

## Pro-Poor Policy and Regulatory Reform of Water and Energy Supply Services

Asia and the Pacific is home to about 1.8 billion people who survive on less than \$2.00 a day and 903 million people living below the poverty line of less than \$1.25 a day.<sup>1</sup> Over 406 million people in rural areas<sup>2</sup> and 93 million people in urban areas<sup>3</sup> lack access to adequate water, while over 1.9 billion people in the region are living without basic sanitation facilities.<sup>4</sup> About 1 billion people in Asia and the Pacific do not have access to electricity.<sup>5</sup>

One of the Millennium Development Goals (MDGs) is to halve the proportion of the world's population living without sustainable access to safe drinking water and basic sanitation.<sup>6</sup> The International Covenant on Economic, Social and Cultural Rights implicitly entitles

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everyone to sufficient, safe, acceptable, physically accessible, and affordable water for personal and domestic uses.<sup>7</sup> At a time when many programs have been introduced to reform water and energy infrastructure and utility service industries—by restructuring, introducing competition and private sector participation, and initiating different types of

regulatory reform—it is crucial to ensure that the poorest of the poor actually gain increased access to affordable utility services.

Although universal access to safe, reliable energy is not itself an MDG, it is a necessary condition for providing the poor with safe water and sanitation, ensuring adequate standards of living, and achieving any of the other MDGs.<sup>8</sup> However, broad efforts at regulatory reform and increasing energy and water access may, but will not necessarily, help the poor. The poor often need specifically targeted

interventions, measures, and approaches to ensure that they benefit from these efforts.

### What do Asian Development Bank Policies Say?

The Asian Development Bank (ADB) defines poverty as “a deprivation of essential assets and opportunities to which every human is entitled” and distinguishes three categories of poverty—human, income, and absolute—to which many of its activities and programs are directed.<sup>9</sup> Pro-poor approaches and measures are “specifically targeted initiatives or interventions that seek to promote benefits for the poor, or mitigate the effects of activities on the poor or a group or subset thereof.”<sup>10</sup> Pro-poor approaches go beyond macro-level efforts at poverty reduction; they target particular activities and populations in relation to energy and water supply.



*New, clean and cheap technologies—combination of solar panels, LEDs, and Lithium Ion battery—can light houses like these in Mongolia and ensure access by the poor to affordable utility services*

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<sup>1</sup> United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), Asian Development Bank (ADB), and United Nations Development Programme (UNDP). 2010. *Achieving the Millennium Development Goals in an Era of Global Uncertainty: Asia-Pacific Regional Report*. Bangkok: UNESCAP.

<sup>2</sup> Endnote 1.

<sup>3</sup> UNESCAP, ADB, and UNDP. 2007. *The Millennium Development Goals: Progress in Asia and the Pacific 2007*. [www.unescap.org/stat/mdg/04.Part1-MDGreport2007-P3-19.pdf](http://www.unescap.org/stat/mdg/04.Part1-MDGreport2007-P3-19.pdf). Data available for water and sanitation as of 2004.

<sup>4</sup> ADB. 2008. *Strategy 2020: Long-Term Strategic Framework of the Asian Development Bank 2008–2020*. Manila, p. 6.

<sup>5</sup> ADB. 2009. *Technical Assistance for the Energy for All Initiative*. Manila.

<sup>6</sup> United Nations. 2009. *The Millennium Development Goals Report 2009*. [www.un.org/millenniumgoals/pdf/MDG\\_Report\\_2009\\_ENG.pdf](http://www.un.org/millenniumgoals/pdf/MDG_Report_2009_ENG.pdf)

<sup>7</sup> United Nations Committee on Economic, Social and Cultural Rights. 2002. *The Right to Water*. General Comment No. 15, 26 November. Geneva, para. 1.

<sup>8</sup> Endnote 10.

<sup>9</sup> ADB. 2004. *Fighting Poverty in Asia and the Pacific: The Poverty Reduction Strategy*. Manila; and ADB. *Poverty Handbook: Monitoring ADB's Poverty Reduction Impact*. Manila.

<sup>10</sup> ADB. Forthcoming. *Pro-Poor Water and Energy Policy and Regulation Guide*. Manila.

ADB's water and energy policies explicitly embody its goal of achieving poverty reduction.<sup>11</sup> ADB's Water for All and Energy for All initiatives support the need to adopt pro-poor approaches and measures.<sup>12</sup>

### Who are the Poor?

To implement pro-poor measures, reformers need to identify the poor. The five broad methods used to identify groups of poor people are

- self-identification;
- geography—all those living in a defined rural or urban area are considered poor;
- income—all those earning less than a set dollar amount are considered poor;
- household demographics—all those living in households sharing particular sociodemographic characteristics, such as size, composition, occupation, education, and income, are considered poor; and
- neighborhood demographics—all those living in a certain neighborhood that has been characterized as poor by data from census or household data surveys, are considered poor.

Whatever method is used, once the poor are identified, reformers must answer the critical questions about them, including how they

currently obtain services, what they want, what they can afford, and how they are organized. Box 1 identifies key questions to assist in understanding the needs of poor consumers.

#### Box 1: Understanding Poor Consumer's Needs

##### Who are the Poor?

Establish a formal, predictable, and transparent means of determining who counts as "poor." It is likely to be difficult to gather the necessary information due to the absence of formal addressing systems or property rights and the lack of statistical information about poor communities.

##### How do the Poor Currently Obtain Services?

Determine whether the poor have access to the main network provider or rely on small, informal entities (Alternative Providers). The poor often obtain services through Alternative Providers, which may be resellers of utility services or shared outlets.

##### What Services can the Poor Afford?

Establish a means of determining what the poor can pay. Affordability is a key issue, and subsidies may be required for equitable service provision. However, subsidies must be targeted to be efficient.

##### How are the Poor Organized?

Consider how the poor are grouped, and how the regulator can use these groupings to listen to them and address their needs. Rural communities are more cohesive and more easily organized, which makes them easier for regulators to deal with. Peri-urban areas may be more disjointed, without an organized voice to express their needs.

##### What do the Poor Want?

Determine what the poor in the particular community and location want. The needs of the poor may be very different in different communities. While the poor are aware that there are trade-offs between price and quality, they may have difficulty expressing their preferences to regulatory bodies, especially if they are illiterate.

Source: Adapted from S. Tremolet. 2002. Pro-Poor Regulation: Challenges and Implications for Regulatory Design. Conference Background Paper. Infrastructure Development: Private Solutions for the Poor: The Asian Perspective. October.

### How do the Poor Access Water and Energy Services?

The poor may be connected to the main electricity or water network. However, in areas where they do not have access to the main network, they are usually served by alternative service providers. Alternative service providers are an often unconsidered element of private sector provision of energy and water services. They have a large impact on utility service delivery for the poor, because they deliver utility services to poor or inaccessible end-users who are not served or underserved by the main network provider. Alternative service providers include small independent power producers that generate electricity from solar panels or diesel generators; alternative service providers that operate "mini-electricity grids" from a mini-hydropower source; water suppliers that deliver water containers to a tank or common community source through water trucks or low-cost piping;

**Alternative service providers are an often unconsidered element of private sector provision of energy and water services**



Women must gather water from this communal faucet in the uplands near Pokhara several times a day for household needs, as well as for irrigation

<sup>11</sup> ADB. 2003. *Water for All: The Water Policy of the Asian Development Bank*. Manila; ADB. 2009. *Energy Policy*. Manila. Also available: [www.adb.org/Documents/Policies/Energy-Policy/Energy-Policy-2009.pdf](http://www.adb.org/Documents/Policies/Energy-Policy/Energy-Policy-2009.pdf)

<sup>12</sup> Footnote 15.

small companies providing small-bore, reticulated sewerage systems with off-site treatment; and small private utility providers that offer more flexible payment conditions for the provision of water or power.

### How do Main Network Service Providers Help or Hinder Access for the Poor?

The poor face several challenges in accessing services from main network service providers. They often cannot afford the high upfront connection fees to access the water or electricity network. The main network provider may choose not to expand the access to low-income communities because doing so is unprofitable, or because the poor have no secure tenure over their land in slums or informal settlements. They may also lack the know-how to serve the poor, if service levels are based on quality standards that the wealthy and middle class require. Their employees do not always communicate well with the poor.<sup>13</sup>

### How are Utility Service Providers Regulated?

Reformers usually establish regulations for large water and energy network utility service providers. Utility service regulatory reform encompasses any change to policy, law, or regulation that is undertaken to separate the functions of sector policy development, operation and management of a utility, and regulation of the utility; introduce competition; separate vertically integrated industries; introduce private sector participation; or introduce and then promote the functioning of autonomous regulators. Regulation of network service provision involves access, price, and quality regulation. It requires targeted pro-poor measures and approaches and may also require the institutionalization of a consumer or pro-poor advocate.

### How are Alternative Service Providers Regulated?

Alternative service providers are numerous, diverse, and often exist outside the formal, legal sector.<sup>14</sup> They tend to operate in unregulated markets, whether they supply the water or power themselves or only distribute and sell it.<sup>15</sup> Pro-poor regulation for alternative service providers needs to take account of these facts. Regulatory reformers should therefore adopt minimum environmental, health, and safety standards and maximum pricing levels.<sup>16</sup> One way of regulating these providers is through a gradual tightening of minimum service standards, with some incentives offered to alternative service providers to enter the formal sector and to upgrade their service in the long run.<sup>17</sup>

### What is Pro-Poor Policy and Regulation, and What are its Objectives?

Pro-poor policy and regulation of utility services are directed toward providing poor customers with reasonable access to utility services at

affordable prices and adequate quality, no matter where they are or who serves them.<sup>18</sup> Pro-poor regulation has five fundamental objectives:

- access to services—universal provision of water supply and electricity;
- affordability—access to water and energy is within the means of the poor;
- service quality—is commensurate to the price and service provided;
- efficiency—proper management of water and energy services to ensure that resources are put to their best use by providing the right signals for consumption, investment, and innovation; and
- sustainability—provision of water and energy must be beneficial to the communities being served on a long-term basis.

Box 2 sets out principles to guide the establishment of pro-poor objectives in a particular context.

#### Box 2: Principles to Consider in Establishing Pro-Poor Objectives

Policy makers and service providers should consider the following principles in establishing pro-poor regulatory objectives:

- the objective of improving the lives of the poor, through access to affordable utility services of appropriate quality, should be front and center;
- avoid assuming that the poor are high-risk, low-return customers;
- address the poor living in informal and often illegal settlements in utility supply policies, related legislation, and regulations;
- avoid assuming that the main network provider is the best utility service provider for the poor, as alternative service providers may play important roles;
- seek novel ways to deal with the geographical and physical constraints on infrastructure and service provision in low-income areas;
- appreciate that efforts to provide subsidies to the poor through tariffs have not often worked; and
- actively seek innovations to overcome the financial, legal, and social constraints faced by the poor in utility service reform.

SOURCE: Adapted from Public–Private Infrastructure Advisory Facility. 2002. *New Designs for Water and Sanitation Transactions*. Washington, DC.

### When Should Pro-Poor Policy and Regulation be Considered?

Regulatory designers and reformers should consider pro-poor policy, regulation, and measures prior to

- introduction of new infrastructure and utility service laws,
- establishment of a new policy or regulation,
- review of and revision to a major policy or regulation,
- changes in the tariff, and
- changes to subsidies.

<sup>13</sup> A. McIntosh. 2003. *Asian Water Supplies: Reaching the Urban Poor*. Manila: ADB, p. 45.

<sup>14</sup> B. Baker and S. Tremolet. 2000. Micro-Infrastructure: Regulators Must Take Small Operators Seriously. *Public Policy for the Private Sector*. Note No. 220. Washington, DC: World Bank. Also available: <http://rru.worldbank.org/Documents/PublicPolicyJournal/220Baker-10-24.pdf>

<sup>15</sup> B. Baker and S. Tremolet. 2003. Regulation of the Quality of Infrastructure Services in Developing Countries. In P. Brook and T. Irwin, eds. *Infrastructure for Poor People: Public Policy for Private Provision*. Washington DC: World Bank, p. 252.

<sup>16</sup> Footnote 20.

<sup>17</sup> Footnote 20.

<sup>18</sup> S. Tremolet. 2002. Pro-Poor Regulation: Challenges and Implications for Regulatory Design. Conference background paper for the Public–Private Infrastructure Advisory Facility–Asian Development Bank Conference on Infrastructure Development—Private Solutions for the Poor. The Asian Perspective. Manila. 30 October.



The Kapit Bisig community along the Metro Manila's Manggahan Floodway badly needed a new system but could not afford the connection fee of the water utility, Manila Water. Through an ADB pilot project, Manila Water installed piped connections in the neighborhood and allowed the community to pay the connection fee over 3 years

## How can the Poor Benefit from Policy and Regulatory Reform?

Regulators must understand the needs of the poor and take them into account when setting regulatory objectives. Box 1 identifies key questions to assist in understanding the needs of poor consumers. Regulators must then carefully monitor implementation over time, to ensure that the objectives are met and that unforeseen problems are addressed in a timely manner. The steps to ensure pro-poor policy and regulatory design are

- assess and understand the poor's needs,
- formulate pro-poor policy and regulatory objectives,
- assess the impact of policy and regulatory reform on the poor,
- design and formulate pro-poor policy and regulations,
- monitor and review implementation of those policies and regulations, and
- encourage accountability and transparency.

Box 3 sets out guiding questions on how to measure the impact of pro-poor regulatory reform.

## What is the Substance of Pro-Poor Regulation?

The poor may be targeted in policy and regulatory design and regulatory reform by expanding access, diversifying service quality (or offering different levels of services), and making prices affordable.

## Expanding Access

Increasing access to water and electricity services is one of the most significant pro-poor objectives of policy and regulatory reform. Reformers need an understanding of the wide variety of ways to increase access so that they can deploy the right technique for their specific, country- and context-bound situation. Techniques for making service expansion affordable are as follows.

**Direct government subsidies.** In Indonesia, for example, the government provides subsidies to the state electricity company through annual appropriations to fund extensions of service to low-income households for the lowest level of service. It installed a device that limited the households' electricity load to about 480 watts of service without requiring a line extension or connection charge to be paid.

**Output-based aid.** In Cambodia, the government adopted a pilot output-based aid scheme whereby it pays the water utility provider an agreed amount for each connection made from the water network to a pre-identified poor household, with the bulk of the payment being made after the connections have been validated by an independent engineer.<sup>19</sup>

**Connection fees and connection kits.** In Afghanistan, the poor have a high willingness to pay for electricity, but might not be able to pay the one-time connection charge and the internal wiring costs for lighting. ADB's Power Transmission and Distribution Project provided for project beneficiaries to receive electrification kits paid for under the ADB grant to ensure that they could obtain connections.<sup>20</sup>

### Box 3: Guide to Measuring the Impact of Pro-Poor Regulatory Reform

- What are the likely effects of the reform on low-income consumer bills?
- Are low-income consumers likely to be disconnected from service more frequently?
- Are there low-cost resources (e.g., government-owned hydro) that can be reserved for basic domestic needs, so that a lower cost-based rate can apply to lifeline service?
- Should tariffs for basic domestic service be moved to a full-cost level through a gradual phase-in?
- Can an inverted or lifeline rate design be established to ensure that additional use is billed under a full-cost tariff adequate to pay for expanding supply, while the tariff for essential needs is either based on the cost of older resources or is subsidized in some fashion?
- To what extent do regulators prioritize the poor's access to services?
- How do regulators improve access and prevent disconnections?
- Do tariff schedules prioritize income distribution goals over allocative efficiency?
- How is affordability addressed? How do regulators interact with other government departments concerned with the poor? Do different parts of government cooperate in poverty reduction?
- Are subsidies or cross-subsidies used to pay for connection costs or the charges for service, such as through lifeline tariffs?
- What administrative and regulatory capacity exist? How does the regulator's funding affect their ability to tackle pro-poor issues?
- To what extent is the regulator subject to capture by politicians or the private sector? To what extent does this bias regulatory policy against pro-poor approaches? To what extent do regulators attempt to obtain information from the poor to ensure that they address their needs?

Source: Adapted from D. Parker, C. Kirkpatrick, and C. Figueira-Theodorakopoulou. 2008. Infrastructure Regulation and Poverty Reduction in Developing Countries: A Review of the Evidence and a Research Agenda. *Quarterly Review of Economics and Finance*. 48 (2) pp. 177–188.

<sup>19</sup> M. Navarro and L. Tavares. 2008. Output-Based Aid in Cambodia: Getting Private Operators and Local Communities to Help Deliver Water to the Poor—The Experience to Date. *The Global Partnership on Output-Based Aid Working Paper Series*. No. 9. [www.gpoba.org/gpoba/node/129](http://www.gpoba.org/gpoba/node/129)

<sup>20</sup> ADB. 2005. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to Afghanistan for the Power Transmission and Distribution Project*. Manila.

**Distributed generation.** In rural areas, local renewable resources may be more economical, efficient, and effective to use than extending the transmission and distribution network from centralized power plants and distribution lines. In India, 500 megawatts will be added from renewable energy projects in cogeneration, biomass, and small hydro, more than doubling its current capacity from alternative energy.<sup>21</sup> In Bangladesh, 438,000 solar home systems have been installed under the Solar Energy Program to households in rural off-grid areas.<sup>22</sup>

**Grants from ADB or other parties.** Grants in the form of equipment, technical assistance, or cash can make a service expansion project more feasible. ADB's grant assistance to Mongolia for community-based heating supply in rural remote areas replaced heat-only boilers with locally manufactured 1-megawatt package heating systems (including heat-efficient boilers, water treatment equipment, and heating distribution systems).<sup>23</sup>

**Low-interest loans.** In Sri Lanka, many poor households are on a power grid but cannot afford to connect to it. ADB launched a pilot microfinance scheme enabling nearly 15,000 households to avail of small loans that allow them to connect to the grid, with affordable installment payments.<sup>24</sup>

**Utility-provided subsidies.** In Indonesia, the state-run power firm, PT Perusahaan Listrik Negara (PLN), can sustain its operations with revenues from service on the major islands, despite low revenues on the smaller and more remote islands. This is referred to as "postage stamp pricing," wherein the utility provider charges the same price for all areas, resulting in low-density areas being subsidized by more heavily populated areas (a form of cross-subsidy).

**Volunteer and cooperative implementation.** The government or a utility's ability to expand service to new areas can be provided by local support in the form of land for electricity-generating facilities, trees to provide poles for distribution systems, or labor to construct generation or distribution facilities. In remote areas of the United States, preferential federal assistance has been provided to communities that organized volunteer efforts to clear rights of way and prepare poles to carry electricity. In Oregon, the Salem Electric Cooperative relied on its members to assist in construction of distribution lines. Members also donated trees for poles and labor to erect the poles and install equipment on the poles.

**Low-cost option.** In 1994, Eskom, Electricité de France and East Midlands Electricity of the United Kingdom started a pilot project that established a community-based distribution company, Phambali Nombane Energy (PN Energy), to provide low-cost electricity to the residents of the Khayelitsha township on the outskirts of Cape Town.<sup>25</sup> The project lowered the cost of connection by subsidizing connection fees, substituting the installation of standard household wiring with "ready boards" (electrical panels from which electricity is distributed that also contains provisions for electrical outlet and lighting socket), and introducing prepayment schemes that allowed households to control their electricity spending by paying for it in advance. The project also provided higher-quality, more convenient, and more reliable service; employed technology for reducing theft by locating service drops (electrical lines that run from an electricity pole to the customer's house or other premises) high on utility poles that are easily seen from the road; and reduced nonpayment by introducing prepayment meters.

### Offering Varying Levels of Quality

Reformers must know that customers may not all need or expect the same level of utility service. The poor are best served when a utility offers a variety of levels of service quality. Given minimum levels of environment, health, and safety protection, different service offerings can satisfy the needs of the poor at reduced cost. Methods of varying service quality include the following.

**Flexible payment schemes.** Prepaid metering is one example of a flexible payment scheme. In India, the West Bengal Renewable Energy Development Agency has installed prepaid energy meters in many households on Sagardeep Island. Consumers simply purchase and insert prepaid cards into the prepaid meter to activate their electricity. When 75% of the prepaid amount is consumed, the energy meter alerts the consumer. Upon exhaustion of the full amount, the electricity stops until new payments are made on the card. This prepaid system allows



This small water flow has the energy to light up few hundred houses: Wonosobo, Indonesia. ADB financed micro-hydropower unit

<sup>21</sup> United States Energy Association. 2009. *Handbook on Best Practices for the Successful Deployment of Grid-Connected Renewable Energy, Distributed Generation, Cogeneration and Combined Heat and Power in India*. [www.usea.org/Programs/EUPP/GCRE\\_September\\_2009/GCRE\\_Presentations/GCR\\_Workshop\\_Presentations\\_Monday\\_August-31-2009/Handbook.pdf](http://www.usea.org/Programs/EUPP/GCRE_September_2009/GCRE_Presentations/GCR_Workshop_Presentations_Monday_August-31-2009/Handbook.pdf)

<sup>22</sup> The Program is funded by the World Bank, Global Environment Facility (GEF), KfW (Reconstruction Credit Institute) Bankengruppe, German Technical Cooperation (GTZ), ADB and Islamic Development Bank. Infrastructure Development Company. Renewable Energy Projects. [www.idcol.org/energyProject.php](http://www.idcol.org/energyProject.php)

<sup>23</sup> ADB. 2006. *Proposed Grant Assistance to Mongolia for Community-Based Heating Supply in Rural Remote Areas*. Manila.

<sup>24</sup> ADB. *Powering the Poor: Projects to Increase Access to Clean Energy for All*. Manila, p. 3; ADB. 2004. *Proposed Grant Assistance to Bangladesh for the Power Fund for the Poor*. Manila.

<sup>25</sup> K. Manlove. 2009. *Energy Poverty 101*. Washington, DC: Center for American Progress. [www.americanprogress.org/issues/2009/05/energy\\_poverty101.htm](http://www.americanprogress.org/issues/2009/05/energy_poverty101.htm)

consumers to manage their energy budgets without severance fees or disputed bills, and with reduced losses to utilities.<sup>26</sup>

**Flexible service options.** Utility providers could offer consumers the option to avail of time-of-use tariffs, wherein electricity rates are higher during peak hours and lower during off-peak hours. Other examples include offering discounts for intermittent service.

**Use of low-cost technologies.** The Lighting a Billion Lives campaign in India allows households and enterprises to rent rechargeable lanterns for a small fee and to charge them at solar charging stations in villages.<sup>27</sup> In Pakistan's Orangi Pilot Project for sanitation services<sup>28</sup> utility providers developed a technique for providing low-income households with cheap in-house sanitary latrines, household sewers, and connections to underground sewers in adjoining lanes and streets by building a network using cheaper pipes of shorter lengths that are buried less deeply than conventional networks and installed and maintained with community labor.<sup>29</sup>

**Cooperative arrangements with alternative providers.** In India, the Assam State Electricity Board appointed franchisees to manage rural networks; these franchisees were responsible for the operation and maintenance of distribution lines, as well as billing and revenue collection. In the village of Sualkuchi, this collaboration has resulted in a significant reduction in commercial and system losses, increased billing efficiency, and revenue collections that have more than doubled.<sup>30</sup>

**Blockgrid connections.** In the Philippines, the Manila Water Company—the water utility—launched a program that offered communal meters to among five to seven households on a shared bill basis. However, drawbacks, such as nonpayment by some households of their share of the bill and credit management, arose from this scheme.<sup>31</sup> In Morocco, 75% of slum residents were legally connected to the electricity grid through a project in which community representatives manage metering and payment for a block of 20 people. If one bill is late, the whole block is disconnected. Currently, 98% of bills are paid on time.<sup>32</sup>

## Ensuring Affordability

No matter what level of utility service quality is offered to the poor, reformers must ensure that it is affordable. Tariffs and subsidies can be used to ensure this. The high cost of utility services for the poor can be addressed by pricing the service at a level that low-income users can afford, or by finding funding to support these customers. Tariff systems should be designed or redesigned to reflect the full costs of the service, while subsidy systems should be designed to target the subsidy directly to the poor's needs. A system that combines tariffs and subsidies should determine the basis and continuing validity of the tariff design, the financing sources of the utility, and how to distribute the subsidy to accomplish its specific purpose.

Other successful pro-poor pricing mechanisms that should be considered include those set out below.

**Inverted rates.** The price per unit increases with the more energy or water used. Inverted rates may help the poor by providing a low or free base rate with disincentives for increasing consumption. However, safeguards are needed for poor households that share a single water connection among many households and therefore end up paying high consuming rates although their individual rate is low.

**Zero basic charge setup.** No fee is charged for the services related to the basic connection to the utility system i.e., meter reading. This scheme is sometimes combined with a minimum charge for the first 100 kilowatt-hours of electricity consumed. Once this threshold is reached, the tariff is then use-based. Basic charges are different from connection fees because they relate to the ongoing charges to a consumer associated with maintaining a connection.

**Lifeline rates.** These are special rates for low-income households, which are usually lower than the rate available to other households for the same level of service.

**Percentage-of-income charge.** A customer's maximum utility bill is set at a percentage of income, and any excess use is funded by the government, the utility, or a privately funded subsidy program.



Low cost technology in action: a solar lamp powering a monastery in Nepal  
(Taken from Clean Energy in Asia: ADB, 2010)

<sup>26</sup> R. Moharil and P. Kulkarni. 2009. A Case Study of the Solar Photovoltaic Power System at Sagardeep Island, India. *Renewable and Sustainable Energy Reviews*. 13 (3). pp. 673–678.

<sup>27</sup> The Energy and Resources Institute, North America. Lighting a Billion Lives. [www.terina.org/index.php?option=com\\_content&task=view&id=22](http://www.terina.org/index.php?option=com_content&task=view&id=22)

<sup>28</sup> The Project was founded by Dr. Akhtar Hammed Khan in 1980 and is known as one of the most successful community-owned and managed projects. See [www.unescap.org/DRPAD/VC/CONFERENCE/bg\\_pk\\_5\\_opp.htm](http://www.unescap.org/DRPAD/VC/CONFERENCE/bg_pk_5_opp.htm)

<sup>29</sup> D. Ehrhardt. 2000. Impact of Market Structure on Service Options for the Poor. In P. Brook and T. Irwin, eds *Infrastructure for Poor People: Public Policy for Private Provision*. Washington, DC: The World Bank.

<sup>30</sup> Endnote 31.

<sup>31</sup> I. Menzies and M. Suardi. 2009. Output-Based Aid in the Philippines: Improved Access to Water Services for Poor Households in Metro Manila. *OBA Approaches*. Note No. 28. Washington, DC: The Global Partnership on Output Based Aid. Also available: [www.gpoba.org/gpoba/pub/12](http://www.gpoba.org/gpoba/pub/12)

<sup>32</sup> A. Nowlan. 2009. Reliable Access to Energy in Slums: There's Hope. *Next Billion*. 19 May. [www.nextbillion.net/blog/2009/05/19/hope-for-reliable-slum-access-to-energy](http://www.nextbillion.net/blog/2009/05/19/hope-for-reliable-slum-access-to-energy)

Some nonpricing elements that bear on the affordability of services to the poor are set out below.

**Deposit requirements.** Deposit or full prepayment is required prior to extending service. The poor often cannot afford the deposit payment, hence schemes assisting with this upfront cost will be pro-poor.

**Prepaid metering.** Prepaid cards purchased by customers are plugged, or a numerical pin is entered, into the electric meter that records the value of prepayment on the card. When the prepaid amount is exhausted, the electricity stops flowing until a new card is purchased. In the Philippines, the energy regulator has issued guidelines on prepaid retail electric service. In addition, Meralco, the electric utility provider, has conducted pilot tests of prepaid metering in certain areas of Manila.<sup>33</sup> In Singapore, the Pay-As-You-Use (PAYU) metering scheme has been available since May 2005 for residential customers whose electricity supply has been disconnected due to arrears. The scheme enables customers with significant arrears to manage their electricity consumption with their ability to pay and also payoff their arrears.<sup>34</sup>

**Moratorium on winter electricity disconnections.** To qualify for a moratorium, a customer must typically satisfy conditions including meeting a set income standard, accepting a payment plan developed with the utility, and participating in energy efficiency programs to reduce energy use.

**Moratorium on lifeline disconnections.** A moratorium on lifeline disconnections prevents poor consumers from being disconnected for nonpayment of water or electricity service if it would jeopardize basic living standards.

**Universal service funds.** These funds are dedicated to subsidizing rural or low-income service derived from direct charges on a utility's full-paying customers.

**Good neighbor funds.** Customers make small voluntary donations to a fund operated by the utility or low-income assistance agency. Funds raised are used for low-income bill assistance.

**Load limiters.** The level of electric current that a consumer receives is automatically limited from an electric utility power line by a device known as a "load limiter". This device allows poor consumers more control over their electricity bills.

## Efficiency Measures

Demand management through increased water and energy efficiency and conservation is an important pro-poor measure. Energy efficiency services help the poor directly because they reduce demand for energy

services. They can also help the poor indirectly, because their efficiency gains can be reinvested to expand network access to unconnected poor areas—or be transferred to consumers, making energy services more affordable.

Demand-side energy efficiency measures include educating consumers installing efficient lighting and appliances, building or retrofitting houses with insulation, establishing tariff rates that encourage reduced consumption, and establishing fuel conversion programs. Supply-side energy efficiency measures, which are not complete energy efficiency programs in themselves, include load limiters, inverted rates, and time-of-use or seasonal tariffs.

Demand-side water management measures include installing irrigation mechanisms such as low-pressure pipes, sprinkler systems, and drip systems; water recycling; reducing seepage through measures such as improved water canal-lining materials; putting in automatic water flow restrictors; using efficient toilets and low-flow showerheads; and providing for seasonal variations in the water tariff. Supply-side water management measures include rainwater harvesting, efficient pumping, leak management, system automation, and metering and monitoring.

## What is the Role of the Regulator?

Regulators can conduct specific activities and take actions to promote pro-poor programs. Regulators usually deal primarily with utility service extension and pricing programs, but regulators have also taken lead roles in rural electrification and low-income water and energy programs. They must consider this full range of costs in setting a fair rate design. The role of regulators is important in achieving pro-poor access in the following ways:

- **Expanding Access.** Regulators can expand access by (i) establishing rural electrification policies and programs; (ii) administering concession agreements, which have established investment obligations upon the utility for expanding access to unserved areas; (iii) reviewing and approving hook-up fees and line extension tariffs – that is, the terms under which the utility will extend service to new communities and new consumers; and (iv) reviewing and approving the utility's policies on connection, disconnection, and reconnection.
- **Ensuring Affordability.** Regulators can ensure affordability by (i) approving the tariff rate design policies, including those applicable to low-income consumers; (ii) considering the application of an inverted rate or a lifeline rate in a rate case, and approving them specifically; (iii) establishing different cost bases for different classes of customers or establishing different rate levels for different types of customers; and (iv) establishing fee waivers for any basic service charge, which changes for the costs of metering, meter reading, and billing.

<sup>33</sup> Energy Regulatory Commission, Government of the Philippines. 2009. A Resolution Adopting the Rules for Prepaid Retail Electric Service Using a Prepaid Metering System. No. 9. 13 July. Available at: [www.erc.gov.ph/pdf/Resolution%20No.%2015,%20Series%20of%202009%20Prepaid%20Metering%20Service.pdf](http://www.erc.gov.ph/pdf/Resolution%20No.%2015,%20Series%20of%202009%20Prepaid%20Metering%20Service.pdf); *Philippine Daily Inquirer*. 2009. Prepaid Electricity Metering Guidelines. 30 July. Available at: <http://newsinfo.inquirer.net/breakingnews/nation/view/20090730-217975/Prepaid-electricity-metering-guidelines-out>

<sup>34</sup> Singapore. Energy Market Authority. "Pay-As-You-Use Metering Scheme." 21 April 2005. Web. 15 April 2010. <[www.ema.gov.sg/index.php?option=com\\_news&task=article&cid%5B%5D=60](http://www.ema.gov.sg/index.php?option=com_news&task=article&cid%5B%5D=60)>

- **Setting Quality.** Regulators can establish performance and quality of service standards, which set targets and benchmarks for the performance of utilities. Such standards cover many aspects of the quality and quantity of supply, the continuity of service, and the quality of pro-poor consumer service and response time.
- **Encouraging Energy Efficiency.** Regulators can lead energy efficiency efforts in several ways. Regulators can establish requirements under which the utility will provide grants and loans to pay for energy efficiency measures for all consumers. The programs for low-income consumers must reflect the fact that they do not have the ability to make investments in energy efficient appliances or equipment. Regulators can also require the utility to engage in integrated resource planning which seeks to consider both demand-side (energy efficiency) and supply-side (efficiency and new generation) options in satisfying the least-cost options for meeting energy needs. Integrated resource planning also factors in environmental and social costs of different options. Regulators can compel regulated entities to require consumers to comply with minimum efficiency standards for buildings and appliances before obtaining access to electricity services (hook-up standards). For example, a tariff may restrict access to service for very low-efficiency appliances, or those with electrical characteristics that can impair reliable service to other consumers.
- **Encouraging Renewable Energy.** Renewable energy is relevant to the poor because renewable energy generation can often be designed to increase access and affordability for remote or rural areas by developing small scale or off-grid generation and directly linking it to distribution lines for the poor. Regulators can support renewable energy through incentives or regulations that favor the development of distributed generation and renewable energy resources. These favorable regulations encouraging renewable energy should also come with associated restrictions against greater use of environmentally harmful options, such as diesel generators.
- **Promoting Transparency and Consultation.** Regulators must work with stakeholders and consumer advocacy groups to further pro-poor initiatives in tariff review or tariff setting. Consumers, particularly poor and low income consumers, often have difficulty understanding their rights and entitlements relating to the provision of electricity and water utility services. Often times consumers even have difficulty understanding the bill the utility sends to invoice their usage of the utility service. As a result, regulators can play a very significant role in consumer outreach and clarifying the basis for tariff structure, and tariff levels, and related calculations, as well as the obligations of the utility to conduct regular metering and the like.

Despite the mandate of most regulators to protect the interests of consumers, not all regulators sufficiently disclose electricity and water supply information in a form, and in languages that are readily accessible to consumers, particularly poor consumers. All information other than commercially sensitive information should be disclosed. This includes financial audits of regulators and regulated entities; tariff reviews and decisions and the basis upon which they were made; the opportunities for appeal; and the basis for metering.

## Next Steps: Advancing a Pro-Poor Utility Services Agenda

Water and energy services are essential for sustainable human development, economic growth, higher quality of life, and better delivery of education and health services. ADB's water and energy policies explicitly embody its goal of achieving poverty reduction. The need to target the poor is recognized in ADB's Water for All and Energy for All initiatives. To do so, policy and regulatory designers should take specific and targeted steps to address the poor's needs, including the measures described in this brief. Policy makers and regulators could use this variety of pro-poor measures to implement policy and regulation that focus on the needs of the poor in future interventions and reform programs.

### Contact Persons

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ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries substantially reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.8 billion people who live on less than \$2 a day, with 903 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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**Kala K. Mulqueeny, senior counsel, and Angelique Dawn A. Badelles, legal specialist (consultant), prepared this LPR brief. For further information, including project covenants, ADB's Pro-Poor Water and Energy Policy and Regulation Guide should be consulted.**

For details, you may visit [www.adb.org](http://www.adb.org)