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Reliable, affordable, and sustainable energy services for agriculture, industry, commerce and households underpin growth in productivity and output, and improve the welfare of the poor. However, in many International Development Association (IDA) countries, households and enterprises lack service altogether or suffer high cost and unreliable energy supplies. In fiscal year (FY) 2010, the total cost of energy projects with IDA participation was about US$2.7 billion, of which IDA financed US$1.36 billion. IDA resources have improved access and reliability to energy supply and are facilitating the shift towards lower-carbon options of energy supply. Looking ahead, IDA’s strategy in the sector will seek to reinforce good governance, improve the financial and operational performance of utilities, leverage increased investment and ensure that energy sector development and reform is pro-poor and sustainable.

**CHALLENGE**

For the past ten years, under-investment in the power sector in IDA countries has resulted in a huge and growing power supply shortfall, unreliable services and slow progress in connecting poorly served populations. The challenge of providing reliable access is now balanced with rising concerns about climate change, and adapting to ensure security of power supply in the future.

Lack of energy services in many IDA countries is due to chronic underinvestment in the sector as well as to sub-optimal policies and weak institutions. The support of IDA in the sector encompasses investment as well as policy and institutional support to help countries improve energy services, but reliable access to modern energy services, including electricity, remains a key challenge for poor and rural populations in many developing countries (Table 1).

| Table 1. 2008 Electrification Rates, Selected IDA Countries |
|-----------------------------------|-----------------|-----------------|-----------------|
| Country                          | Electrification Rate (%) | People Without Access (Millions) |
|                                  | Total | Urban | Rural |                          |
| Afghanistan                      | 14    | 22    | 12    | 23.3                      |
| Bangladesh                       | 41    | 76    | 28    | 94.9                      |
| Cambodia                         | 24    | 66    | 13    | 11.2                      |
| Malawi                           | 9     | 25    | 5     | 13.0                      |
| Tanzania                         | 12    | 39    | 2     | 36.8                      |
| Uganda                           | 9     | 43    | 4     | 29.1                      |
| Yemen                            | 38    | 75    | 22    | 14.2                      |

IDA at WORK: Energy

APPROACH

IDA’s focus has been on improving access to, and reliability of, modern energy services, while at the same time addressing the underlying policy and institutional issues that have contributed to the lack of investment in the sector. In addition, IDA is often the largest financier of critical energy infrastructure, and its investment and guarantees have played a critical role in leveraging both public and private investment. IDA has leveraged about twice the funds it committed in the previous three fiscal years. IDA is also increasingly supporting decentralized renewable energy sources, which are not just cleaner, but less costly and more efficient.

RESULTS

The projects below illustrate the variety of interventions supported by IDA, and the role IDA has played in the energy sector around the world.

In Bangladesh, IDA has been active for a decade in the Rural Electrification and Renewable Energy Development (RERED) Project, helping connect more than 900,000 households through grid extensions and solar home systems. With additional financing approved in FY2010, the government of Bangladesh’s original target of just 50,000 new connections through solar home systems has been revised to a million systems by 2012, a twentyfold increase. To help the government address long-term chronic power shortages, IDA also helped design and implement a new energy efficiency program to reduce demand for power through the use of energy efficient Compact Fluorescent Lights (CFLs), through the Efficient Lighting Initiative of Bangladesh. The first stage of the Initiative set a new one-day worldwide record for CFL distribution, with 5 million bulbs distributed in a single day, reducing demand for electricity by 50 megawatts (MW); a further 5.5 million will be distributed by the end of 2010. IDA helped Bangladesh secure Carbon Financing for the project, and is assisting the government to build up local manufacturing capacity to meet demand for replacement bulbs.

In Bolivia, IDA has been working to provide 90,000 people in rural and peri-urban areas with electricity since 2005 through the Decentralized Infrastructure for Rural Transformation Project. In rural, remote areas of Bolivia, where grid electrification is not economically viable, the project has developed a new model to provide sustainable access to solar electricity. Since project inception in 2005, more than 9,200 solar home systems (SHS) have been installed in the poorest rural areas of Bolivia, benefiting an estimated 45,000 people. In addition, 87 SHS have been installed in schools and clinics, benefiting another 30,000 people, and public lighting has been provided for 20,000 inhabitants in El Alto, the large poor satellite city of the country’s capital. Approximately 8,000 new electricity connections are under construction, as part of densification of the existing electricity network in peri-urban areas (extension of the grid to consumers that are nearby but outside concession obligations). The project also supported the “Electricity Program to Live with Dignity”, by establishing regulations and a regulatory body for off-grid rural electrification in 2007. In Kenya, IDA has engaged in the development of
geothermal energy in the Rift Valley for nearly 15 years, helping supply clean energy to the growing economy. The Kenya Electricity Expansion Project, approved in FY2010, will help develop 280MW of the country’s 7,000MW geothermal energy potential, supplying about 20 percent of the required installed generating capacity by 2015, and reducing Kenya’s reliance on hydropower energy, which is vulnerable to drought. To accompany this new resource development, IDA is assisting the country in developing new transmission and distribution networks that will help connect 330,000 new households to the grid, including 50,000 low-income customers that reside in Kenya’s slums. An ongoing IDA-financed project has added 35 MW of geothermal power and already helped to connect about 300,000 customers. IDA is working with the Government of Kenya to implement its energy targets through new policy mechanisms, including establishing a wholesale electricity market that encourages private players to enter and stay in the Kenyan electricity sector instead of providing just emergency supplies, as they have since 2006.

In Laos, about 38,000 households will receive modern electricity services for the first time through Phase II of the Rural Electrification Program, approved in FY2010. A third of these new connections will be through renewable energy sources such as solar home systems and pico-hydro systems. IDA is also working to address the underlying structural
issues of the Laotian energy sector by improving the financial performance of the electricity utility, Electricité du Laos, and building capacity at the Ministry of Energy and Mines to ensure sustainable development of the power sector. At the utility, IDA is supporting tariff reform that brings fees to costs while ensuring affordability of electricity to rural households, financing the purchase of better technology systems to ensure customers are correctly and consistently billed, helping reduce technical and nontechnical losses in the distribution of electricity, and improving the environmental safeguards for rural electrification. At the Ministry, IDA is supporting the overall planning process for rural electrification to ensure the Government’s targets for access are met. IDA is also helping develop low carbon energy plans for rural areas and assisting in the creation of an enabling environment that allows small and medium enterprises to participate in decentralized energy services.

In Mali, the Household Energy and Universal Access Project promotes electricity services in peri-urban and rural areas, enhancing the quality and efficiency of health and education centers through the provision of electricity connections. The project also fosters sustainable management of forestry resources and biomass energy, such as fuel wood. Since the project’s approval in 2004, 43,000 homes, 803 public institutions, including 172 rural schools, and 139 health clinics have been connected. Forested areas under sustainable management have grown from 350,000 hectares to 873,805 hectares.

Since the beginning of the decade, Tajikistan has faced severe shortages of energy in winter, which culminated in a crisis in 2007. IDA responded to this emergency by both ensuring that critical facilities, such as hospitals, had standby power year-round, but also by working to ensure that the improvements were sustainable. Energy efficiency measures financed by IDA included the installation of 105,000
new meters that noticeably reduced power consumption and increased bill collection, increased water reserves at Tajikistan’s major hydropower plant, and even provided 250,000 people in northern Tajikistan with basic modern energy services for the first time. With support provided by IDA in FY2010, Tajikistan is now on track to meet not just its own demand, but also to supply neighboring Afghanistan with electricity beginning in summer 2012, with a fiscally sound energy sector.

**IDA CONTRIBUTION**

IDA credits and grants for energy projects amounted to about US$1.36 billion in FY2010. Lending to IDA countries from the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA) and specialized trust funds, such as the Global Environment Facility (GEF) and Carbon Finance reached US$577 million, in addition to the funds provided directly by IDA, providing US$1.94 billion to support energy access in IDA countries.

**PARTNERS**

Given the tremendous challenge of ensuring reliable energy access, IDA has worked with a number of development partners in financing projects, combining each institution’s capabilities and strengths. The projects collectively leveraged twice their investment amounts, drawing financing from a combination of other sources, including public financing from the recipient governments, private financing from both domestic and interna-

<table>
<thead>
<tr>
<th>Region</th>
<th>2003-2006</th>
<th>2007-2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Saharan Africa</td>
<td>1,384</td>
<td>3,519</td>
</tr>
<tr>
<td>East Asia and the Pacific</td>
<td>677</td>
<td>799</td>
</tr>
<tr>
<td>Europe and Central Asia</td>
<td>259</td>
<td>201</td>
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<tr>
<td>Latin America and the Caribbean</td>
<td>40</td>
<td>44</td>
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<tr>
<td>Middle East and North Africa</td>
<td>63</td>
<td>172</td>
</tr>
<tr>
<td>South Asia</td>
<td>834</td>
<td>1,269</td>
</tr>
<tr>
<td>Total</td>
<td>3,258</td>
<td>6,005</td>
</tr>
</tbody>
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*Source: Energy Anchor database, data as of August 2010.*
tional sources, and financing by the World Bank’s counterpart development agencies, such as the African Development Bank, the Japan International Cooperation Agency and Kreditanstalt für Wiederaufbau.

The Energy Sector Management Assistance Program (ESMAP) has helped IDA countries build capacity at public energy institutions and helped governments develop plans for low carbon growth. The Public-Private Infrastructure Advisory Facility (PPIAF) has worked to enable access to private international funds in IDA countries. The Netherlands dedicated US$29-million in FY2009 to support analytical and technical assistance activities in Sub-Saharan Africa through the Africa Renewable Energy Access Grants Program (AFREA). AFREA improves public and private sector capacity for renewable energy projects in the region, catalyzes additional investment for renewable energy, and expands access through these renewable energy projects. Finally, in FY2010, the Scaling Up Renewable Energy in Low Income Countries (SREP) Fund, one of the Strategic Climate Funds of the Climate Investment Funds became active. The SREP Fund stimulates economic growth through the scaled-up development of renewable energy solutions and acts as a catalyst for the transformation of the renewable energy market by obtaining government support for market creation, private sector implementation, and productive energy use in low-income countries.

MOVING FORWARD

Globally, IDA’s strategy will seek to support: (i) regional efforts to develop energy corridors that could save sub-Saharan Africa US$2 billion a year in electricity costs; (ii) policy, institutional and governance improvement of the energy sector’s institutions, including for instance improving financial sustainability of utilities; (iii) sector-wide approaches to plan and finance expanded access in a more systematic way while facilitating donor coordination; (iv) energy efficiency programs that include the deployment of energy saving options for lighting and appliances; (v) low carbon energy to tap into new

| Table 3. Total IDA Energy Credits and Grants by Type of Project (US$ millions) |
|---------------------------------|----------------|----------------|
| Region                          | 2003-2006      | 2007-2010      |
| Energy Efficiency               | 99             | 744            |
| Large Hydropower                | 85             | 568            |
| New Renewable Energy            | 292            | 759            |
| Oil, Gas and Coal (Upstream)    | 111            | 110            |
| Other Energy                    | 760            | 1,309          |
| Thermal Generation              | 67             | 318            |
| Transmission and Distribution   | 1,843          | 2,196          |
| Grand Total                     | 3,258          | 6,005          |

Source: Energy Anchor database, data as of August 2010.
resources for climate finance and balance the needs for energy access while ensuring environmental sustainability; and (vi) modern biomass and lighting programs to deliver affordable, modern, and efficient lighting products and improved cooking stove programs through public private partnerships.

In post-conflict countries such as Afghanistan and Sierra Leone, IDA focuses on the reconstruction and rehabilitation of destroyed power facilities. In countries facing power shortfalls due to droughts that have curtailed hydropower production (as in East Africa), IDA assistance supports emergency capacity additions while at the same time helping with planning to diversify supply sources in the longer term. In countries with high potential for increased private sector participation (for example, Bangladesh, Nigeria and Vietnam), IDA can help improve sector governance that underpins increased private sector investment, and provide funding and guarantees that encourage private sector participation.

In countries where the policy framework is favorable, IDA proposes to coordinate closely with the donor community to assist countries prepare and implement sector-wide programmatic approaches. The approach is designed to coordinate donor support and to mobilize increased investment to scale up energy access.
Addressing Electricity Supply Shortages – The Rwanda Experience

Challenge
Rwanda’s post-conflict recovery resulted in a strong demand growth during 1995-2004. The ever-increasing demand, in combination with unexpectedly low lake levels due to prolonged regional droughts during 2003-2005, led to a rapid drawdown of the hydropower reservoirs Rwanda depended on for its power supply. The power supply shortage and the unreliability of the utility’s dilapidated network rapidly led to extensive and lengthy power cuts beginning in early 2004. Load shedding increased to about 50 percent of peak demand during 2004-2005 with power being cut to nearly all households daily for hours at a time. The Urgent Electricity Rehabilitation Project (UERP) was designed to address the three core challenges in the energy sector - adjusting the physical and financial shortfalls in the power sector, strengthening the capacity of sector institutions, and initiating the preparation for the development of locally available energy resources, at a lower cost than fuel imports, for development of a long-term sustainable power sector.

Approach
To eliminate the load-shedding, it was decided to rehabilitate the national grid, focusing on the main growth center of Kigali, and invest in added thermal (petroleum based) electricity generation to increase the available power supply quickly and provide a much needed diversification from the dependency on hydro resources. To strengthen sector capacity and enable Rwanda to develop a long-term strategy for domestic and regional energy supply, sector staff in the Utility and Infrastructure Ministry were trained and paired with international expertise to accelerate the reform of the energy sector, improve the ability to plan for future development and open the sector for private sector investments in additional generation resources.

Results
The UERP is focused on alleviating the power outages and improving the capacity of energy sector institutions in Rwanda. It has contributed to set the stage for the turn-around of the Rwandan electricity sector and put an end to the load shedding that was so damaging to the Rwandan economy. The UERP provided support to improvements in several key outcomes:

- **Reduction in outages:** The UERP contributed to eliminating load shedding in Rwanda by financing an additional 21MW of power generation capacity. The Jabana 21MW HFO power plant was operational in May 2009. The investment, combined with the government’s own initiatives, increased Rwanda’s electricity generation capacity from 41MW in 2004 to 75MW by 2010 and load shedding going from approximately 50 percent at peak hours in 2004 to zero percent in 2010 and significantly improved the access, reliability and quality of electricity supply for 750,000 people in Rwanda.

- **Revised power sector framework promoting private sector participation:** Technical assistance and capacity building provided by UERP contributed to the drafting of new Electricity and Gas laws, currently under consideration by the Rwandan Parliament. Advisory services also assisted the government of Rwanda to conclude negotiations on the country’s first private sector owned and operated power plant (100MW), using domestic methane gas from Lake Kivu.

- **Transmission and distribution grid rehabilitated:** IDA and Nordic Development Fund support through the UERP enabled the utility to rehabilitate the national grid, building a new city distribution ring (20 kilometers of new 15 kilovolt (kV) lines and 4 new ring main units) as well as a new main substation (Birembo) for Kigali distribution zone. The project also completed the rehabilitation of five other key 110/15kV substations across the country.
IDA Contribution

The IDA allocation to UERP was US$25 million equivalent. Of this amount, US$15 million financed the construction of the Jabana power plant, with government cofinancing, for a total cost of US$23 million. A further US$6 million was spent on distribution investments to increase the reliability of the Kigali distribution system.

Partners

There is a strong partnership among key development partners in Rwanda’s energy sector. The IDA support is co-financed by approximately US$10 million from the Nordic Development Fund and approximately US$10 million of counterpart financing from the government of Rwanda. The project financing is complemented by projects funded by the governments of the Netherlands, Japan, Belgium as well as multilateral organizations such as the European Union (EU), African Development Bank (AfDB), the Organization of the Petroleum Exporting Countries Fund for International Development (OFID) and the Arab Bank for Economic Development in Africa (BADEA).

Next Steps

The turnaround of the Rwandan electricity sector, made possible in part by the IDA-financed UERP, has put an end to power shortages. It has also created the foundation for the National Electricity Access Roll-out Program (NERP), agreed between the government of Rwanda and the development partners in March 2009. This program aims to triple access to electricity in Rwanda to reach 350,000 customers (from a base of a mere 110,000) by 2013. A US$70 million equivalent IDA Credit was approved in October 2009 for investments made towards the objectives set forth in the NERP in the Electricity Access Scale-up and Sector-Wide Approach Development Project.

The project improved the access, reliability and quality of electricity supply for 750,000 people in Rwanda.
Mali: What a Little Light Can Do for Social and Economic Development

Challenge
The objective of the Household Energy and Universal Access Project (HEURA) was to support the Government of Mali’s efforts to increase access of isolated low income populations to basic energy services to help achieve economic growth and poverty reduction targets. The rural electricity access rate is low in Mali. According to the National Directorate of Energy, only about 13 percent of the rural population had access to electricity in 2009. These low access rates are not allowing Mali to fully harness its economic potential to compete fairly on international markets. Most rural households meet their lighting and small power needs with kerosene, dry cell, and car batteries. A spectrum of innovative service delivery mechanisms is needed with the active participation of communities, Non-Governmental Organizations (NGOs), and the private sector. Progress made in the last four years through the HEURA project should be sustained and expanded to increasing the number of connections and to ensure that energy services are impacting the competitiveness of small and medium size enterprises and social programs.

Approach
The Household Energy and Universal Access Project followed a two-pronged design: First, it helped Mali to develop a multi-layered approach to rural energy, combining bottom-up spontaneous small concessions with top down planned large concessions for electrification. Secondly, it built and strengthened a community-based woodland management to ensure sustainable wood fuel supply and inter-fuel substitution initiatives with a gradual introduction of improved stoves. The HEURA project supported the Government of Mali in creating the Agence Malienne pour le Developpement de l’Energie Domestique et pour l’Electrification Rurale (AMADER), a specialized agency with its staff fully funded by the government that serves as the one stop agency on household energy and rural electrification in the country. The HEURA helped the government set up a Rural Electrification Fund aimed supporting partially start-up capital costs of rural electrification sub-projects. An operational rural agency and the availability of funding from the Rural Electrification Fund have enabled local private operators to become the driving force of this project. They have provided an average matching co-financing of 25 percent of rural electrification sub-projects.

Results
- **Encouraging local private sector participation.** About 80 sub-projects managed by 46 operators are financed by the project. As of May 15, 2010 about 43,311 off-grid connections in households and for public lighting have been made to provide electricity to about 650,000 persons. In addition, through the project, about 803 public institutions including 172 schools and 139 health centers have also been provided off-grid electricity access.
- **Empowering women.** Women’s associations are playing an important role in remote communities as providers of energy services. After receiving training in basic accounting in local languages provided by NGOs financed through the project, they manage multifunctional platform electrification initiatives, which are village diesel motors that combine electricity production with other services such as milling, husking, pumping water, charging batteries, running lights and powering tools. To date, multifunctional platforms have been installed in 64 communities resulting in 7,200 connections.
- **Introducing new renewable energy technologies into Mali’s rural energy mix.** Over a period of six years, more than 7,926 households were connected to solar home systems and solar photovoltaic systems were installed in more than 500 institutions countrywide.
• **Promoting sustainable wood fuel management and inter-fuel substitution.** In order to contribute to a sustainable supply of wood fuel, predominantly used for cooking and heating, the project in partnership with the National Directorate of Nature Conservation, has placed about 874,000 hectares under community management. NGOs and local private operators have disseminated about 748,500 improved wood and charcoal stoves and about 51,385 Liquified Petroleum Gas stoves.

**IDA Contribution**

The Household Energy and Universal Access Project (comprising an IDA Credit of US$35.7 million and a Global Environment Facility (GEF) trust fund of US$3.5 million) was presented to the Board in November 2004. Based on satisfactory performance of the project, an additional IDA credit US$35 million was presented to the Board in September 2008.

**Partners**

In fiscal year 2011, a second additional financing will be signed. It is a combination of trust funds totaling about US$9 million provided by the Government of Russia and the Government of the Netherlands to further introduce renewable energy technologies and to promote productive uses of energy. The successful project performance has attracted other donors such as Germany’s KfW and the African Development Bank to the rural electrification sector.

**Next Steps**

The project is working to address three main challenges: (i) introducing further low-cost technologies to reduce electricity tariff in rural areas; (ii) ensuring sustainability of the initiatives; and (iii) securing long term financing to sustain the interest of local private operators in the energy services delivery business.

As of May 15, 2010 about 43,311 off-grid connections in households and for public lighting have been made to provide electricity to about 650,000 persons.
Georgia: Improving Electricity Reliability by Financing the SCADA System

**Challenge**
Georgia’s power sector faced multiple challenges after the collapse of the Soviet Union, since it had been a part of the centralized power system. At that time, no customer had uninterrupted power, there were daily blackouts and brownouts, the capital had a scheduled power supply, and several rural areas had no power for months. Power sector assets were dilapidated and theft of electricity and corruption was rampant. Due to lack of financial discipline in the sector, only a fraction of fees paid by the customers was collected, resulting in a massive debt accumulation by the sector companies, making them unable to import needed power for the country from neighboring country systems, which in turn led to more power shortages.

**Approach**
The Electricity Market Support Project (EMSP) was designed to tackle a wide range of sector challenges, including structural, financial, legal, technical, and policy reforms. Through concerted effort by the International Development Association (IDA) and other donor organizations, the project has helped the government to unbundle, de-monopolize, commercialize, and privatize the sector. The debt issues have also been addressed by other donor’s support. An Electricity law was adopted which established a power sector regulator and provided a basis for an electricity tariff increase to a cost-recovery level. Privatization has also been launched to enable the better-equipped private sector to own and operate the generation and distribution assets. Finally, the EMSP has invested in the rehabilitation and upgrading of critical elements of the power grid.

**Results**
By investing in the Supervisory Control and Data Acquisition System (SCADA) and a management contract for the national power transmission company, the EMSP has helped to turn the power sector into a viable sector and achieved four specific outcomes:
- Improved power system reliability, with no registered total blackouts during 2006 – 2009.
- Reduced technical losses in the power system from 6.6 percent in 2004 to 1.7 percent in 2009.
- Increased collection rate for transmission services from 22.3 percent in 2004 to 100 percent in 2009.
- Re-adjusted power sector debt, through financial rehabilitation, bankruptcy protection, and liquidation of bankrupt companies.

All of the above provided the foundation to make Georgia’s power sector sustainable and financially viable.

**IDA Contribution**
IDA provided a US$27 million credit in 2001. In 2004, an IDA supplemental credit of US$9.1 million was provided.

**Partners**
There was a strong partnership among all development agencies involved in the power sector. IDA helped to coordinate donor activities and harmonize the efforts.

The German government-owned Development Bank (Kreditanstalt für Wiederaufbau, KfW) and the European Bank for Reconstruction and Development (EBRD) provided parallel financing of US$12 million and US$1 million respectively. The government of Georgia also provided US$17 million. In addition, KfW and the U.S. Agency for International Development (USAID) funded various technical assistance activities. IDA, together with USAID, KfW and EBRD, provided policy advice to the government and supported sector reforms.
Next Steps

EMSP was followed by a major transmission system expansion project, the Black Sea Transmission Line Project. This project, in the amount of about US$300 million, has been jointly funded by EBRD, the European Investment Bank (EIB), and KfW and will increase the transmission connection capacity between Georgia and Turkey. This expansion will substantially increase Georgia’s power export and transit capacity. In addition, potential donors have considered a second phase of the SCADA upgrade.

Considering the outstanding transformation of the power sector in Georgia, IDA and the government of Georgia have agreed to publish a book documenting the reforms’ success and drawing lessons learned.

The project Improved power system reliability, with no registered total blackouts during 2006 – 2009.
**Challenge**
Only 30 percent of Bolivia’s rural population has access to electricity, the second-lowest level of access in Latin America. Bolivia is the poorest country in South America, with gross domestic product (GDP) per capita of US$4,495 in 2008. The incidence of poverty in rural areas, where more than one third of the population lives, is particularly high, with 82 percent of the population classified as poor, and 59 percent as extremely poor. The country’s sparse population (eight people per square kilometer on average), and low per capita income translate into high infrastructure costs, particularly in rural areas. The provision of infrastructure services to rural Bolivia is therefore a national priority, but also a comparatively costly one.

Responding to this challenge, in 2003 IDA approved a US$20-million credit for the Decentralized Infrastructure for Rural Transformation (IDTR) project. The second of its kind in Latin America, the project, which has been effective since 2005, seeks to expand and improve the delivery of electricity as a catalyst for the development of rural areas in Bolivia. It is an integral part of the government program called “Electricity to Live with Dignity”.

**Approach**
The project developed an integrated approach to expand access to electricity in Bolivia’s difficult geographical conditions, by (i) implementing a new model for providing electricity through installation of solar systems in isolated rural areas and grid densification in peri-urban areas (usually those areas on the outskirts of major towns or cities), (ii) putting into place the necessary regulatory framework for sustainable rural electrification and (iii) partnering with World Bank-managed trust funds to provide technical assistance to the government for project design and implementation; and (iv) replicating the IDTR approach in the GPOBA supported Decentralized Electricity for Universal Access Project, which will also pilot provision of “Pico-PV” solar lanterns to the poorest households. (i) The IDTR approach uses innovative medium-term service contracts to install solar PV systems and provide operation and maintenance support for four years after installation, to assist in sustainability and development of the local market. These medium-term service contracts were awarded through a process of international competitive bidding in 2005.

**Results**
The project is providing new electricity service to an estimated 130,000 people in rural and peri-urban areas of Bolivia. In rural, remote areas of Bolivia, where grid electrification is not economically viable, the project has developed a new model to provide sustainable access to solar electricity. Since project inception in 2005, more than 9,200 solar home systems have been installed in the poorest rural areas of Bolivia, benefiting an estimated 45,000 people. In addition, 87 solar home systems have been installed in schools and clinics, benefiting another 30,000 people. Public lighting has also been provided for 20,000 inhabitants in the large poor satellite city of the country’s capital, El Alto. Approximately 8,000 additional new electricity connections benefiting an estimated 35,000 people are under construction, as part of an effort to extend the power grid to consumers that are nearby, but outside, concession obligations.

The project also supported the government’s program, “Electricity to Live with Dignity,” with two main results: (i) the adoption of electricity service as a basic human right under the Bolivian constitution in 2008, (ii) the elaboration of regulations for rural electrification in 2005. In 2007, the project also financed the creation the Office of Technical Monitoring - the de-facto regulator for offgrid rural electrification – under the Vice Ministry of Electricity and Alternative Energy.
IDA Contribution

- The IDA is providing a loan of US$20 million for the IDTR Project, out of total costs estimated at US$32.8 million.
- The Global Partnership on Output Based Aid (GPOBA) is providing a grant of US$5.2 million for the installation of about 7,000 solar home systems.

Partners

The project has built partnerships at several levels: (a) with municipalities and prefecturas who helped indentify beneficiaries and provide co-financing; (b) with the US and Bolivia branches of the US National Rural Energy Cooperatives Association, which assisted with training and technical assistance for peri-urban densification; (c) with the German coop-eration agency (GTZ) for the testing and development of a market of small Pico-PVs and for assisting in the development of a delivery model for the installation of efficient cook stoves; and (d) with the Lighting Africa initiative regarding the Pico PV component.

Next Steps

- The second bidding for the grid extension component, which is expected to generate 7,000 additional connections, has been launched and is under evaluation.
- The Global Partnership on Output Based Aid Decentralized Electricity for Universal Access bidding was launched in July 2010.
- The Project will prepare a request for additional financing to further expand the provision of service through solar home systems and peri-urban densification of the grid to respond to consider-able unmet demand.

The project is providing new electricity service to an estimated 130,000 people in rural and peri-urban areas of Bolivia.
IDA at WORK: Energy

Vietnam: Powering Up Rural Development

Challenge
During the second half of the 1990s, energy demand in Vietnam grew at a rate 30 percent faster than GDP. The expansion of energy supply was critical for growth in agriculture and industry. Providing electricity access to the rural poor improves health and education levels, and providing an alternative to traditional energy sources reduces environmental degradation.

Approach
The IDA-supported Rural Energy Project was identified and designed to:
• Extend the electricity grid to 671 communes, with 395,000 households, located in 32 provinces.
• Build government capacity to maintain a viable power sector in the long term.
• Apply alternative energy sources in areas not reached by the electricity grid.

Results
An additional 2.7 million people in some of the poorest rural areas of Vietnam now have a reliable electricity supply for the first time in their lives. They report higher incomes, improved health conditions, better quality of education, less time spent on housework and more business development opportunities.

Highlights:
• The project connected 976 communes with 555,327 households to the national power grid, a 45 percent jump in commune access and a 40 percent rise in household access.
• More than 30 percent of men and 29.8 percent of women in recently electrified rural households reported higher incomes.
• Health clinics reported better conditions for diagnosis and treatment.
• Children are studying more because of access to lighting at night.
• The government’s broader rural electrification program increased access from 50.7 percent of rural households in 1996 to 94.5 percent by the end of 2008.

IDA Contribution
• Of the total project cost of US$216 million, IDA gave US$150 million in financing from 2000–06.
• IDA has a long-term involvement in the sector and maintains a continuing dialogue on reforms.
• IDA helped design a 10-year Master Plan for Rural Electrification that brings government, user and donor resources into one program.
• IDA worked with the government to set up technical standards for rural networks.

Next Steps
IDA is financing the Second Rural Energy Project (US$220 million) to upgrade service standards and the institutional framework for delivering rural electricity and the Rural Distribution Project (US$150 million) to improve the reliability and quality of medium-voltage service to targeted retail electricity distribution systems, as well as providing US$200 million in Additional Financing to Rural Energy Project II. This will be followed by the Third Rural Energy Project (planned to start in 2011), which will complete the grid by bringing coverage to isolated or scattered households and to communities in mountainous areas and on islands.