantees. The linkages of energy sector operations to poverty reduction and ways to evaluate and monitor these impacts will also be examined as part of the strategy recommendations. Finally, the strategy will provide estimates and/or targets for ADB's future role in contributing towards energy sector development in Asia for the next 5 years.

12. A consultative approach will be followed throughout the process. Within ADB, RSDD's RSID will be responsible for the study under the overall guidance of the energy community of practice (CoP). The CoP will provide regular expert inputs and support for the preparation of the paper. The strategy paper will be processed in one stage and circulated to ADB's Board of Directors for information. An informal Board seminar will be held after intra- and interdepartmental review of the draft strategy paper, external consultations in accordance with the Public Consultation Policy, web posting, and a management review meeting.

13. The external consultation process, using ADB's *Guidelines for External Consultations* and *Policy on Disclosure*, will be designed to solicit input and advice from a range of international stakeholders and experts from DMCs, as appropriate, so that the paper will be based on best international practices and adequate engagement of interested parties. A panel of experts will be engaged as resource persons who will provide strategic direction throughout the course of strategy formulation and review. The energy sector strategy 2006 paper will propose a set of strategic options to achieve the objectives established by the 1995 energy policy and the 2000 Review.

2. Energy Outlook and Data Book 2007 for the Asia and Pacific Region

14. Asia's rapidly growing energy requirement and recent oil price developments give rise to concerns to long-term energy security. Coupled with economic, social, environmental, and geopolitical implications, energy security issues reach far beyond national borders, hence require a multilateral approach, yet tightly linked to the regional development strategies. Asian economies, in general, rely heavily on oil imports and exhibit energy intensive growth patterns. In this context, a clear understanding of energy needs, available and alternate energy sources

based on reliable data, analysis, and outlook, constitutes a key element in their policy and investment decision making with a view to securing adequate energy supply and eventually safeguarding the regional economic and political stability. As part of this regional TA, it is proposed that ADB produce a document that will address the concerns of DMCs and provide them with a comprehensive source of energy data and available options. This sourcebook will be jointly prepared by ADB and a group of well-established, reputable energy research institutions, including the International Energy Agency (IEA), which may provide significant collaborative work. The tentative title of the book is “Energy Outlook and Data Book 2007 for the Asia and Pacific Region”. RSID and Economics and Research Department’s (ERD) Macroeconomics and Finance Research Division (ERMF) will be in close coordination for the overall guidance and ensure effective collaboration with other leading institutes through regular review meetings.

3. Energy Efficiency Initiative

15. The objective of the EEI is to expand ADB’s investments in energy efficiency (including renewable energy) projects to \$1 billion a year (para. 6). The EEI is being implemented in three phases. Phase I, completed in March 2006, produced a report that firmly establishes the rationale for expanded and sustained ADB action and energy efficiency investment. It also defined the general principles and action plan, and provides priorities and a framework for next steps. Phase II will (i) develop country-level and regional strategies and action plans on how to reach the target set for EEI, and (ii) examine the need for establishing the Asia-Pacific fund for energy efficiency.⁷ Immediate energy efficiency investment opportunities will be pursued even during Phase II. The strategies and action plans will be implemented in Phase III (2007–2010). Resources from the regional TA will be used to implement Phase II.

16. As part of the EEI, ADB is organizing a conference on clean energy from 20–22 June 2006. The ADB Clean Energy Week will be a knowledge-sharing event among practitioners and policy makers engaged in crosscutting issues of clean energy development and financing, climate change, energy access and security, and governance in the energy sector. The Clean Energy Week will provide a unique opportunity for ADB’s DMC clients, donor governments, nongovernment organizations, the private sector, academics, and other players with an important stake in the Asian energy agenda to interact and exchange lessons learned across the region. The three-day event will further contribute to discussions necessary for ADB as it begins to rethink its own energy policy and reformulates a strategic approach to address DMCs’ energy needs.

C. Cost and Financing

16. The total cost of the regional TA, estimated at \$1,000,000, will be financed on a grant basis by ADB’s TA funding program. The TA cost estimates and financing plan are in Appendix 2.

⁷ The Asia-Pacific Fund for energy efficiency (APFEE) will have three main functions: (i) **mitigating risk**. It will underwrite risks of energy efficiency projects to improve access to capital; (ii) **increasing access to technology**. For innovative and demonstrative energy efficiency technologies, the APFEE will provide concessional loans to lower capital cost and make such projects financially viable; and (iii) **capacity building**. The APFEE will provide grant assistance for non-lending measures, such as developing the knowledge base and incentive mechanisms, advocacy, institutional capacity building, project preparation, and establishment of the monitoring and evaluation mechanism.

D. Implementation Arrangements

1. Energy Strategy

17. This component of the regional TA will be implemented over 12 months from August 2006 to July 2007. ADB will serve as the Executing Agency, and RSDD's RSID will be the implementing unit. One international expert/consultant will be recruited for 4 person-months. Mission travel will be required for the consultant to selected countries for in-country consultations. An energy research consultant will be recruited for research and presentation support. The draft strategy will undergo external peer review and consultations. Subregional stakeholder consultations and/or workshops will be conducted in selected key DMCs, to be determined later. An external panel of experts will be retained as resource persons to provide strategic directions for the preparation of the strategy. The terms of reference for the international consultant, the energy research consultant, and the panel of experts are in Appendix 3. Consultants will be recruited as individuals in accordance with ADB's *Guidelines on the Use of Consultants*.

2. Energy Outlook and Data Book 2007 for Asia and Pacific Region

18. This component will be implemented over 12 months from August 2006 to July 2007. ADB will serve as the Executing Agency and RSDD's RSID and ERD's ERMF will be the implementing units. ADB will recruit a group of regional energy research institutes to conduct research on a regional basis, compile data, and submit a detailed analysis of the energy sector of the Asia and Pacific region for the medium and long term. IEA is the producer of the World Energy Outlook, which can be benchmarked by the proposed energy outlook for Asia and Pacific region. Hence, it is desirable that ADB taps into IEA's knowledge base, research network and know-how. Details will be worked out after further consultations with IEA and other regional research institutes. The international and domestic consultants will be recruited as individuals in accordance with ADB's *Guidelines on the Use of Consultants* to assist the team leader in the preparation of the energy outlook, analytical work, data management, and copy editing. Because of the specialized nature of work and expertise, the regional energy research institutes will be recruited following single source selection procedures in accordance with ADB's *Guidelines on the Use of Consultants*.

3. Energy Efficiency Initiative

19. This component will be implemented over 19 months from June 2006 to December 2007. ADB will serve as the executing agency and RSDD's RSID will be the implementing unit. One international expert/consultant will be recruited for 12 months. Mission travel will be required for the consultant who will conduct research on energy efficiency markets and policies and compile feasibility studies for specific projects. The consultant will be recruited as an individual in accordance with ADB's *Guidelines on the Use of Consultants*. The Clean Energy Week will be held in ADB headquarters on 20-22 June 2006 under the overall supervision of RSDD. The regional TA will finance the expenses of DMC officials participating in the Clean Energy Week which will be cofinanced with the Promoting Renewable Energy, Energy Efficiency, and Greenhouse Gas Abatement⁸ project.

IV. THE PRESIDENT'S DECISION

20. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$1,000,000 on a grant basis for the Energy Sector Strategy and Development and hereby reports this action to the Board.

⁸ TA 5972-REG: *Promoting Renewable Energy, Energy Efficiency, and Greenhouse Gas Abatement*, for \$5 million, approved on 4 January 2001.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/ Reporting Mechanisms	Assumptions and Risks
Impact DMCs have a sustainable supply of energy	<ul style="list-style-type: none"> Increased percentage of clean energy sources compared to total energy sources 	<ul style="list-style-type: none"> National, regional and/or country statistical reports, such as annual reports of the energy ministry 	Assumption <ul style="list-style-type: none"> DMCs will implement their policies Risks <ul style="list-style-type: none"> DMCs face financial crisis Policy change
Outcome ADB future assistance in the energy sector is focused on providing clean energy and energy security	<ul style="list-style-type: none"> Increase ADB's project focus on clean energy to \$1 billion per year 	<ul style="list-style-type: none"> ADB annual reports National statistical reports Energy data IEA sources 	Assumptions <ul style="list-style-type: none"> DMCs will implement their strategies ADB and DMCs' policies continue to be relevant DMCs seek clean energy and energy security assistance from ADB Risks <ul style="list-style-type: none"> DMCs face financial difficulties Policy change
Outputs 1. ADB energy strategy has been approved 2. Energy sector forecasts and outlook for Asia and Pacific region disseminated 3. Energy efficiency initiative phase II implemented	<ul style="list-style-type: none"> Increased ADB operations in clean energy projects Energy outlook and data book distributed to all DMCs by October 2007 Energy efficiency action plans for 15 DMCs finalized Funding mechanism to support energy efficiency projects established 	<ul style="list-style-type: none"> Progress reports Progress reports 	Assumption <ul style="list-style-type: none"> Consultant selected as scheduled Risks <ul style="list-style-type: none"> Delay in data collection Delay in review by stakeholders Assumptions <ul style="list-style-type: none"> DMC's officials respond as required Cofinancing is available Risk <ul style="list-style-type: none"> DMCs' delay in initiating energy efficiency projects

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
4. ADB, DMCs, energy experts, and NGOs exchange views and interest on energy sector development	<ul style="list-style-type: none"> At least 80% of participants rate Clean Energy Week useful 	<ul style="list-style-type: none"> Feedback from participants Staff reports 	<p>Assumption</p> <ul style="list-style-type: none"> Significant participation by invited speakers and energy experts <p>Risk</p> <ul style="list-style-type: none"> Insufficient response to invitations
<p>Activities with Milestones</p> <ol style="list-style-type: none"> Energy strategy review <ol style="list-style-type: none"> 1.1 Regional technical assistance approval Jun 2006 1.2 Consultant recruitment Jul 2006 1.3 Initial consultations Apr–Aug 2006 1.4 Draft report Dec 2006 1.5 Informal Board seminar Q1 2007 1.6 Board approval Q2 2007 1.7 Dissemination Q3 2007 Energy outlook and data book 2007 in Asia and Pacific region <ol style="list-style-type: none"> 2.1 Regional technical assistance approval Jun 2006 2.2 Award consulting contracts Aug 2006 2.3 Research Aug 2006–Feb 2007 2.4 Publication of document Q3 2007 Energy efficiency initiative <ol style="list-style-type: none"> 3.1 Regional technical assistance approval Jun 2006 3.2 Award consulting contract Aug 2006 3.3 Research/consultation Sep 2006–Aug 2007 3.4 Finalize action plan for 15 DMCs Aug 2007 Design and organize workshop on clean energy <ol style="list-style-type: none"> 4.1 Prepare agenda for workshop Apr 2006 4.2 Prepare list of speakers 4.3 Identify participants 4.4 Identify funding 4.5 Invite speakers 4.6 Invite participants 4.7 Conduct workshop Jun 2006 4.8 Disseminate findings on website Jul 2007 			<p>Inputs</p> <ul style="list-style-type: none"> Staff consultant Energy researcher Budget: \$150,000 <p>Input</p> <ul style="list-style-type: none"> Energy consultants, energy research institutes' contributions Budget: \$600,000 <p>Input</p> <ul style="list-style-type: none"> Consultant's services Stakeholders' consultations Budget: \$200,000 <p>Inputs</p> <ul style="list-style-type: none"> Participation cost of DMC officials Staff resources Budget: \$50,000

ADB = Asian Development Bank, DMC = developing member country, IEA = International Energy Agency, NGO = nongovernment organization.

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Total
Asian Development Bank (ADB) Financing^a	
Component A: Energy Strategy	
1. International Consultant	
a. Remuneration (4 person-months)	80
b. Travel and Per Diem	20
2. Energy Research Consultant (Domestic)	
a. Remuneration (10 person-months)	30
3. Resource Persons' Honorarium ^b	10
4. Miscellaneous Expenses	5
5. Contingencies	5
Subtotal (Component A)	150
Component B: Preparing the Energy Outlook and Data Book 2007 for the Asia and Pacific Region	
1. Energy Specialist (International)	
a. Remuneration (6 person-months)	80
b. Travel and Per Diem	20
2. Energy Research Consultant (International)	
a. Remuneration (8 person-months)	80
b. Travel and Per Diem	20
3. Copy Editor (Domestic) Remuneration	20
4. Research Institutes (Consulting Agencies) Remuneration for 6 Agencies Including Travel and Per Diem	380
Subtotal (Component B)	600
Component C1: Energy Efficiency Initiative	
1. International Consultant	
a. Remuneration (8 person-months)	120
b. Travel and Per Diem	30
c. Stakeholders' Consultations ^c	50
Subtotal (Component C1)	200
Component C2: Clean Energy Week 2006	
1. DMC officials' participation	45
2. Contingencies	5
Subtotal (Component C2)	50
Total (Components C1+C2)	250
Grand Total	1,000

DMC = developing member country.

^a Financed by ADB's technical assistance funding program.

^b Panel of experts.

^c Includes preparation of materials for consultation and participation of resource speakers, stakeholders' consultation, workshops, preparation of information dissemination materials.

Source: ADB estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Energy Sector Strategy

1. The energy sector strategy component of this regional technical assistance (TA) will recruit (i) one international consultant who will help prepare the draft energy sector strategy, and (ii) a panel of experts who will serve as resource persons to provide strategic direction to the study and review the draft strategy.

1. International Consultant (4 person-months, intermittent, August 2006–May 2007)

2. The international consultant will provide significant inputs to the Asian Development Bank (ADB) team leader prepare the draft energy sector strategy 2006 paper. The strategy paper will propose a set of strategic options to achieve the objectives established by *Energy Policy 1995* and *Review of Energy Policy 2000*.

3. The 2006 energy sector strategy paper will require review and analysis of the following significant areas:

- (i) Energy efficiency improvements in energy supply (including renewable energy) and end use.
- (ii) Increase in energy supply: since higher economic growth rates will require increasing energy supply, developing member countries (DMCs) will need large investments in power generation (clean coal, large hydropower, renewable energy, nuclear) that support (i) above, power transmission, power trade.
- (iii) Energy sector reforms: review the independent power producers and unbundling models that have been adopted in industrialized countries; and examine if these are appropriate for DMCs, and what changes would be needed to make them suitable.
- (iv) Economic impact of investments in the energy sector, including direct and indirect benefits for the poor. The section of the 2006 energy sector strategy will form the basis of preparation of energy sector road maps in a country strategy and program (CSP)—why and when ADB needs to include energy sector projects in the pipeline, and what to include so that projects are beneficial to the poor.
- (v) Energy security and access.
- (vi) Regional cooperation and cross-border exchange.
- (vii) Clean energy options in the transport sector, enhancing the use of clean fuels, development of biofuels and their viability.

4. The consultant will provide analytical results and inputs (as described above) to the ADB team leader in a timely manner and appropriate form to enable the preparation of the first draft which will be reviewed by the community of practice (CoP). The second draft strategy paper will undergo an external peer review and consultation.

5. The key responsibilities of the consultant, who will be based in ADB headquarters, will include the following:

- (i) Review literature and collect information and/or projections related to para 3.
- (ii) Review ADB's operations and determine the impacts.
- (iii) Review project completion reports and project performance audit reports to capture lessons learned.
- (iv) Review the energy lending policies of other multilateral development banks.
- (v) Review policies and constraints and gather data on various energy sector technologies and interventions—including traditional areas such as coal, oil, and gas; and alternate technologies such as renewable and nuclear energy.
- (vi) Review relevant ADB policies such as the environment policy, private sector investment policy, etc.
- (vii) Have regular discussions with the ADB team leader and relevant staff and/or working group members.
- (viii) Carry out analysis to distill logical arguments for ADB interventions in the energy sector.
- (ix) Prepare a number of papers on various energy sector aspects.

2. Panel of Experts (Resource Persons)

6. A panel of experts will be engaged to provide strategic advice to the CoP in the preparation of the strategy. Their tasks will involve reviewing and commenting on the draft energy sector strategy. Members of this panel will be recognized experts in the field of energy sector policy. The experts will be expected to bring their practical experience to the formulation of the sector strategy.

7. The experts will be paid a fixed honorarium for their services. International travel is not required.

3. Energy Research Consultant (domestic, 10 person-months, August 2006–June 2007)

8. The energy research consultant, based in ADB headquarters, will work under the overall supervision of the team leader. The consultant will collect and review relevant data and information needed for preparation of the energy sector strategy 2006.

9. Specific tasks of the energy research consultant will include the following:

- (i) Review the CSP and/or CSP updates and other country documents; and assess the quality of energy sector assessments and road maps—focusing on conformity with sector policies, linkage to CSP outcomes, consistency of program with sector assessments, depth, comprehensiveness, quality of data, analysis of partnerships, and work of other stakeholders.
- (ii) Review ADB's lending and TA operations in the energy sector, identify portfolio performance issues and implementation record, analyze trends at the regional and institution-wide levels, and assess DMCs' progress in achieving key policy and institutional changes.
- (iii) Review the midterm progress reports of loan projects and summarize key issues and problems identified and actions taken to address the issues.
- (iv) Review the regional cooperation strategy and programs (RCSPs)/RCSP updates and other relevant reports, and identify regional and subregional activities and initiatives that ADB has undertaken in the energy sector.

- (v) Review reports and recommendations of the President to the Board of Directors, TA papers, project completion reports, TA completion reports, project performance audit reports, TA performance audit reports and relevant reports and studies to determine the
 - (a) contribution of energy sector lending and nonlending activities to key elements of the sector strategy;
 - (b) issues encountered in strategy implementation; and
 - (c) mainstreaming of themes in the energy sector.
- (vi) Collect information on good practices and assess the effectiveness of knowledge generation and dissemination activities in the energy sector.
- (vii) Collect and review cofinancing and private sector financing data to determine funds generated from commercial sources and private sector investments in DMCs.
- (viii) Identify types of activities to promote participation of nongovernment organizations and/or civil society, and harmonization with other multilateral development banks and/or agencies.
- (ix) Recommend systems that need to be established to capture data and information for future review of the energy sector.
- (x) Provide any other research assistance to the team leader in gathering data and information needed to support the preparation of the energy strategy.

B. Energy Outlook and Data Book 2007 in Asia and Pacific Region

10. This component of the regional TA is to publish an objectively prepared document providing comprehensive energy-related data from the Asia and Pacific region, including an assessment of the future energy outlook for the DMCs.

1. International Consultant (Energy Expert) (6 person-months, intermittent, August 2006–July 2007)

11. The energy expert will provide support in the preparation of the energy outlook and data book 2007 in the Asia and Pacific region under the direct supervision of ADB team leader. The energy expert who is a well reputed energy economist will undertake research and assess key policy challenges for the region and provides significant inputs and overall review for the publication.

12. The energy outlook and data book 2007 will require review and analysis of the following significant areas: (i) global energy trend, energy projections and outlook; (ii) oil market outlook; (iii) electricity market outlook; (iv) alternate energy sources and development outlook; (v) regional outlooks, including subregional summaries, individual countries in each sub-regional chapter, and relevant policy analysis and development strategies in each subregion and countries; (vi) theme chapter on energy security, energy efficiency, renewable energy, subsidies, biomass possibilities, energy conservation, and energy growth that are pertinent to Asia and Pacific region, but not covered enough in the above chapters.

13. The energy expert will provide analytical results and initial drafts on each chapter (as described above) to the ADB team leader in a timely manner. The initial draft will be thoroughly reviewed by IEA and/or international and regional energy institutes.

14. The key responsibilities of the energy expert will include the following:

- (i) To oversee the overall publication of the energy outlook and data book 2007;
- (ii) To review the contents of submitted documents prepared by a consortium of regional energy research institutes and revise as necessary;
- (iii) To review the contributions of the theme chapters by IEA or other energy research institutes and combine them with the rest of chapters for the overall publication;
- (iv) To provide advice and inputs on issues related to energy market development, projections and outlook in the context of the Asia and Pacific region's development strategies; and
- (v) To support coordination of various parts of research assigned to a group of regional energy research institutes.

2. Energy Research Consultant (Data Management) (international, intermittent, 8 person-months, August 2006–July 2007)

15. The energy research consultant will closely cooperate with the energy expert under the overall supervision of the team leader. He/she will support and assist the research work of the consultant by carrying out overall data management for the publication and help coordinate the data compilation for the statistical appendix.

16. He/she will:

- (i) compile relevant data and information needed for the preparation of the energy outlook and data book 2007;
- (ii) prepare research materials, information, tables, and charts included in the write-up;
- (iii) review the validity and accuracy of information, tables, and charts included in the write-up submitted by other research institutes;
- (iv) confer with the other research institutes to submit their data and analyses regarding gaps in the data, and follow up with questions and necessary revisions; and
- (v) perform any other research support functions as may be assigned by the energy research consultant and ADB team leader.

3. Copy Editor-cum-Desktop Publishing Specialist (domestic, 3 person-months, August–October 2007)

17. Under the direct supervision of ADB team leader and in consultation with the energy expert, the copy editor will edit the energy outlook 2007 in accordance with ADB's editorial style. He/she will be responsible for (i) typesetting and proofreading the text, tables, and charts of the publication from the preliminary draft for digital printing (via pdf) before forwarding to the external printer; and (ii) data linking to ensure consistency in the final manuscript. The copy editor must have full working knowledge of MS Office 2000 (MS Word, MS Excel, and MS Powerpoint), Adobe Pagemaker/Indesign and Corel Draw/Adobe Illustrator, as substantial amount of typesetting work will be undertaken, including copy fitting.

18. The output requirements are pdf file of manuscript for two volumes of energy outlook 2007 and a small booklet of statistics summary.

4. A Group of International and Regional Energy Research Agencies

19. International energy research institutes such as IEA will be consulted in the initial stage of documentation design for the structure and potential collaboration. They will also provide comprehensive reviews on the global and regional energy outlook as well as comment on the draft energy outlook. A group of regional energy research institutes will be engaged to provide energy data, analysis, and outlook for the assigned regions and countries in the preparation of energy outlook 2007.

20. Specific tasks will include compilation and verification of data, review of ADB and other documents pertaining to the energy sector, analyze, both at the country and regional levels, the overall development and perspectives of the energy sector in the areas of resources, supplies, demand, security, accessibility, climate change, economic outlook based on energy modeling, and prepare a draft document which will provide the necessary data and analysis in a uniform and comprehensive manner. One of these research institutes can be designated as an overall coordinator of various regional data, analysis, and outlook. In addition, this agency will closely cooperate with the consultants who will extract relevant data and develop small booklets on energy statistics, power sector statistics, etc.

B. Energy Efficiency Initiative

21. The EEI component of the regional TA will require the services on one international consultant who will help identify prospective energy efficiency investments.

1. **International Consultant** (8 person-months, intermittent, August 2006–December 2007)

22. Phase II of the EEI will require the review and analysis of the following significant areas:

- (i) Conduct further research on their countries' energy efficiency markets, policies, and specific investment market segments. Research includes compilation of feasibility studies of sample/representative projects to confirm which energy efficiency investments offer the strongest economics.
- (ii) Consult with DMC governments, especially those governments that already have adopted energy efficiency and renewable energy policy frameworks and targets.
- (iii) Consult with other energy efficiency market stakeholders in target countries, including private sector actors such as energy users, industrial associations, commercial financial institutions, energy efficiency companies and energy service companies, project developers, equipment manufacturers, and vendors.
- (iv) Assist in establishing a mechanism to mobilize resources to reduce energy intensity in the developing countries in Asia and Pacific. This region has rapidly become the largest fossil fuel user, therefore, the reduction in energy intensity is essential to reduce global emissions of greenhouse gases, ease growth in energy demand and the upward pressure on energy prices, and improve energy security.
- (v) Complete selection of priority target energy efficiency market segments and define appropriate ADB investment instruments to reach them. Prepare near- and medium-term energy efficiency investment pipeline reports on a quarterly basis. Conduct initial assessments of investment risks and issues for each prospective investment, with plans for further due diligence. Regional departments will first analyze each country strategy for conformity and then

develop their respective pipelines and recommendations, recommend worthy prospective investments for immediate action, and prepare associated investment development plans for them.

- (vi) Refine the ADB energy efficiency investment target for the near- and medium-terms. Provide breakdowns of this target by selected market segments and ADB instruments. Provide justification for plausibility of these targets based on the bottom-up market analysis. RSDD will then aggregate the targets of regional departments into ADB targets.
- (vii) Complete research on experiences with various types of TA programs which can complement ADB energy efficiency investments, and make preparations to implement such programs.
- (viii) Prepare a report summarizing the regional departments' energy efficiency investment and action plan to achieve its targets for the 2007–2010 timeframe, addressing action plan, staffing, organization, budget, sources of funding, schedule, and deadlines.
- (ix) Consider holding annual events to develop the demand and wide support for EEI investments. The subsequent annual energy efficiency events may be held in DMCs by rotation. This will promote sharing of successful experiences and bring together planners, financiers, decision makers, and the energy efficiency industry (energy service companies, equipment manufacturers, consultants). These events should be differentiated from the commercial conferences being organized in Asia and Pacific, by focusing on mainstreaming energy efficiency in Asia and Pacific.