



# Technical Assistance Report

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Project Number: 40498  
October 2006

## Supporting the Inception of the Energy Efficiency Initiative in Developing Member Countries

## ABBREVIATIONS

ADB	–	Asian Development Bank
APFEE	–	Asia-Pacific Fund for Energy Efficiency
CDM	–	Clean Development Mechanism
CE&EP	–	Clean Energy and Environment Program
CMI	–	Carbon Market Initiative
DMC	–	developing member country
EEl	–	energy efficiency initiative
EEl TF	–	energy efficiency initiative task force
EET	–	energy efficiency in transport initiative
GDP	–	gross domestic product
GHG	–	greenhouse gas
IEA	–	International Energy Agency
IFI	–	international financial institution
M&E	–	monitoring and evaluation
MOU		memorandum of understanding
Mtoe	–	million tons of oil equivalent
OECD	–	Organization for Economic Cooperation and Development
PRC	–	People's Republic of China
PREGA	–	Promoting Renewable Energy, Energy Efficiency, and Greenhouse Gas Abatement
PSOD	–	Private Sector Operations Department
REACH	–	Renewable Energy, Energy Efficiency, and Climate Change Program
RETA	–	regional technical assistance
RSID	–	Energy, Transport, and Water Division
RSDD	–	Regional and Sustainable Development Department
TA	–	technical assistance
T&D	–	transmission and distribution
TPES	–	total primary energy supply
UNFCCC	–	United Nations Framework Convention on Climate Change

## TECHNICAL ASSISTANCE CLASSIFICATION

<b>Targeting Classification</b>	–	General intervention
<b>Sector</b>	–	Energy
<b>Subsector</b>	–	Energy sector development
<b>Theme</b>	–	Sustainable economic growth
<b>Subthemes</b>	–	Promoting economic efficiency and enabling markets

### NOTE

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

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## I. INTRODUCTION

1. Energy use in the developing member countries (DMCs) of the Asian Development Bank (ADB) is rapidly increasing. Energy is vital to support economic growth necessary for raising the living standards of large populations and at present this comes mainly from fossil fuels. The current energy path, which focuses on expanding fossil fuel supplies, is neither environmentally nor economically sustainable. Increasing energy efficiency, to ensure more service value from each primary energy unit consumed, has significant environmental and economic benefits. Energy efficiency is essential to reduce global emissions of greenhouse gases (GHGs), ease growth in fossil energy demand, curb the upward pressure on energy prices, and improve energy security.

2. Measures are needed first to slow the growth of worldwide GHG emissions, followed by efforts to reverse growth trends. This will require a shift from the present fossil-fuel-dominated economy to one with an efficient and prudent fuel mix. More investments need to be made in many diverse and distinct market segments, on both the supply and demand sides—all targeting the creation of a low-carbon sustainable energy future.

3. Taking into account the growing importance of energy efficiency, ADB launched the energy efficiency initiative (EEI) in July 2005 to expand its operations in energy efficiency to \$1 billion a year, both on the supply side (including supporting increased use of renewable sources) and on the demand side (including promoting greater end-use efficiency). The EEI is being implemented in three phases. Phase I was completed in June 2006 with the ADB Management's endorsement of the draft EEI report. The report firmly established the rationale for expanded and sustained ADB action and investment in energy efficiency, while defining the general principles of the energy efficiency investment. It included an action plan, a list of priorities, and a framework for subsequent steps. During clean energy week (20–22 June 2006), DMC officials and international experts also provided support to the EEI. Phase II (from June 2006 to December 2007) will (i) develop country-level and regional strategies and action plans on how to reach the target set for the EEI, (ii) explore the possibility of establishing the Asia Pacific Fund for Energy Efficiency (APFEE), and (iii) develop the necessary institutional capacity within ADB to scale-up as well as to monitor and evaluate activities implemented under the EEI. Immediate energy efficiency investment opportunities will also be pursued during phase II. The strategies and action plans will be implemented in phase III (2008–2010). The concept paper for this regional technical assistance (RETA) was approved by Vice President, Knowledge Management and Sustainable Development on 27 July 2006.<sup>1</sup> The concept paper for the RETA was for \$2.9 million, which was to cover the inception phase and also finance the implementation of EEI phase II. However, only \$600,000 is available in 2006. Therefore the RETA will be used for the inception of EEI phase II (as outlined above) in ADB's DMCs. The RETA will develop a detailed workplan and country consultations will be held. The remaining \$2.3 million will be available in 2007. Follow-on technical assistance (TA) or supplemental TA will be processed in 2007 to undertake the activities identified by the RETA.

## II. ISSUES

4. The rationale for the EEI and the justification for developing more energy efficiency projects is based on an analysis of current and future projections of energy use patterns in the Asia and Pacific region. Factors that affect energy use in the region are listed in Appendix 1.

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<sup>1</sup> The RETA first appeared in *ADB Business Opportunities* on 31 July 2006.

5. Promoting energy efficiency will slow the growth of GHG emissions without sacrificing economic gains or living standards. Improving supply and energy use efficiencies will directly lower the cost of energy services, and thereby create financial savings. At the same time, lower fossil fuel use and an increased share of renewable energy will create additional environmental and economic benefits in terms of (i) lower GHG emissions, (ii) reductions in other pollutants and improvements in local air quality, (iii) reduced upward pressure on international fuel prices, and (iv) diversification of energy sources through energy efficiency investments, contributing to energy security. Energy efficiency can achieve success on many fronts and needs to be strategically targeted at the national, enterprise, and household levels. The efforts to promote energy efficiency have to be radically scaled up if its technical and economic potential is to be realized.

6. The international community is strongly promoting energy efficiency as a way of addressing climate change. The Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC) came into force on 16 February 2005 and includes the Clean Development Mechanism (CDM). CDM was established to provide financial incentives to boost investments in GHG abatement projects, such as those covering renewable energy and energy efficiency in developing countries. The G8+5 Gleneagles Summit in July 2005 gave the clean energy and climate change agenda new momentum. Following the summit's joint communiqué, the World Bank has led consultations among the international financial institutions (IFIs) to prepare an investment framework for clean energy and development. Similarly, a six-country Asia-Pacific Partnership on Clean Development and Climate, comprised of Australia, India, Japan, the People's Republic of China (PRC), Republic of Korea, and the United States, announced its program during its inaugural minister-level meeting in January 2006. Special funds, such as the Global Environment Facility, have been established, although there are limitations on the use of these based on grant criteria and allocation formulas. The International Energy Agency (IEA) is carrying out extensive technical studies and has many special programs on energy efficiency and renewable energy. The IEA also provides guidance on strategy, rationale, and policies based on long-term energy projections and technology choices. The global drive toward sustainable energy was also bolstered through the consensus reached at the World Summit on Sustainable Development in Johannesburg in 2002, and the subsequent International Conferences for Renewable Energy in 2004 (Bonn) and 2005 (Beijing). Moreover, clean energy is a high priority for several development organizations, including the French Agency for Environment and Energy Management; Germany's Kreditanstalt für Wiederaufbau Bankengruppe; Deutsche Gesellschaft für Technische Zusammenarbeit; the UK Department for International Development; the Swedish International Development Cooperation Agency; and Canadian, Danish, Dutch, and Japanese development agencies.<sup>2</sup>

7. ADB held two consultation meetings with stakeholders from DMCs in November 2005 and June 2006. At these meetings it was clear that DMCs also recognize the urgency and rationale for significant improvements and investments in energy efficiency.<sup>3</sup> Several countries have adopted aggressive policies. For example, although the goal of PRC is to increase its gross domestic product (GDP) by four times between 2000 and 2020, it plans to only double energy use in the same period.<sup>4</sup> India has adopted a comprehensive energy efficiency policy and defined methods (such as mandatory audit programs) for expanding energy efficiency in energy-intensive industries, government buildings and facilities, and utility demand management

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<sup>2</sup> The current wide support for energy efficiency is conducive for raising donor funds.

<sup>3</sup> See, for example, comments from the PRC during an EEI consultative workshop, 22 November 2005.

<sup>4</sup> Zhaoguang, Hu. 2005. Opportunities for Energy Efficiency in China. Paper presented at ADB Energy Efficiency Consultative Workshop, ADB, Manila, 22 November.

programs. DMCs have strongly requested assistance to improve their energy efficiency policies and programs and make them operational.

8. ADB's EEI is part of its comprehensive program on Clean Energy and Environment Program (CE&EP) to assist its DMCs to achieve significant and measurable change in their energy use patterns and secure a low-carbon sustainable energy future. The CE&EP will comprise activities in several areas:<sup>5</sup> (i) the EEI, as outlined above; (ii) the carbon market initiative (CMI) to use the emerging carbon market to catalyze funds for the implementation of clean energy projects in the Asia and Pacific region; (iii) the energy efficiency in transport initiative (EET), which has sought to broaden ADB's engagement with DMCs on climate change implications of road transportation; (iv) the establishment of "knowledge hubs" for awareness raising and capacity building on clean energy;<sup>6</sup> (v) management of the Canadian, Danish, Dutch, and Finnish channel financing facilities for increasing access to energy, renewable energy, and energy efficiency under the Renewable Energy, Energy Efficiency, and Climate Change (REACH) Program; and (vi) organization of an annual clean energy week to bring together policy makers, practitioners, financiers, and other stakeholders in the Asia and Pacific region to share knowledge and best practices.

### **III. THE TECHNICAL ASSISTANCE**

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

9. The impact of the RETA will be to decrease the rate of climate change through increased use of sustainable energy. The outcomes will be (i) the design of the implementation framework for phase II of the EEI agreed upon by ADB and participating DMCs, (ii) the detailed design of the APFEE, and (iii) the initial development of a project development and monitoring and evaluation (M&E) system for renewable energy and energy efficiency projects in ADB. The design and monitoring framework is in Appendix 2.

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

10. ADB will carry out the work under the RETA through two distinct components. Component 1 will prepare energy efficiency strategies and investments by (i) prioritizing the DMCs with the greatest potential for energy efficiency investments; (ii) prioritizing sectors in selected DMCs; (iii) developing country-level work plans<sup>7</sup> for priority sectors in selected DMCs; (iv) developing work plans to establish a regional framework for the EEI phase II; and (v) reviewing ADB's energy and non-energy sector projects from the past 2 years with the objective of improving the monitoring of investments that ADB has made in energy efficiency but which were not tracked as energy efficiency projects. Component 2 will begin the detailed design of the APFEE through consultations with DMCs and donors and internal deliberations in ADB. The outline terms of reference are attached in Appendix 3.

<sup>5</sup> EEI, CMI and EET activities also contribute towards the investment framework on climate change under the Group of Eight (G8) Gleneagles' Action Plan on Climate Change, Clean Energy and Sustainable Development, which was agreed in July 2005.

<sup>6</sup> Such hubs are currently being established with The Energy Research Institute in New Delhi, India; Asian Institute of Technology in Bangkok, Thailand; and Tsinghua University in Beijing, PRC.

<sup>7</sup> The detailed country-level energy efficiency investment and action plans, which may consider specific technical, economic, financial, legal and policy support if needed to support EEI through phase III, and the proposed energy efficiency monitoring and evaluation system will be prepared under a supplemental RETA for the remainder EEI phase II activities in 2007.

11. Component 1 will provide the groundwork for the strategic allocation of the RETA resources for the remainder of the EEI phase II activities. The requisite preparatory work will involve the prioritization of countries that have the greatest potential for energy efficiency investments, the gathering of information<sup>8</sup> related to the policies, regulations, incentives and disincentives that are in place for promoting energy efficiency, and the drafting of a list of potential types of energy efficiency projects falling under the following major categories: (i) supply-side energy efficiency such as power generation, transmission and distribution as well as grid-connected and off-grid renewable energy; (ii) end-use energy efficiency in industry (including cleaner production technologies); buildings (commercial, institutional, and residential sectors); urban and municipal utility services (street lighting, district heating, gas distribution, water supply, waste and sewerage infrastructure); irrigation (e.g., efficient pumps, foot valves and piping); and through energy efficiency standards and labeling (for equipment, lighting and domestic appliances); and, (iii) energy efficiency in the transportation sector (such as biofuel use, urban mass transit, and newer vehicle technologies).

12. Component 2 will begin the detailed design of the APFEE. The APFEE is a proposed fund of \$500 million with three facilities:

- (i) a credit enhancement facility to finance smaller energy efficiency investments that require quick and efficient transactions;
- (ii) a technology transfer facility to finance the technology transfer costs of clean technologies for a small number of high-impact large interventions that will help establish energy efficiency technologies; and
- (iii) a technical assistance facility that provides grant assistance for non-lending measures, such as developing the knowledge base and incentive mechanisms, advocacy, institutional capacity building, and project preparation, and establishing the M&E mechanism.

13. The APFEE design work will include extensive consultations.

- (i) Discussions will be held with potential borrowers from industry, owners of commercial buildings, utilities, municipalities, and local financing institutions. These will focus on the potential demand for such a fund, and the most efficient means to design its structure and operations.
- (ii) Donors will be consulted to determine their requirements for supporting such a fund and their views on the choice of a governance and reporting structure.
- (iii) Within ADB, a working group has been formed to design the structure and operational requirements of the APFEE. The working group will hold detailed discussions with ADB's environmental and social safeguards division, the Treasury and Controller's Departments, as well as the Office of the General Counsel to ensure the optimal design for the fund's operational structure.

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<sup>8</sup> In general, information will be gathered on a country-level basis. There may be cases, however, where sub-national or provincial investigation of policy frameworks will be necessary.

### C. Cost and Financing

14. The total cost of the TA is estimated at \$600,000. It will be financed on a grant basis by ADB's TA funding program. The cost estimates and financing plan are in Appendix 4.

### D. Implementation Arrangements

15. ADB will be the executing agency for the RETA. The Energy, Transport and Water Division (RSID) of the Regional and Sustainable Development Department (RSDD) will oversee the overall administration of the RETA. All country-level and energy efficiency project-based activities under the RETA will be performed in close coordination with operations departments<sup>9</sup> as they have the technical knowledge and the relationships with the relevant government agencies and stakeholders in the DMCs. Operations departments will prioritize the countries and the activities to be carried out and identify the methodology to be used (i.e., whether to pursue a country-by-country strategy or work with several countries together). RSID will then provide support and assistance to operations departments to identify consultants for each task (if required), define the specific terms of reference for each consultant, and undertake the process for retaining the consultant and managing the contract. RSID will also develop standard templates for the types of data to be gathered and formats of the consultants' reports to ensure consistency. Where appropriate, operations departments will oversee the technical outputs of the consultants. RSID will compile the outputs of the various contracts into a cohesive set of country strategies and action plans. The local counterparts in the various DMCs will vary country by country, sector by sector, and also between the public and private sectors.

16. RSID will take the lead in the RETA activities related to the development of the APFEE and will work in close coordination with the operations departments, Controller's Department, Treasury Department, Office of the General Counsel, Office of Cofinancing Operations and other relevant departments and offices. RSID has prepared the first draft of the information memorandum that outlines the rationale, structure and proposed operations of the APFEE. It will be used for further consultations with donors and potential clients and internally in ADB to enable the design of the APFEE to be finalized after the RETA has been completed.

17. The RETA will begin in September 2006. It will be carried out over 6 months and will be completed by March 2007. The RETA will require an estimated 16 person-months of international consulting services and about 24 person-months of national consulting services. The engagement of consultants will be phased in accordance with the sequence of activities. The international consultants will be expected to spend 90% of their time in the field. Consulting work and output will be defined by RSID for each work component. It is expected that individual consultants will mainly be recruited for the RETA because of the need to source specialized technical and sectoral energy efficiency expertise as well as specific-country energy efficiency expertise, and the short implementation period. If a firm is required to carry out part of the terms of reference, it will be selected in accordance with the quality-and-cost-based selection (QCBS) method with biodata technical proposals. The recruitment of consultants will be carried out in accordance with ADB's *Guidelines on the Use of Consultants*.

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<sup>9</sup> In the context of this RETA, operations departments refer to the Private Sector Operations Department (PSOD) and the energy and infrastructure divisions, transport divisions, and urban development divisions of the regional departments that may have energy efficiency projects.

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

18. The President, acting under the authority delegated by the Board, has approved the provision of regional technical assistance, not exceeding the equivalent of \$600,000, on a grant basis for Supporting the Inception of the Energy Efficiency Initiative in Developing Member Countries, and hereby reports this action to the Board.

## FACTORS THAT AFFECT ENERGY USE IN THE ASIA AND PACIFIC REGION

1. Energy use patterns in the Asia and Pacific region are driven by the following factors.
  - (i) **Rapid Economic Growth and Larger Share of World Energy Use.** The total primary energy supply (TPES) for the Asia and Pacific region was 2,655 million tons of oil equivalent (Mtoe) in 2003, representing 25% of the world's total energy consumption. In 1973, figure was 804 Mtoe, only 13.3% of the world total. Between 1973 and 2003, Asian energy consumption rose 230%, compared with an average worldwide increase of 75% during the same period, reflecting the Asia and Pacific region's dramatic economic growth.<sup>1</sup>
  - (ii) **High Projected Growth in Energy Use.** The growth of the Asia and Pacific region's energy use has outpaced that in the rest of the world—a trend that is expected to continue. From 2003 to 2030, it is estimated that energy use in the Asia and Pacific region will increase by 89% to 5,016 Mtoe, and will account for an estimated 30% of world consumption.
  - (iii) **Manufacturing and Urban Migration.** The Asia and Pacific region's increasing energy use is driven in part by strong regional growth in manufacturing (frequently shifted from industrialized countries) and rural-to-urban migration. These long-established trends are expected to continue. Further, urban populations tend to adopt higher-energy lifestyles, reinforcing the energy use growth trends.
  - (iv) **Growing Share of Worldwide Greenhouse Gas (GHG) Emission.** The dominance of fossil fuels in the region has increased the Asia and Pacific region's share of worldwide GHG emissions from 8.7% in 1973 to 24.4% in 2003. The region's share is expected to continue to increase to 28% by 2010 and 30.4% by 2030.
  - (v) **Relatively Low Efficiency in Energy Use.** Most countries remain inefficient in their use of energy resources across most major industries. These inefficiencies are a major burden on the region's economies, particularly owing to high levels of fuel imports.<sup>2</sup>
  - (vi) **Relatively Low Per Capita Energy Consumption.** Energy use per capita per year in the Asia and Pacific region, excluding the People's Republic of China (PRC), is 0.61 Mtoe. Energy use per capita per year is 1.10 Mtoe in the PRC, 4.67 Mtoe for members of the Organization for Economic Cooperation and Development (OECD), and the world average is 1.69 Mtoe. Energy use per capita must increase to meet the legitimate aspirations of the people to improve their lives.
  - (vii) **Limited Access to Energy Services.** Across the Asia and Pacific region, approximately 1.7 billion people rely on traditional biomass fuels for cooking. Such fuels have negative health and environmental impacts. Further, over 1

<sup>1</sup> International Energy Agency (IEA). 2005. *Key World Energy Statistics*. IEA, Paris. The IEA definition of TPES includes estimates for non-commercial subsistence biomass energy use. Since a large part of the rural Asian population continues to use biomass energy, the IEA definition de-emphasizes the share attributable to fossil fuels compared with the definitions of other statistical methods, which calculate TPES solely as commercial energy. The IAE definition of the Asia and Pacific region does not include Japan or Republic of South Korea.

<sup>2</sup> Energy use in Asia per unit of gross domestic product (GDP) when corrected for purchasing power parity is similar to OECD countries, but this is not the case for delivered goods or services, i.e., energy used per unit of output measured in physical terms, e.g., tons of steel.

billion people in the Asia and Pacific region lack access to electricity,<sup>3</sup> which limits their prospects for development, education, and livelihood. Providing access to energy services is essential to reduce poverty.

- (viii) **Large Need for Energy Investment.** The International Energy Agency (IEA) has estimated the worldwide need for investments in energy capital infrastructure of approximately \$16 trillion through 2030. Given that the Asia and Pacific region accounts for nearly 30% of the world's TPES in that period, it can be assumed that the region may require energy capital infrastructure investments from \$4 trillion to \$5 trillion during the next 25 years.

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<sup>3</sup> IEA. 2004. *World Energy Outlook 2004*. IEA, Paris. IEA experts estimate that about 64% of the 1.6 billion people without access to electricity live in the Asia and Pacific region.

## DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b></p> <ul style="list-style-type: none"> <li>• Decreased rate of climate change through increased use of sustainable forms of energy</li> </ul>	<ul style="list-style-type: none"> <li>• Proliferation of clean energy projects</li> </ul>	<ul style="list-style-type: none"> <li>• UNFCCC reports</li> <li>• DMC energy data and national reports</li> </ul>	<p><b>Assumptions</b></p> <ul style="list-style-type: none"> <li>• Continued international collaboration to address climate change.</li> <li>• International resources for clean energy are available.</li> <li>• Political will of DMCs to adopt clean energy alternatives.</li> </ul>
<p><b>Outcome</b></p> <ul style="list-style-type: none"> <li>• Design of an implementation framework for phase II of EEI agreed upon by ADB and the participating DMCs</li> <li>• Establishment of the APFEE</li> <li>• Introduction of the initial design of a project design and M&amp;E system for energy efficiency projects for ADB review</li> </ul>	<ul style="list-style-type: none"> <li>• An implementation framework for EEI phase II</li> <li>• A fund for financing energy efficiency investments</li> <li>• A model project design and M&amp;E system for consideration by ADB</li> </ul>	<ul style="list-style-type: none"> <li>• EEI phase II reports</li> </ul>	<p><b>Assumptions</b></p> <ul style="list-style-type: none"> <li>• Energy security and climate change issues are a priority for DMCs.</li> <li>• DMCs see energy efficiency as a way to address energy security and climate change.</li> <li>• DMCs committed to addressing climate change.</li> <li>• Financial institutions in DMCs see RE and energy efficiency as a potential untapped business opportunity.</li> </ul> <p><b>Risks</b></p> <ul style="list-style-type: none"> <li>• Interest cannot be sustained and will be overwhelmed by the investment momentum of conventional energy systems.</li> <li>• Clean energy investments are marginalized solutions.</li> </ul>
<p><b>Outputs</b></p> <ul style="list-style-type: none"> <li>• Prioritization of countries that have the greatest potential for energy efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Gathering of information on policies, regulations, incentives and disincentives necessary for promoting energy efficiency</li> <li>• Prioritization of countries that have the</li> </ul>	<ul style="list-style-type: none"> <li>• RETA reports</li> </ul>	<p><b>Assumptions</b></p> <ul style="list-style-type: none"> <li>• DMC counterparts willing to see value of the RETA and willing to work with ADB on the RETA.</li> <li>• DMC governments will adopt strong supportive policies and targets for clean energy investments.</li> </ul>

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<ul style="list-style-type: none"> <li>• Prioritization of energy efficiency sectors in selected DMCs</li> <li>• Agreements with DMCs on the methodology and implementation arrangements for EEI phase II</li> <li>• Implementation framework for the implementation of EEI phase II</li> <li>• Detailed design for the APFEE</li> <li>• Initial design of a project model and M&amp;E system for energy efficiency projects</li> </ul>	<p>greatest potential for energy efficiency</p> <ul style="list-style-type: none"> <li>• Prioritization of sectors in selected countries that have the greatest potential for energy efficiency</li> <li>• List of potential types of energy efficiency projects</li> <li>• MOUs with prioritized DMCs on the implementation arrangements for PREGA phase II</li> <li>• Detailed work plan for implementation for PREGA phase II</li> <li>• Design of detailed operational structure for three facilities under the APFEE</li> <li>• Review of all energy efficiency components of ADB loans since 2004</li> <li>• Establish a baseline of ADB's energy efficiency operations</li> <li>• A system for identifying the energy efficiency potential in projects</li> <li>• A monitoring and evaluation system for energy efficiency projects</li> </ul>		

<p><b>Activities with Milestones</b></p> <p>1.1 RSDD and EEI TF to coordinate EEI phase II and provide administrative support to PSOD and RDs. (September 2006–February 2007)</p> <p>1.2 RSID to develop templates for country-level assessments as well as investment and actions plans. (September 2006–February 2007)</p> <p>1.3 RDs to convene working groups to oversee consultants for DMC/stakeholder consultations, review energy efficiency</p>	<p><b>Inputs</b></p> <ul style="list-style-type: none"> <li>• Part-time effort of five-member EEI TF</li> <li>• Quarterly review by the eight-member EEI steering committee</li> <li>• \$600,000 for 16 person-months of international consultants, 24 person-</li> </ul>
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Activities with Milestones	Inputs
<p>1.4 policies and incentives, conduct market research, and identify potential investments. (September 2006–February 2007) Detailed design of the APFEE (September 2006–February 2007)</p>	<p>months of domestic consultants, and consultation workshops in DMCs</p>
<p>1.5 Review all ADB loans since 2004 to identify energy efficiency components embedded in non-energy sector loans (September 2006–February 2007)</p>	
<p>1.6 Develop a system to identify projects with potential energy efficiency components (September 2006–February 2007)</p>	
<p>1.7 Develop a system for monitoring and evaluating energy efficiency projects, especially evaluating energy efficiency projects (September 2006–February 2007)</p>	
<p>1.8 Continued ADB involvement in the development of coordinated international financial institution clean energy investment framework (ongoing)</p>	

ADB = Asian Development Bank, APFEE = Asia Pacific Fund for Energy Efficiency, DMC = developing member country, EEI = Energy Efficiency Initiative, EEI TF = Energy Efficiency Initiative Task Force, M&E = monitoring and evaluation, MOU = Memorandum of Understanding, PREGA = Promoting Renewable Energy, Energy Efficiency and Greenhouse Gas Abatement, PSOD = Private Sector Operations Department, RD = regional department, RE = renewable energy, RETA = regional technical assistance, RSDD = Regional and Sustainable Development Department, RSID = Energy, Transport and Water Division, UNFCCC = United Nations Framework Convention on Climate Change

## OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. The Asian Development Bank (ADB) began phase II of the energy efficiency initiative (EEI) upon the conclusion of the clean energy week on 20–22 June 2006. Intended to intensify the EEI phase II activities through the period September 2006 to February 2007, the regional technical assistance (RETA) will require 16 person-months of international consultants' services and about 24 person-months of national consultants' services.

### A. International Consultants

#### 1. Energy Efficiency Experts (various international consultants, up to 5 person-months total)

2. The energy efficiency experts will provide technical support to all EEI phase II activities covered under the RETA. The consultants will provide technical expertise in the application of energy efficiency technologies and practices in the supply side of the power sector, the various end-use sectors, and the transport sector. Supporting the operations departments, the consultants will develop strategies for the national consultants' work in the developing member countries (DMCs), and then review and analyze the output of the country-level assessments. The international consultants will likewise participate in the template development, market research, technology reviews and framework design activities of the RETA. Up to 5 person-months of international consultants' time may be needed for the proposed scope of work.

3. The tasks of the energy efficiency experts will include, but will not be limited to:

- (i) assisting operations departments to prioritize those DMCs with significant potential for energy efficiency investments and reviewing the evaluation of energy efficiency investment conditions in countries included in the EEI phase I study;
- (ii) reviewing policy and regulatory frameworks in selected DMCs (energy efficiency and energy conservation laws, decrees, ordinances, regulations, standards, specifications, and utility demand-side management practices) and, where applicable, policy and regulatory frameworks at the sub-national or provincial level;
- (iii) reviewing energy efficiency stakeholder assessments (role of government agencies, regulators, certification bodies, generators, transmission and distribution [T&D] utilities, financial institutions [FIs], consultants, designers, specifiers, contractors, suppliers, energy service companies in the development and implementation of energy efficiency projects);
- (iv) developing data requirements for the national consultants;
- (v) performing a review of the feasibility studies and success stories of the energy efficiency projects gathered by the national consultants;
- (vi) conducting a review of existing energy efficiency and/or renewable energy technologies in the DMCs;
- (vii) analyzing all findings from the DMC market assessments;
- (viii) developing strategies for energy efficiency markets in selected DMCs based on data gathered by the national consultants; and
- (ix) preparing a report summarizing the respective outputs of each consultant under the RETA.

4. Each energy efficiency expert should have a minimum of 7 years of experience in energy sector projects, at least 5 years of which were dedicated to the field of energy efficiency. The international consultant should have previous working experience in the Asia and Pacific region, particularly within the DMCs of ADB. The consultant must also have demonstrated experience in energy efficiency issues, whether in the area of policy intervention or market transformation, and in the design and monitoring of energy efficiency projects.

**2. Energy Efficiency Finance Expert** (international consultant, 2 person-months)

5. The primary objective of the energy efficiency finance expert will be to assist the Energy, Transport and Water Division (RSID), the EEI task force (EEI TF) and the Asia Pacific Fund for Energy Efficiency (APFEE) working group to design the APFEE. The consultant is expected to participate in all EEI meetings and reviews of progress of work, including discussions of any specific issues related to the APFEE.

6. The tasks of the energy efficiency finance expert will include, but will not be limited to:

- (i) gathering information on various energy efficiency financing models at the project-lending and the local-FI levels with the objective of capturing model strengths, weaknesses and lessons learned;
- (ii) drafting other recommendations related to design, fund-raising and administration of the APFEE;
- (iii) participating in consultations with DMCs, which will include discussions with potential borrowers from industry, owners of commercial buildings, utilities, and municipalities and local FIs (discussions will focus on the potential demand for a fund, and the most efficient means way if designing its structure and operations);
- (iv) participating in consultations with donors to determine their requirements for supporting such a fund and their views on the choice of a governance and reporting structure;
- (v) participating in internal working group consultations to design the structure and operational requirements of the APFEE;
- (vi) drafting a preliminary design of the partial credit guarantee facility and concessional lending facility within the policy framework of ADB and potential donors;
- (vii) drafting other recommendations related to design, fund-raising and administration of the APFEE;
- (viii) providing advice on other energy efficiency finance-related activities of the EEI; and,
- (ix) preparing a report containing findings, recommendations and all other outputs of this consulting assignment.

7. The energy efficiency finance expert should have a minimum of 7 years of experience in energy sector projects, at least 5 years of which were dedicated to the field of energy efficiency. The international consultant should have previous working experience in the Asia and Pacific region, particularly within the DMCs of ADB. More importantly, the consultant must have demonstrated experience in energy efficiency issues and in the design of financial instruments with the objective of accelerating the implementation of energy efficiency projects in country or regional markets.

**3. EEI Coordinator/Energy Efficiency Expert** (international consultant, 6 person-months)

8. The EEI coordinator/energy efficiency expert will assist the EEI TF in the overall coordination of Phase II activities during the RETA. The consultant will be based in the EEI TF secretariat located at RSID of the Regional and Sustainable Development Department (RSDD). The consultant is expected to assist RSID in coordinating the implementation of EEI through its Phase II.

9. The tasks of the EEI coordinator/energy efficiency expert will include, but will not be limited to:

- (i) providing assistance to all RSID activities related to the selection, engagement and supervision of international and national consultants recruited under the RETA and overseeing and coordinating the technical support provided by international and national consultants, as required by RSID, the operations departments and the EEI TF;
- (ii) coordinating the development of the templates to be used by country-level consultants to guide them in their research, analysis and reporting with the support of international consultants;
- (iii) coordinating the review of ADB's its pipeline of electricity sector projects from the past 2 years with the objective of identifying opportunities for energy efficiency improvements on either the supply side or end-use side;
- (iv) consulting with operations departments on the prioritization of DMCs with high potential for energy efficiency investments;
- (v) supporting the review of policy and regulatory frameworks in selected DMCs (energy efficiency and energy conservation laws, decrees, ordinances, regulations, standards, specifications, utility demand-side management practices);
- (vi) reviewing the work of domestic consultants in the conduct of energy efficiency stakeholder assessments and the gathering of feasibility studies and success stories of EE projects in DMCs;
- (vii) assisting the regional departments in carrying out a country-level review of existing energy efficiency and renewable energy technologies in the region;
- (viii) assisting RSID and the EEI TF in all activities related to the implementation of EEI phase II; and,
- (ix) assisting RSID and the APFEE working group in all activities related to the preliminary design of the APFEE.

10. The EEI coordinator/energy efficiency expert should have a minimum of 7 years of experience in energy sector projects, at least 5 years of which were dedicated to the field of energy efficiency. The international consultant should have previous working experience in the Asia and Pacific region, particularly within the DMCs of ADB. More importantly, the consultant must have demonstrated experience in energy efficiency issues and in the management of energy efficiency projects and consulting resources.

#### **4. Energy Efficiency Engineer/Monitoring and Evaluation Specialist** (international consultant, 3 person-months)

11. The energy efficiency engineer/monitoring and evaluation (M&E) specialist will provide technical support to RSID and operations departments in all EEI phase II activities covered under the RETA. The international consultant will provide technical expertise in the application of energy efficiency technologies and practices in the supply side of the power sector, the

various end-use sectors, and the transport sector. He or she will participate in the development of an M&E system for ADB to use in tracking the impacts of the EEI activities. The consultant is expected to participate in all EEI meetings and reviews of progress of work, including discussions of all specific issues related to the project.

12. The tasks of the energy efficiency engineer/M&E specialist will include, but will not be limited to:

- (i) supporting RSID in the development of an M&E system intended to track and measure the direct and indirect impacts of the EEI at both country and regional levels, specific activities to include (a) reviewing ADB's pipeline of energy and non-energy sector projects from the past 2 years with the objective of improving monitoring of investments that ADB has made in energy efficiency but which were not tracked as energy efficiency projects; (b) developing a system for ranking the energy efficiency potential of projects in the ADB pipeline; and (c) work with mission leaders who are not energy specialists (e.g., urban and agricultural sector specialists) to develop the potential energy efficiency components of their projects;
- (ii) assisting operations departments to prioritize DMCs with high potential for energy efficiency investments and review the evaluation of energy efficiency investment conditions in countries included in the EEI phase I study;
- (iii) working with other international consultants to review policy and regulatory frameworks in selected DMCs;
- (iv) performing energy efficiency stakeholder assessments (role of government agencies, regulators, certification bodies, generators, T&D utilities, FIs, consultants, designers, specifiers, contractors, suppliers, energy service companies in the development and implementation of energy efficiency projects);
- (v) performing a review of the feasibility studies and success stories of energy efficiency projects gathered by the national consultants;
- (vi) conducting a review of existing energy efficiency and/or renewable energy technologies in the region; and,
- (vii) preparing a report summarizing the outputs of each task.

13. The energy efficiency engineer/M&E specialist should have a minimum of 7 years of experience in energy sector projects, at least 5 years of which were dedicated to the field of energy efficiency. The international consultant should have previous working experience in the Asia and Pacific region, particularly within the DMCs of ADB. More importantly, the consultant must have demonstrated experience in energy efficiency issues and in the design and monitoring of energy efficiency projects.

## **B. National Consultants**

### **1. Energy Efficiency Project Specialists, DMC-based** (various national consultants, up to 24 person-months total)

14. The energy efficiency project specialists will provide technical support to operations departments and RSID for all country-level EEI phase II activities covered under the RETA. The consultants shall provide technical expertise in the identification of potential energy efficiency investments in domestic markets. The consultants shall lead all market research and technology review activities in their respective countries of assignment. Up to 24 person-months of national consultants' services may be needed for the proposed scope of work. All national consultants

will be situated in the selected DMCs and will be expected to participate in all local EEI coordination meetings and reviews of progress of work, including discussions of all specific issues related to the project. Intermittent engagements will be spread over the 6-month RETA period.

15. The tasks of the energy efficiency project specialists will include:

- (i) reviewing the evaluation of energy efficiency investment conditions in domestic markets;
- (ii) reviewing policy and regulatory frameworks in selected DMCs (energy efficiency and energy conservation laws, decrees, ordinances, regulations, standards, specifications, utility demand-side management practices) and, where applicable, policy and regulatory frameworks at the sub-national or provincial level;
- (iii) performing energy efficiency stakeholder assessments (role of government agencies, regulators, certification bodies, generators, T&D utilities, FIs, consultants, designers, specifiers, contractors, suppliers, energy service companies in the development and implementation of energy efficiency projects);
- (iv) gathering feasibility studies of energy efficiency projects in DMCs (supported previously by international financial institutions or bilateral grants), which are still in need of energy efficiency financing;
- (v) gathering case studies of energy efficiency success stories in the region;
- (vi) conducting a review of existing energy efficiency/renewable energy technologies in the domestic market;
- (vii) attending local EEI-related meetings and teleconferences; and
- (viii) preparing a country report summarizing the respective outputs of each consultant under the RETA.

16. Each energy efficiency project specialist should have a minimum of 5 years of experience in energy sector projects, at least 3 years of which were dedicated to the field of energy efficiency. Each specialist must have demonstrated experience in energy efficiency issues in his or her home DMC and in the design and monitoring of energy efficiency projects.

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

<b>Item</b>	<b>Total Cost</b>
Asian Development Bank (ADB) Financing <sup>a</sup>	
1. International and National Consultants	
a. Remuneration	
i. International Consultants (16 person-months)	320.0
ii National Consultants (24 person-months)	96.0
b. Per Diem	
i. International Consultants (189 person-months)	33.0
ii National Consultants (3.5 person-months)	6.0
c. International and Local Travel	
i. International Consultants (8 trips)	42.0
ii National Consultants (6 trips)	3.0
d. Reports and Communications	7.0
2. Surveys and Stakeholders/Public Consultations <sup>b</sup>	45.0
3. Contingencies	48.0
<b>Total</b>	<b>600.0</b>

<sup>a</sup> Financed by ADB's technical assistance funding program.

<sup>b</sup> Includes preparation of tools and materials for local consultation on the project impacts and mitigation and staff participation in stakeholder consultations, workshops, preparation of information dissemination materials, etc.

Source: ADB estimates.