

## **Guidelines for Estimating Asian Development Bank (ADB) Investments in Access to Energy Projects**

The Asian Development Bank (ADB) recognizes that energy poverty remains endemic in Asia and the Pacific despite the great developmental strides achieved in the last two decades. One quarter of the region's population (822 million) still has no access to electricity, and more than half – 1.8 billion – relies on wood, dung and agricultural residues for cooking and heating<sup>1</sup>. Strategy 2020 sets the ADB's commitment to increasing access to clean and affordable energy for people throughout the region. This is reinforced in the 2009 Energy Policy which identifies maximizing access to energy for all, as one of the three pillars for ADB's overall support to the energy sector.

In pursuit of universal access to energy and the realization of ADB's vision of a region free of poverty, the ADB is developing new approaches for scaling up access to modern energy among the region's poor. In 2009, ADB launched the Energy for All Partnership which brings together financial institutions, governments, civil society and the private sector with the aim of providing access to modern energy to 100 million people in the Asia-Pacific region by 2015. ADB's access to energy investments will cover a significant portion of this target. To effectively monitor and evaluate ADB's progress, a set of guidelines is established to determine ADB's access to energy investments and the number of people provided energy access. These guidelines shall evolve and be refined as projects are implemented.

The following three (3) parameters, corresponding to Energy Policy 2009 and Managing for Development Results (MfDR) level 2 indicators as listed in Table 1 below, will be monitored,

1. Amount of access to energy investments and total cost of projects supported
2. Number of loans and grants
3. Number of households

### **I. Definition: What is access to energy?**

Access to energy addresses the energy, environment and poverty nexus of concerns by linking households to modern energy sources, technologies and finance. Specifically, access to energy involves any or a combination of the following:

1. Provision of electricity and motive power<sup>2</sup> to households<sup>3</sup>
2. Improvement in the supply and delivery of energy services<sup>4</sup> to households

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<sup>1</sup> In 2008, over one-fifth of the world's population (1.5 billion people, 85% of whom live in rural areas in Sub-Saharan Africa and South Asia, and 160 million are from ASEAN countries) still has no access to electricity (World Energy Outlook 2009, IEA)

<sup>2</sup> Motive power is defined here as 'the effective outcome of transforming different forms of energy sources (e.g. wind, hydro, fossil fuels, etc) to kinetic energy (to cause motion)

<sup>3</sup> Access to energy impact/investment will be assessed at the household level, and tracking the specific number of household connections is essential to avoid double-counting. (Please see Notes 1 and 2 below on cumulative investments). For new projects, the number of new household connections resulting from the project as well as the number of households with increased hours of service due to reduction of outages and supply interruptions must be included as an outcome indicator in the DMF. These access to energy outcome indicators (at the household/residential level) must be determined at the concept paper stage and then clearly specified in the RRP.

3. Provision of modern fuels and/or efficient devices for cooking and/or heating to households
4. Provision of finance to households to access energy

*Notes:*

1. ADB investments in the supply chain are taken cumulatively (e.g. investments in the manufacturing of efficient cook stoves are added to investments at the household user level)
2. ADB investments for each energy service provided to the same household are taken cumulatively (e.g. investments in electricity grid extension are added to investments in gas pipeline extension)
3. The task of monitoring indicators requires in depth examination of project documents particularly the project cost and cost allocation tables, investments estimates and the DMF in the concept paper and the RRP
4. The following data need to be determined at the concept stage and clearly specified in the concept paper and RRP:
  - a. Access to energy cost components in the Project cost tables identified according to access to energy project types (See Section II of these Guidelines) ;
  - b. Cost allocation by financing institution; and,
  - c. The indicators listed in Table 1 of these guidelines (clearly specified in the DMF and on a per project basis)

**II. What types of projects, or components of projects, can be considered energy access projects?**

1. Rural Electrification Projects/Household grid extension/ Investment Program for rural areas<sup>5</sup>
2. Off-grid and mini-grid power capacity addition or distribution
3. Power Sector Investments and Development Program involving Generation and/or Transmission with Distribution component<sup>6</sup>
4. Cleaner fuels and efficient technologies for cooking and heating applications
5. District heating distribution expansion and upgrade
6. Gas Distribution Pipeline extension
7. Multi-sector or non-energy sector projects with household energy service provision/enhancement component
8. Provision of finance to households to access energy

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<sup>4</sup> For the purposes of these guidelines, improvement in the delivery of energy services refers to the increase in the number of hours (reliability and security of supply) the energy service is provided and does not include natural increases in consumption due to GDP or household income growth. Outcome indicators in the DMF must specify number of hours of service per service with and without the project and/or percent reduction in supply outages/interruptions and number of households served. Energy services include electricity, modern fuels such as LPG and efficient devices for cooking and heating applications, lighting, motive power, district heating, space cooling and food preservation.

<sup>5</sup> It is assumed that rural electrification, off-grid and mini-grid projects reach only households unless otherwise specified

<sup>6</sup> Power plant and transmission projects without a distribution component will not be considered access to energy. Those with distribution component will only be considered energy access when the number of new households gaining grid connection as a result of the project is specified in the RRP.

### **III. Determining energy access investment component:**

For projects with energy access components clearly defined, calculated and presented in the project documents such as in the RRP, the project estimates for such components are taken as the energy access investments.

#### **A. Provision of electricity and energy services to households**

1. For dedicated energy access projects providing lighting and/or other household electricity, and/or mechanical power, the entire ADB loan/assistance is the energy access investment
2. For rural electrification projects, the entire ADB loan/assistance is the energy access investment
3. For off-grid household electrification projects, the entire ADB loan/assistance is the energy access investment
4. For mini-grid electrification projects, the entire ADB loan/assistance is the energy access investment
5. For power projects with a distribution component, where the number of new household connections resulting from the project is specified, the entire distribution component investment is the energy access investment
6. For new Distribution only and Transmission and Distribution projects including district heating, the ADB investment in the distribution or distribution component thereof is the energy access investment

#### **B. Cleaner Fuels and/or efficient devices for cooking and heating**

1. For dedicated energy access projects involving switching to cleaner<sup>7</sup> fuels and/or more efficient cook stoves and heating applications, the entire ADB loan/assistance, excluding any forest management component or other agricultural products enhancement component, is the energy access investment.
2. For a distribution pipeline or extension project to supply natural gas or coal mine methane or district heating to households, the entire ADB loan/assistance is the energy access investment.

#### **C. Multi-sector or non-energy sector projects**

1. For projects with clearly defined energy access components, the project estimates for such components are taken as the energy access investments. In such cases, because the costs of the energy access components have been calculated and presented in the project documents, there is no need for energy access percentage calculations.
2. Projects where energy access components are not clearly defined will not be considered so as to maintain conservative estimates. Future projects must indicate energy access components and costs where applicable to be counted as access to energy investments.

#### **D. Financing Projects**

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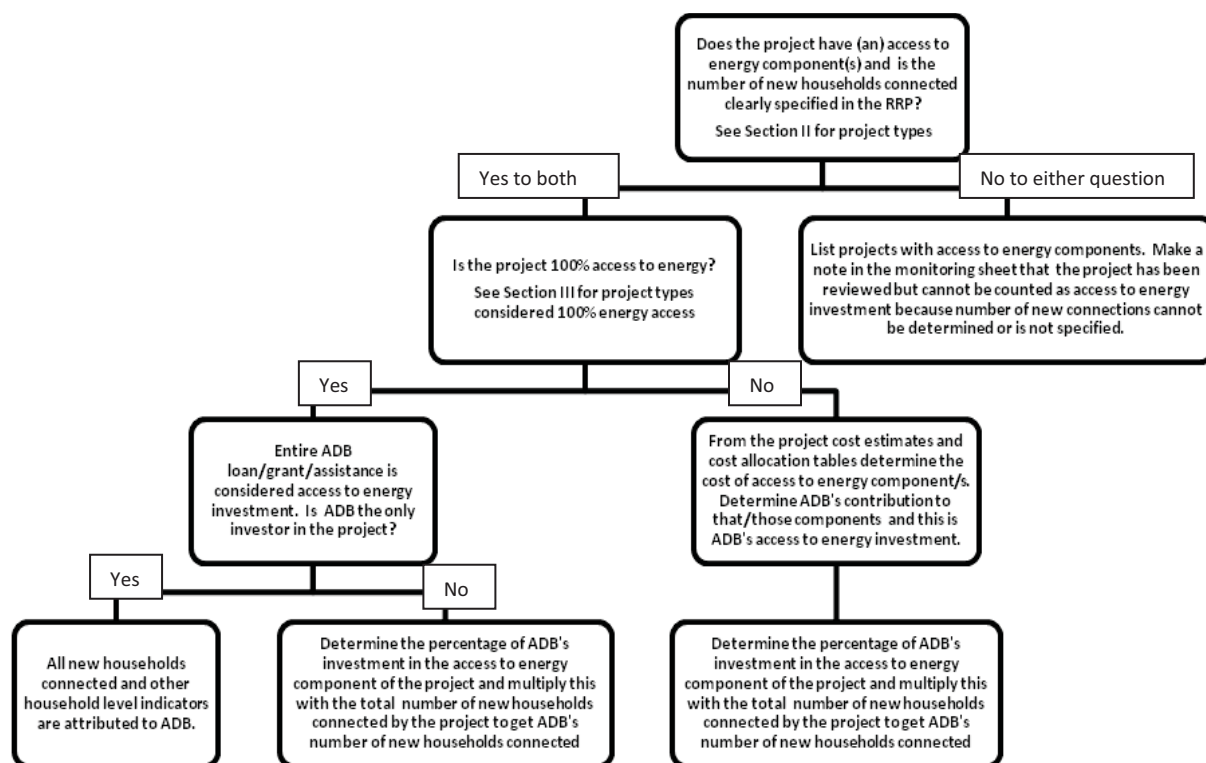
<sup>7</sup> For example, fuel switching from kerosene to LPG and from biomass to biogas for cooking and/or heating

1. For financing projects with clearly defined energy access components, the project estimates for such components are taken as the energy access investments. In such cases, because the costs of the energy access components have been calculated and presented in the project documents, there is no need for energy access percentage calculations.
2. Partial credit guarantees provided by ADB should be considered as access to energy investment, even when not drawn down.

#### IV. General Approach and Methodology

1. A conservative approach is used in assessing whether a project is access to energy or has an access to energy component and in including it the monitoring of investments and other indicators.
2. Figure 1 shows the process flowchart for reviewing project documents in monitoring ADB's investments in access to energy and number of new households provided access. Specific calculation methods are subsequently provided.

Figure 1 Monitoring Process Flowchart



3. Steps to follow:
  - a. Check if project is considered access to energy or has (an) access to energy component/s using Section II of these guidelines
  - b. Check if project is 100% access to energy investment using Section III A, B, C, and D of these guidelines.

*An energy generation and/or transmission project even if the DMF clearly indicates new household connections is not counted as ADB's access to energy investment unless ADB is investing in the distribution component as well. Only the distribution component and other clearly defined access to energy investments and assistance (e.g. rural, off-grid, mini-grid, access for poor projects/project components) of ADB's investment are counted as access to energy investments.*

- c. Using Project Cost tables and, if available, a Project cost by financing institution table, in the RRP check if entire access to energy investment is ADB-funded.
- d. Determine from RRP ADB's portion of the access to energy investment or calculate by pro-rating if not clearly specified in RRP
- e. If project is part of a multi-tranche facility or sector investment program, ensure that only ADB's portion of the access to energy investment is counted and on a per project basis
- f. The final pro-rated access to energy component of ADB funding is ADB's access to energy investment in the project

*For projects where ADB is not the sole investor, the amount of access to energy investments attributed to ADB include all ADB-funded hard costs and soft costs (contingencies, interest during construction, project management) of access to energy components. When soft costs are lumped for an entire project, these are pro-rated to the share of those ADB-funded hard costs to the total project investment considered.*

- g. The number of households connected are similarly pro-rated to ensure only ADB's contribution to the access to energy component is considered thereby ensuring a fair distribution of investment impacts
  - 1) The number of households provided access per service, and number of households with increased reliability and security of supply of service per service are monitored and must be indicated in the project DMF. Table 1 lists the indicators to be monitored at ADB level.
  - 2) The number of new household connections or households with increased hours of service attributed to ADB is pro-rated according to ADB's share of the total access to energy component investment. If connections are specified in the RRP in terms of number of people, to get the number of households, the number of people is divided by the latest available DMC-specific household size (if available, site-specific household size is used, e.g. town/city, province or grid). In the absence of other data and for purposes of aggregation, it is assumed that one household has an average of five (5) people.
  - 3) If a project is part of an investment program or multi-tranche financing facility, the number of households provided access is further distributed to each ADB-funded access to energy project in the investment program pro-rated to that project's share of the total ADB access to energy investment in the program.

**Table 1 Energy Policy, Managing for Development Results (MfDR) Level 2 and Energy for All Outcome Indicators for monitoring**

<b>Indicators</b>	<b>Unit</b>	<b>Definition and Guideline</b>
Number of loans and grants for expanding access to energy	Number	All RRP's for investment projects (excluding programs), or with components, that expand energy supply to households will be added to monitor this indicator at ADB-level.
Amount of loan and grants for expanded access to energy	\$ million	Total of all loan amounts from RRP's and monitored at ADB level.
<b>MfDR Level 2 indicators and EFA outcome to be specified in the DMF at the concept paper stage</b>		
Total additional installed capacity	MW-eq	The total installed energy generation capacity (expressed in MW) as a result of ADB-funded projects
Numbers of new households connected to <b>electricity</b>	Number	The number of new households connected to electricity as a result of electricity distribution, off-grid, mini-grid or rural electrification projects
Numbers of households provided <b>longer hours of electricity services</b>	Number	The number of households provided reliable and secure supply of electricity as a result of electricity distribution or distribution enhancement projects
Numbers of new households connected to <b>piped natural gas/CMM supply</b>	Number	The number of new households provided cleaner fuel as a result of natural gas or coal mine methane pipeline/distribution projects
Numbers of new households connected to <b>district heating supply</b>	Number	The number of new households connected to district heating supply as a result of district heating projects
Numbers of households provided longer hours of <b>district heating supply</b>	Number	The number of households provided reliable and secure supply of district heating services as a result of new or improved district heating projects
Numbers of new households provided access to <b>LPG, biogas or improved cook stoves</b>	Number	The number of new households provided LPG or biogas or improved cook stoves as a result of cleaner fuels or fuel switching projects
Numbers of new households provided access to <b>motive power</b>	Number	The number of new households provided motive power e.g. improved windmills/pumping for domestic water supply and multi-functional platforms (MFD) for domestic milling, grinding and food processing
Distribution Line Installed / Upgraded	km	The expansion or upgrade of distribution network. This indicator includes: <ul style="list-style-type: none"> <li>• km of power distribution line installed or upgraded</li> <li>• km of district heating network pipes installed or upgraded</li> <li>• km of urban gas supply network pipes installed or upgraded</li> </ul> <i>Note: Upgrade of distribution lines includes reconductoring.</i>