ADB

Completion Report

Project Number: 46241-001
Technical Assistance Number: 8483
August 2017

Asia Energy Efficiency Accelerator

Asian Development Bank

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<table>
<tr><td colspan="3">TA Number, Country, and Name:

TA 8483-REG: Asia Energy Efficiency Accelerator</td><td colspan="2">Amount Approved: US$2,500,000.00

Revised Amount: US$3,000,000.00</td></tr>
<tr><td>Executing Agency:
Asian Development Bank</td><td colspan="2">Source of Funding:
Multi-Donor Clean Energy Fund under the Clean Energy Financing Partnership Facility; Republic of Korea e-Asia and Knowledge Partnership Fund; Korea Energy Agency; Government of the United Kingdom; and U.S. Agency for International Development</td><td>Amount Undisbursed:
US$258,673.00</td><td>Amount Utilized:
US$2,741,327.00</td></tr>
<tr><td>TA Approval Date:
10 October 2013</td><td>TA Signing Date:
10 October 2013</td><td>Fielding of First Consultant:
15 July 2015</td><td colspan="2">TA Completion Date
Original: 30 Sep 2016 Actual: 30 Nov 2016
Account Closing Date
Original: 30 Sep 2016 Actual: 28 Feb 2017</td></tr>
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Description

Energy use in Asian Development Bank's (ADB's) developing member countries (DMCs) had soared to support the economic growth needed to raise the living standards of their populations, and their energy supply continued to be dominated by fossil fuel use. Therefore, a rapid switch to clean and efficient energy use was considered essential to improve energy security, reduce global greenhouse gas (GHG) emissions, and ease the growth in fossil energy demand and upward pressure on energy prices.

Demand-side energy efficiency (DSEE) measures–such as efficient lighting, heating ventilation and air conditioning for buildings, and efficient boilers, motors, and compressors in industrial sector–are among the least cost option to meet growing demand for energy, while addressing climate change concerns. However, investments in DSEE remained significantly below its identified economic benefits mainly due to lack of institutional capacity and awareness coupled with inadequate policy and regulatory framework in most DMCs in the region. The TA aimed to address these shortcomings, and support ADB's goal of scaling up and improving the effectiveness of DSEE investments.

Expected Impact, Outcome, and Outputs Impact:

The expected impact of the TA was reduced GHG emissions and improved economic productivity from increased adoption of and investment in DSEE in DMCs. The expected outcome of the TA was that target DMCs facilitate increased DSEE investment and deployment, and are able to integrate energy efficiency targets, policies, and strategies into their national development plans. The TA supported the following outputs: (i) create enabling DMC environments for increased investment in DSEE through improved policy, strategy, regulatory, and institutional frameworks; (ii) initiate projects that can be replicated to scale-up ADB investment in energy efficiency; and (iii) strengthen regional DSEE knowledge networks and benchmarking information.

The TA design and formulation was **highly relevant** and consistent with ADB's long standing commitment of increasing investment in energy efficiency and the use of clean and renewable energy in its DMCs through Strategy 2020 and its 2009 Energy Policy. The TA enhanced awareness of decision makers on DSEE, provided data-based recommendations to improve the policy, institutional and regulatory framework, and paved the road for increased investment in demand-side energy efficiency in target DMCs. This is consistent with the ADB's new initiative of finance++, and ADB's Independent Evaluation Department's recommendations to promote energy efficiency through demand-side measures as well as supply-side.

Delivery of Inputs and Conduct of Activities

The TA for $2.5 million was approved on 10 October 2013. In close consultation with ADB operations departments and DMC governments, five DMCs were initially selected based on a broad assessment of the overall enabling environment for DSEE in the respective countries. These five countries were Indonesia, Kazakhstan, Mongolia, Philippines, and Sri Lanka. Of these, all countries except Kazakhstan provided no-objection letters to implementation of the TA.

During implementation, the TA attracted additional funding from bilateral sources for a total of $500,000, comprising £125,000 ($200,000 equivalent) from the Government of the United Kingdom, $200,000 from the Korea Energy Agency (KEA, formerly Korea Energy Management Corporation), and $100,000 from the U.S. Agency for International Development (USAID). As per the agreement with the funding agencies, contributions from KEA and USAID were used to support the 2015 and 2016 Asia Clean Energy Forum (ACEF)[1], while the Government of United Kingdom's contribution was used to finance specific additional energy efficiency programs in Indonesia. In addition, a letter of agreement was signed between ADB and KEA in May 2014, where KEA agreed to provide in-kind grant support, which resulted in KEA's DSEE activities including completion of investment grade energy audit (IGA) of two selected large buildings in Colombo, Sri Lanka, and hosting three knowledge sharing and capacity workshops on DSEE in Seoul, Republic of Korea. The continued support from ADB partners and bilateral institutions increased the TA resources from $2.5 million to $3.0 million. Out of the total TA amount of $3,000,000, $258,673 was unutilized though all expected activities had been undertaken. The savings are largely due to tight budget control and effective management of consultants' input time by ADB. Costs to

[1] Asia Clean Energy Forum (ACEF) is a premier annual knowledge sharing event in Asia and the Pacific initiated by ADB in 2006.

undertake the TA activities were reasonable considering the breadth and depth of research, policy advice, and capacity building conducted. The TA achieved its objectives with 8.5% savings and with only two-month extension of the implementation period. Overall, the TA delivery is assessed as **efficient.**

Two international consulting firms and 10 individual consultants were engaged following ADB Guidelines on the Use of Consultants. The terms of reference (TOR) of the consultants were adequate to deliver the expected outputs. The engaged consultants performed their tasks in accordance with the TORs and delivered the TA outputs[2], in close coordination with and supervision by ADB, the executing agency of the TA. The TA work was done through adequate coordination and consultation between ADB's operations departments and Sustainable Development and Climate Change Department.

The performance of ADB as the executing agency is considered **satisfactory** in view of sound management of consultant engagement and delivering outputs, mobilizing additional financial resources, strengthening knowledge partnership, and successfully organizing knowledge sharing and capacity development activities. Three consultants engaged under the TA (1 International and 2 National) received **excellen**t rating while the rest, including international consulting firms, were rated **satisfactory**.

Several changes in TA scope and implementation arrangements were undertaken to: (i) include three consultant positions under the TA, i.e. Senior Program Manager, Forum Lead Coordinator, and Senior Logistics Assistant to support the organization of the Asia Clean Energy Forum; (ii) delegate to Indonesia Resident Mission (IRM) the responsibility for administering the Energy Efficient Street Lighting Pilot Projects component [IRM administered the pilot projects in conjunction with Grant 0198 to retrofit existing street lights in two select cities identified under the Java Bali Electricity Distribution Performance Improvement Project (Loan 2619-INO)]; (iii) accommodate the engagement of a Senior Regulatory Specialist (National Consultant) to provide expert input regarding Indonesian law and government procedures to the Government of Indonesia to help develop one integrated Minimum Energy Performance Standards (MEPS) regulation; and (iv) expand the scope of the TA to include Bangladesh and the Maldives based on a request from the South Asia Energy Division of ADB. The TA completion date was extended once by two months from 30 September 2016 to 30 November 2016 to allow completion of the work, which was affected by issues such as frequent changes of government counterpart staff in Indonesia, a heavy flood in Sri Lanka, late establishment of the energy efficiency agency and change of government in Mongolia, and security concerns in Bangladesh, which were beyond the control of ADB and the consultants. The TA would have otherwise been completed on time.

To deliver the expected outcome and outputs, the TA activities took place in Indonesia, Mongolia, and Sri Lanka, while the TA supported knowledge sharing and capacity development in DSEE in all target DMCs including Bangladesh, Kazakhstan, Maldives, and Philippines. **In Indonesia**, the TA executed several activities including (i) energy service company (ESCO) market development, (ii) energy efficiency database development, (iii) energy efficiency standards in building code, (iv) energy efficient street lighting scale-up, and (v) standards and labeling development support. Project deliverables on ESCO regulation, street lighting and MEPS directly supported the ADB Sustainable and Inclusive Energy Program (SIEP) policy-based loan to Indonesia[3]. The TA also conducted additional ESCO and MEPS activities that provided necessary inputs to related project deliverables. In addition, a pilot project to retrofit streetlights in Batang Regency and Semarang City supported by the Government of United Kingdom resulted in installation of 516 light-emitting diode (LED) streetlights. **In Mongolia,** the TA undertook an assessment of DSEE potential in the country to identify appropriate business models and suitable technologies, and developing an investment portfolio. The implementation of the TA coincided with policy initiatives aiming to transform previously heavily subsidized energy tariff schemes to be more market oriented. The DSEE market assessment resulted in a recommendation for a sovereign loan in Mongolia, which ultimately aims to benefit the private and government owned firms identified in the assessment for consideration of ADB and other development partners. **In Sri Lanka,** the TA conducted a load research (LR) study in one province, with a primary focus on low-voltage retail (residential/household) customers for the power utility to make informed decisions on tariff adjustments and demand-side management measures, which built the capacity of the power utility to undertake expanded LR work in future. The TA also supported carbon footprint certification for staff, and cost-benefit analysis of renewable energy projects and rainwater harvesting for the Banadaranaike National Memorial Foundation (BNMF) Complex in Colombo in accordance with a request of the Government of Sri Lanka. The TA further undertook IGA of two selected large energy consuming buildings and capacity development in DSEE with in-kind grant support from KEA.

Evaluation of Outputs and Achievement of Outcome

The TA has been **highly effective** towards the achievement of target outcome and outputs indicated in the design and monitoring framework.

Outputs	Targets and Indicators
Create enabling DMC environments for increased investment in DSEE through	The TA created an enabling environment for increased investment in DSEE through improved policy, institutional and regulatory framework in Indonesia; assessment of energy efficiency potential, development of business models, and recommendation for

[2] Details of number, person-months, specialization, and performance of the consultants may be found in the respective performance evaluation reports.

[3] ADB. 2015. *Programmatic Approach and Policy Based Loans for the Republic of Indonesia: Sustainable and Inclusive Energy Program.* Manila.

support for improved policy, strategy, regulatory, and institutional frameworks	a sovereign DSEE loan in Mongolia; and conducted an LR study in Sri Lanka. Discussions are ongoing or planned to include DSEE investments in the country operations and business plan in Bangladesh, Indonesia, and Sri Lanka.
Initiate projects that can be replicated to scale-up ADB investment in energy efficiency	During implementation, it was decided to do energy audit for large energy saving facilities that have more energy saving potential instead of doing energy audit for small facilities. Bangladesh, Indonesia, and Nepal already have a substantive number of facilities audited by other development partners, hence, support focused on energy audit of large facilities and towards more policy support and pilot projects in Sri Lanka and Bangladesh.
Strengthen regional DSEE knowledge networks and benchmarking information.	The TA fully delivered this output by building knowledge networks and financing partnerships with KEA, the Government of United Kingdom, and USAID; supporting two regional knowledge events of 2015 and 2016 ACEF in attendance of about 2,000 participants in total; and organizing three joint workshops with KEA in Seoul, Republic of Korea engaging a total of 58 participants from the seven target DMCs. These were: (i) Capacity Building Workshop on Load Profile Analysis and Energy Efficiency Improvement on 19–21 October 2015, (ii) Knowledge Sharing Workshop on Energy Efficiency Labeling and ESCO on 28–31 March 2016, and (iii) Knowledge Sharing Workshop on Demand Side Energy Efficiency on 4–7 October 2016. Apart from the above, a knowledge product on street lighting was published (https://www.adb.org/publications/led-lighting-best-practices-indonesia).

All target DMCs virtually had no investment in DSEE before the TA started. The TA initiated scaling-up DSEE investments in selected DMCs such as announcement of the Government of Indonesia in 2016 for a national program for energy efficient streetlights in 73 cities with a budget of $11.3 million based on the pilot project on retrofitting of street lights supported under the TA. To date, Sri Lanka already started procurement for retrofit of the audited super large building (Bank of Ceylon building) for more than $1 million based on the energy audit recommendation, and KEA grant financing for another large building in Sri Lanka in accordance with the IGA recommendations; and improved local capacity to implement DSEE projects in all seven DMCs. Further, Bangladesh issued the EE policy and road map, Sri Lanka announced its policy for EE and established a presidential committee to promote EE. Similarly, the TA helped the Government of Indonesia in preparing EE policies, strategies and plans.

Overall Assessment and Rating

The TA is rated **highly successful** as the envisaged outcome was achieved, and all key target outputs were accomplished as planned with satisfactory performance of the consultants' work. The TA was appropriately designed to achieve the main objectives of gaining better understanding of DSEE technologies and business models. The TA strengthened knowledge and financing partnerships to enhance ADB's relevance and effectiveness to DMCs by bringing in a strong partnership with DFID, KEA, and USAID as Strategy 2020 Mid-Term Review (MTR) determined, which was not envisaged at the time of TA approval. The TA also focused on technology solutions for innovations in ADB DMCs not only introducing cutting-edge technologies but also 'good-fit' and adequate technologies to meet the current demand and capacity in each of the selected DMCs. Building on the achievements of the TA, SARD processed a regional TA in December 2016 to develop energy efficiency project pipelines in five DMCs in the region.

In terms of sustainability, the TA is rated **likely sustainable**. The TA activities including policy development, capacity building and pilot projects were specifically targeted for DMC governments and private sector actors such as ESCOs to collectively progress on DSEE initiatives. Some of the outputs have already led to investments by ADB and other development partners.

Major Lessons

Significant DSEE opportunities exist especially in Bangladesh, Indonesia, Mongolia, and Sri Lanka requiring investments to support project development and implementation, data-based policy development/updating, establishment of accessible financing resources for ESCOs and commercial/industrial facility owners for DSEE activities, and capacity building for stakeholders in both the public and private sectors. ADB should continue to strengthen knowledge partnership with leading institutions in DSEE for valuable technical support and knowledge sharing opportunities for DMCs as well as ADB staff.

Recommendations and Follow-Up Actions

DSEE remains untapped among the different climate mitigation investment options, despite standing out as the least-cost way to acquire new energy system and satisfy growing demand. It is recommended that ADB continue to work with DMCs to scale up and improve effectiveness of its DSEE investments and increase the share of DSEE in ADB's energy portfolio, while continuing to strengthen knowledge partnership with leading DSEE institutions and other development partners to further mainstream DSEE development in DMCs.

TA = technical assistance.

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