

Greenhouse Gas Implications of ADB's Energy Sector Operations

This evaluation knowledge brief (EKB) examines, from the perspective of greenhouse gas (GHG) emissions, ADB's energy sector assistance over 2001–2008 in selected developing member countries (DMCs) – Bangladesh, People's Republic of China, India, Pakistan, Philippines and Viet Nam. These countries account for 80% of ADB's total lending approvals in the energy sector during the same period. Based thereon, this EKB proceeds to make suggestions on improving the GHG efficiency of ADB's future interventions in the energy sector.

Although most development activities aimed at economic growth result in increased GHG emissions, energy sector development is conspicuous by its direct contribution to GHG emissions and the relative ease of measuring the GHG impacts of energy sector interventions. Hence, the DMCs need to adopt a low-carbon growth path for their energy sectors to reduce the GHG emissions associated with increased energy consumption as well as to improve the efficiency of energy usage.

As the leading development financing institution for developing Asia, ADB has a vital role to play in promoting the deployment of new and efficient low-carbon technologies as they become commercially available and thereby lower the carbon content of energy supplies. This will require (among others) the following: (i) policy interventions for an accelerated shift away from fossil fuels, (ii) financial mechanisms to defer the higher capital costs of new technologies until they become available on a commercial scale, and (iii) capacity building and knowledge dissemination on low-carbon technologies and end-user energy efficiency improvements.

ADB's Institutional Response & Results Achieved

A strategic shift in ADB's operations to increase its assistance to key infrastructure sectors (including energy infrastructure) began in 2006. At the same time, ADB formally recognized the need for a focused approach to promote clean energy and energy-efficient investments through the launch of energy efficiency initiative with the objective of increasing its assistance to clean energy projects to \$1 billion by 2008.

The energy efficiency initiative has enhanced management focus as well as increased the institutional capacity and awareness of ADB's operational staff working in the energy sector on the need for a low-carbon approach to energy assistance. The country strategy and programs and country partnership strategies prepared since 2006 for large DMCs with significant GHG emissions explicitly mention the shifting of DMC energy sectors to low-carbon development paths as a primary objective, together with ensuring energy security and energy access.

The annual average GHG emission savings due to power supply projects improved from 1.08 million ton of CO₂ equivalent (tCO₂e) for projects approved during 2001–2005 to 7.3 million tCO₂e for projects approved during 2006–2008. The annual average GHG savings attributable to ADB (i.e., in proportion to its investment in the total project cost) in the power supply projects increased from 0.58 million tCO₂e for the projects approved during 2001–2005 to 1.65 million tCO₂e for the projects approved during 2006–2008. The improvement in GHG savings in the power supply projects is due to increased ADB-financing of power



QUICK LINKS

Evaluation Knowledge Brief on Green House Gas Implications of ADB's Energy Sector Operations

www.adb.org/Documents/Evaluation/Knowledge-Briefs/REG/EKB-REG-2009-38.asp

ADB Energy Efficiency Initiative

www.adb.org/Clean-Energy/eei.asp

ADB Management Response

www.adb.org/Documents/Evaluation/Management-Response/EKB/REG/MR-EKB-REG-2009-38.pdf

Chair's Summary of the Development Effectiveness Committee (DEC)

www.adb.org/bod/dec/dec-chair-sum-17nov2009-38.pdf

generation projects deploying zero or low emission technologies (renewable energy including hydropower) and to more efficient thermal power technologies such as supercritical coal power plants and combined-cycle gas turbines.

The annual average GHG savings of fuel and thermal energy supply projects approved during 2001–2005 (i.e., 1.53 million tCO₂e) compared with the projects approved during 2006–2008 (i.e., 1.31 million tCO₂e) dropped marginally. Consequently, there is a corresponding reduction in the average annual GHG savings attributable to ADB for projects approved during 2001–2005 from 0.44 million tCO₂e to 0.38 million tCO₂e for projects approved during 2006–2008. This was due mainly to the absence of methane destruction projects, which have high GHG savings in the latter period.

Findings

- GHG-efficient investments have been part of ADB's energy sector portfolio for many years without explicit recognition.
- Most supply-side energy investments will necessarily add to GHG emissions in absolute terms.
- More emphasis is required in encouraging policy reforms to promote GHG efficiency of energy sector operations.
- Renewable energy is still a high-cost option for many DMCs.
- There is scope for expanding ADB investments in industrial energy efficiency projects.
- Coal remains as the fuel of choice for many DMCs for power generation.
- There is large potential for coal bed and landfill methane capture projects.
- ADB's private sector operations department has the potential to play a significant role in promoting GHG efficient investments.
- Appropriate indicators are needed in ADB's Results Framework to effectively monitor the GHG implications of ADB's energy sector investments.



Feedback

ADB Management Response appreciates the study and agrees with the overall assessment, conclusion, and recommendations made. Management also acknowledged the usefulness of EKB in dialogues with governments. Management raised concern on accounting for GHG emissions without recognizing the development impacts of the projects. The Chair's Summary of the Development Effectiveness Committee (DEC) noted that GHG-efficient investments have been a part of ADB's energy sector portfolio for many years without explicit recognition. ADB has been increasingly focused on GHG-efficient investments since 2006, and DEC looked forward to further refinements to evaluation methodology and presentation that would include benefits and costs of enhanced environmentally efficient energy investments.

Recommendations

- *Assess GHG implications of future energy sector investments with significant GHG impacts or savings based on a consistent framework at project appraisal and project completion.*
- *Establish a mechanism to buy down incremental cost of clean coal technologies in grid systems that are sufficiently large.*
- *Scale up appropriate and affordable renewable energy technologies by (a) supporting regional research and development of renewable technologies appropriate for the region, (b) pilot testing new technologies in the selected countries, (c) scaling up the deployment of new technologies through technology transfer, and (d) supporting regional manufacturing of packaged renewable energy products and subassemblies*
- *Aggressively pursue methane destruction and capture projects wherever feasible.*
- *Scale up investments in industrial energy efficiency improvement.*

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