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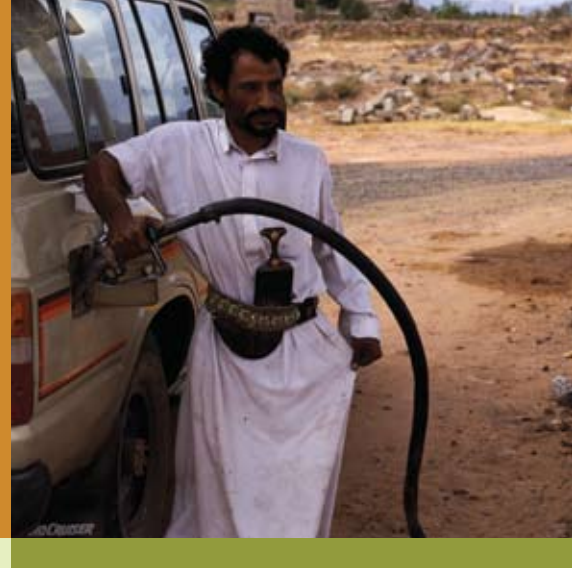
Energy

IMPROVING SERVICES FOR THE POOR

IDA at WORK



THE WORLD BANK



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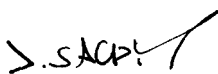
Energy services are vital for economic development and improvements in the standard of living for the world's poor. Agriculture, industry, commerce and household access to energy underpin growth in productivity.

This booklet describes how the International Development Association (IDA), the concessional lending arm of the World Bank, supports the poorest countries to improve access to reliable and affordable energy services. It also shows several detailed examples of how countries have focused on energy services to positively affect the lives and health of the poor.

The international development community has recognized the importance of energy services for poverty reduction. Chronic underinvestment, sub-optimal policies and weak institutional management have been the greatest challenges to effective energy service provision.

We believe that increased donor support can assist many countries to meet the energy MDG targets.

The World Bank remains committed to supporting its partner countries in addressing the demands of the poor for better energy services. We are looking forward to working with other donor agencies and partners.



Jamal Saghir

Director, Energy, Transport and Water

Chair, Energy and Mining Sector Board

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The World Bank

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Energy Services for Poverty Reduction and Economic Growth

Reliable and affordable energy services for agriculture, industry, commerce and households underpin growth in productivity and output, and improve the welfare of the poor. However, in many IDA countries, households and enterprises lack service altogether or suffer high-cost and unreliable supplies.

In some Sub-Saharan African countries, less than 5 percent of rural households receive electricity service and at current rates of electrification more than 50 percent of households region-wide would still lack access in 2030. The World Health Organization (WHO) estimates that more than three billion people, most of them in IDA countries, use wood, dung, and other traditional fuels in their homes to meet cooking and heating needs, and that the resulting indoor air pollution is responsible for 1.5 million deaths per year—mostly of children and women.

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. Therefore, the support of IDA in the sector encompasses investment as well as policy and institutional support to help countries meet the challenge of improving energy services.

Although IDA is the largest external financier of power sector investments in some countries, it only accounts for perhaps 5 to 10 percent of total investment. Consequently, IDA seeks through its projects to leverage other donor and investor finance and to improve the operational performance of sector entities so that they generate increased amounts of investment from their own resources.

At a glance

- As many as 95 percent of people living in the rural areas of the poorest countries in Sub-Saharan Africa do not have access to clean cooking fuels or to electricity.
- In order to increase access in the region from 24 percent in 2005 to 47 percent of the population in 2030 a US\$4 billion in investment is required.
- IDA leverages about three times the funding it commits. In Fiscal Year 2006, the total cost of energy projects financed by IDA was about US\$3 billion.
- 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.



Sectoral Context

Access to electricity is still a challenge.

For the past 10 years, under-investment in the power sector in IDA countries has resulted in a huge and growing power supply shortfall, unreliable service and slow progress on extending service to poorly served populations.

Good government policies and investment programs in countries such as Cameroon, Eritrea, Honduras, and Bangladesh have resulted in marked increase in electrification rates (see table below). However, in other countries, electrification rates have barely kept pace with population growth (as in Bolivia, Mozambique and Kenya). In many of the poorest countries in Sub-Saharan Africa, national household electrification rates are at single digit levels.

National Household Electricity Access Rates (Year)		
Bangladesh	32.0 (2000)	40.6 (2004)
Bolivia	71.2 (1998)	72.3 (2003)
Cameroon	40.7 (1998)	47.1 (2004)
Chad	2.3 (1997)	3.5 (2004)
Eritrea	22.9 (1995)	32.2 (2002)
Honduras	57 (2000)	64 (2005)
Kenya	14.5 (1998)	16.0 (2003)
Mozambique	6.6 (1997)	8.1 (2003)

IDA Contributions

Increased investments.

IDA investment in the energy sector has shown an upward trend since the launch of the Infrastructure Action Plan in 2003. The Action Plan reflected “an increased consensus . . . that the Bank Group needs to increase its engagement in infrastructure in light of growing investment needs, withdrawal of private investors, and growing recognition that the MDGs can only be met in a multi-sectoral way.”

Subsequently, IDA lending for energy rose to an annual average of US\$777 million in Fiscal Years (FY) 2003–06, and was around US\$950 million in both FY05 and FY06.

IDA Lending Commitments for Energy Projects by Region, FY99–06 (Annual Average, US\$ Million)		
Region	FY99–02	FY03–06
Sub-Saharan Africa	264	430
East Asia/ Pacific	107	146
Europe/ Central Asia	63	65
Latin America/Caribbean	3	10
Middle East/ North Africa	13	14
South Asia	181	112
Total Energy	631	777
Total IDA	6,180	8,570
Energy as percent of total IDA	10%	9%

Leveraging funds.

IDA's investments and guarantees have played a critical role in leveraging both public and private investment.

In FY06, for instance, the total value of energy projects partially financed by IDA was about US\$3 billion. IDA thus leveraged about three times the amount of funds it committed. While much of the investment that was leveraged was from the public sector (recipient governments and donor co-financing), the private sector has also contributed significantly to IDA projects.

IDA's focus on systemic changes has produced tangible results.

IDA's focus has been to address the underlying policy and institutional failures that have contributed to the lack of investment. In addition, IDA is often the largest financier of critical energy infrastructure.

The projects discussed below illustrate the variety and breadth of IDA's role in the energy sector around the world.

In Lao PDR, the *Southern Provinces Rural Electrification Project* financed grid extension and supported the Ministry of Energy and Mines in piloting off-grid electrification. The project helped to improve the financial performance of the national utility company and assisted with policy advice in reforming the power sector. In 1995, only 15 percent of households in Lao PDR had access to electricity. By 2004, grid access had almost tripled to cover 44 percent of the rural population. This project accounted for 26 percent of that increase.

In Bangladesh, the *Haripur Power Project* and the *Private Sector Infrastructure Development Project* have helped finance the 360MW Haripur and the 450 MW Meghnaghat power plants. Together the plants account for 20 percent of Bangladesh's installed capacity and, because of their high efficiency and reliability, nearly 30 percent of total electrical energy generated in Bangladesh.

They are the best-operating, best-maintained, and most reliable power plants in Bangladesh. They have

Examples of Private Sector Capital Mobilization in IDA Transactions (millions)

Country	Project	Private Capital	Mobilized IDA Credit	IDA/IBRD Guarantee	MIGA Guarantee	IFC Investment (approx.)
Bangladesh	Haripur Power Project	\$68		\$61		
Lao PDR	Nam Theun Power 2	\$1,177	\$20	\$50		170
Mozambique/ South Africa	South African Regional Gas Project	\$512		\$30	\$72	\$18
Sierra Leone	Bumbuna Power	\$67	\$12	\$38	\$91	
West Africa	West African Gas Pipeline	\$590		\$50	\$75	

by far the lowest unit costs among all independent power producers in the country, and are still among the cheapest even when compared with older plants. The plants have been also Bangladesh's most energy efficient, as they introduced state-of-the-art, gas-fired combined-cycle technology into the country and have had an outstanding environmental and safety record since their start-up.

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, and fostering sustainable management of forestry resources and biomass energy. So far, 40,000 homes, 1,080 enterprises, 1,025 rural schools and 107 health clinics have been connected.

In Sri Lanka, the *Energy Services Delivery Project* created an enabling environment for private sector participation in grid-connected renewable energy projects by helping develop a Small Power Purchase Agreement and by channeling long term credit through licensed commercial and specialized banks.

In parallel, private sector participation in off-grid renewable energy development was stimulated by the participation of micro finance institutions, which was instrumental in achieving increased penetration of solar home systems.

These private sector renewable energy projects have created a vibrant industry of suppliers, developers, consultants and trainers. When the project closed there were 11 mini-hydro developers (compared to just one before project implementation), four major solar companies (from two or three fledgling ones) and about 12–15 village hydro developers (versus one or two earlier). In addition, there were nearly 80 functioning electricity consumer societies at the village level.



In Vietnam, the *Rural Energy Project* approved in 2000 helped the government prepare a master plan for rural electrification that harnessed government, user and donor financing in a coordinated 10-year program. This project, together with follow-on projects, contributed to increasing access of rural households to electricity from 51 percent in 1996, to 91 percent in 2005.

Global reach, harmonization and flexibility.

With its global reach, IDA has helped share international best practices in areas such as strategic development of hydrocarbon resources; utility operational management; power plant design and engineering; and pricing and subsidy design.

Being the largest lender in many countries enhances IDA's convening power with stakeholders and donors to jointly coordinate sector development. In this context, IDA increasingly emphasizes the importance of sector alignment and harmonization of donor support. Cooperation, including joint financing of projects, has been and continues to be critical as investment.

IDA's flexibility in supporting a variety of financing options is a particular strength. For example, the adaptable program loans (APL), which are financing a variety of transmission inter-connection projects linking the power systems of neighboring countries in West Africa, are well-suited for this type of regional development. The West Africa program includes individual country investments that are at various stages of readiness for implementation. In such a situation, APLs are an effective vehicle for moving from narrow, time-limited investment projects to more comprehensive (often sector or country wide) programs.

Global partnerships.

IDA is often a convener, facilitator and contributor to global energy discussions. It shares lessons of its experience with country counterparts, the private sector, civil society and other development partners, in areas such as: analysis of energy poverty; financing of energy infrastructure; energy sector governance and regulation; institutional and operational reform of sector entities; and the impact of energy services on development outcomes.

It supports the voice of energy stakeholders. For example, it supports the Forum of Energy Ministers of Africa (FEMA), an advocacy group created to raise the profile of energy issues in Africa and to promote regional cooperation in energy sector development.

Global Public Programs.

One of IDA's advantages is its ability to leverage funding and technical assistance for clean energy development in the poorest countries:

- The *Energy Sector Management Assistance Program* (ESMAP) is a global technical assistance program of the World Bank that focuses on energy security, development of energy markets, renewable energy and energy efficiency, climate change and energy poverty.
- The *Extractive Industries Transparency Initiative* (EITI) aims to ensure that the revenues from extractive industries contribute to sustainable development and poverty reduction by increasing the transparency of both payments by companies to governments and of revenues received by those governments. Implementing IDA countries include Nigeria, Ghana, Azerbaijan, Cameroon, and the Democratic Republic of Congo.
- The *Global Gas Flaring Reduction Partnership* (GGFR) supports governments and the petroleum industry in their efforts to reduce the flaring and venting of gas associated with the extraction of crude oil. The GGFR currently comprises the governments and/or national oil companies of IDA countries such as Angola, Cameroon and Chad.
- The *Global Partnership for Output-Based Aid* (GPOBA) supports the delivery of basic services where policy concerns justify public funding to complement or replace user fees, and ties this public funding to the actual measured delivery of services such as connecting households to electricity. Output based aid approaches have been applied in the electricity sector in a range of IDA countries such as Bolivia, Nepal and Uganda.

Learning from the past, IDA has adapted to local conditions.

A more gradual approach to public-private partnerships.

In the 1990s, power sector reforms that addressed market structure, competition, private participation, and regulatory frameworks, advanced in developed countries as well as middle income countries in Latin America and Eastern Europe. Countries that undertook ambitious reforms tended to experience large private investment flows, marked improvement in efficiency and operational performance of utilities, and improved service to consumers. It was premised that these models successfully implemented in reforming countries had universal application.

However, experience has demonstrated the difficulty of applying reform models based on substantial market restructuring in large middle income countries to IDA countries with limited economic and institutional capacity.

Starting conditions determine the initial—and often subsequent—scope and composition of reform. Recent research indicates a certain threshold among developing countries in relation to power system size (around 1 GW capacity) and income (per capita income above roughly US\$900), that determines the extent of power market reform (degree of competition, extent of unbundling, and so forth) that is feasible. Most IDA countries are below this threshold.

This has strongly influenced the design of power projects in IDA countries so that in recent years less importance has been placed on fast-track unbundling and privatization of utilities especially in countries with small systems, and greater emphasis is given to improving the performance of these utilities and more gradually introducing forms of public-private participation (for example management contracts and independent power producers).

Enhancing the capacity of public sector entities.

Another lesson is that the public sector will remain an important, and often the main, source of investment where country and market risks deter private investors. A focus therefore, going forward, will be on enhancing planning and operational capacity of public sector entities, and on improving sector governance in order to underpin public private arrangements (management contracts, leases, concessions, and private asset ownership, especially in power generation).

Simpler projects.

A lesson learned in countries where institutional capacity is weak has been to limit project complexity, for example by decreasing the number of project components addressing different energy sub-sectors or the extent of policy changes in project conditions. This has led IDA to design more streamlined projects.



The critical role of political will.

The critical role of political will for power sector reform is demonstrated by Armenia's experience. There, sustained donor support helped a strongly committed government to drive and sustain operational and financial reform of the utilities as well as broader institutional and legal reform in the sector. IDA supported the reform through a combination of structural adjustment lending, investment credits and technical assistance. Most of the agreed policy and institutional changes were implemented, but with some useful flexibility in their timing.

More effective and sustainable lending.

These lessons have helped improve the effectiveness of IDA lending in the energy sector which has increased significantly from an average of around 57 percent satisfactory outcomes of projects completed in FY1999–2002 to about 85 percent in FY2003–05 according to the World Bank's Independent Evaluation Group (IEG).

At the same time, the sustainability of these projects has improved from about 48 to 89 percent. The percentage of completed projects with satisfactory institutional impacts increased to reach 69 percent today.

Looking Ahead

Globally, IDA's strategy will seek to: reinforce good governance at the state and utility levels; improve the financial sustainability of utilities through a range of measures including cost recovery tariffs and improvement of operational efficiency; leverage increased investment; and support energy sector development and reform that is pro-poor by, for example, reducing the level of subsidies and redirecting them to low-income households.

A tailored strategy.

In post-conflict countries such as Sierra Leone and Afghanistan, IDA focuses on the reconstruction and rehabilitation of destroyed power assets. In countries facing power shortfall 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 leverage private sector participation.

In countries where the policy framework is favorable, IDA coordinates closely with the donor community to assist countries in preparing and implementing sector-wide programmatic approaches (SWAPs). The approach is designed to harmonize donor support and to mobilize increased investment to scale up energy access.

A sector syndication prospectus that would be prepared as part of this programmatic approach will set out: projects and subprojects requiring financing;

policies that the government commits to implement; and access targets and service levels sought for household, public facilities and enterprises.

A Plan for Africa.

In Africa, IDA, in partnership with countries, donors, regional organizations (African Union and NEPAD), UN agencies and other stakeholders, has proposed implementing a comprehensive action plan for scaling up energy access. It proposes supporting country-led initiatives to systematically address the root causes of low energy access. The overarching objectives are to:

- Ensure energy access for enterprises and households (through electrification programs, and enhanced generation capacity including through regional projects) to support growth and improved welfare.
- Achieve the MDGs by providing energy services to key public facilities such as schools and clinics.
- Meet basic energy needs for lighting (by equipping unconnected households with affordable, modern lighting) and cooking (through clean, sustainable technologies and fuels).

Key numerical targets are to increase average household electricity access from 24 percent in 2005 to 35 percent by 2015; increase generation capacity by 20 percent or more in at least 30 countries by 2011; and reduce technical and non-technical losses in the power utilities of 20 countries by 10 percent or more by 2011.



Globally, IDA's strategy will seek to: reinforce good governance; improve the financial sustainability of utilities; leverage increased investment; and support energy sector development and reform that is pro-poor.

Sustainable Woodfuel Improves Rural Livelihoods in Senegal

Challenge

At the time of project preparation, forest-based traditional fuels (firewood and charcoal), mainly used for household cooking purposes, represented 53 percent of Senegal's final energy consumption. The bulk of the consumption of charcoal took place in the principal urban areas. Over the years, the operation of the charcoal industry in Senegal had resulted in (i) the gradual loss of forest cover (approximately 30,000 ha per year) degrading the ecosystem's carbon sequestration capacity and biodiversity; (ii) the degradation of the rural environment (particularly soils); (iii) the impoverishment of rural areas and an acceleration of rural exodus; and (iv) a massive transfer of wealth from the rural communities to a few city-based woodfuel traders. These negative impacts disproportionately affected rural women and children.

Approach

The project adopted a comprehensive approach, tackling both woodfuels' supply and demand, by

- Mapping forest resources, preparing participatory, sustainable forest management plans, and training communities on how to implement them, over 300,000 hectares of forests in the Tambacounda and Kolda regions, strengthening in the process the buffer zone around the Niokolo-Koba National Park.
- Establishing GIS-based forestry monitoring and evaluation systems.
- Promoting private sector inter-fuel substitution and the use of improved stoves.
- Strengthening the institutions involved in the management of the sector, and promoting the participation of civil society, with a special focus on women and mobilization opportunities at the village and regional levels. Villages were made contractually responsible for the forests in the project zone.

Results

Demonstrated that the production and marketing of traditional biomass fuels can be stabilized, while arresting deforestation, contributing to ecological conservation and increasing village incomes. More than 20 percent of Senegal's woodfuel consumption in 2004 was derived from sustainably managed forests.

Highlights:

- Sustainable community-managed forests were established over an area of 378,161 ha (exceeding project targets), supplying more than 370,000 tons per year of sustainable fuelwood.
- As an incentive for respecting sustainable forest plans, villagers benefited from rural development and training schemes. Community-based micro enterprises were established including beneficiary-operated improved carbonization units, apiculture cooperatives, collective and individual agricultural diversification units/systems; livestock and poultry-raising, arts and crafts units, etc. While woodfuel and large livestock activities were mostly led by men, all other activities were generally managed and operated directly by women.
- Established a sustainable incremental income generation base (wood and non-wood products) of about US\$12.5 million per year, equivalent to a \$40,000 average per participating village. Of that total, more than 30 percent resulted from women-led economic activities.
- More than 20 percent of Senegal's current energy supplies were derived effectively from renewable resources in the form of sustainable woodfuels in 2004. (That share has increased to 50 percent today with the introduction of sustainable green wood cutting in an eight-year rotation program).

- Inter-fuel substitutions (switching from charcoal to kerosene and LPG) and improved stoves directly benefited some 250,000 families in the principal urban and peri-urban areas of Senegal, reducing negative health effects associated with in-door pollution.
- Training and micro-credit schemes helped create an economically viable market for improved stoves.

IDA Contribution

- IDA contributed US\$5.2 million of US\$19.8 million project cost.
- Pioneered the use of GIS for the development of community-based participatory forest and natural resource management schemes.
- Introduced community-based rural development approaches that will be replicated in non-forested areas, where central economic activity will be agriculture, fisheries, or other.

Partners

From project preparation to supervision, the World Bank worked in close collaboration with the Dutch Co-operation agency (DGIS) which contributed US\$8.8 million. The Global Environment Facility also co-financed the project (US\$4.7 million).

Next Steps

- The establishment of a sustainable and diversified income base and the generation of a productive demand for energy have made the 317 project zone villages prime candidates for rural electrification and increased access to other modern energy services.
- A second transitional phase of this project is now under implementation, covering an additional 269,000 has. A second project is expected to expand the successful community-based and participatory model to other parts of Senegal starting in 2008.



The establishment of a sustainable and diversified income base and the generation of a productive demand for energy have made the 317 project zone villages prime candidates for rural electrification and increased access to other modern energy services.

Reliable Electricity Sparks Change in Rural Vietnam

Challenge

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

Approach

Rural Energy Project which would:

- Extend the electricity grid to 690 communes 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 national 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:

- More than 30 percent of men and 29.8 percent of women in recently electrified rural households reporting higher incomes.
- A major increase in new small businesses and many new jobs created in newly electrified areas.
- Health clinics report better conditions for diagnosis and treatment and improved communication about community health care.
- Children studying more because of access to lighting at night.
- Government's broader rural electrification program increased access from 50.7 percent of rural households in 1996 to 90.7 percent in 2005.

IDA Contribution

- Out of \$216 million, IDA provided US\$150 million in financing from 2000-2006.
- Long-term involvement in the sector and ongoing dialogue on needed reforms.
- Helped design a 10-year Master Plan for Rural Electrification that brings government, user and donor resources into one program.
- Improved management of that program.
- Assisted the government to set up technical standards for rural networks

Next Steps

IDA is financing the Second Rural Energy Project (US\$220 million) to improve service standards and the institutional framework for delivering rural electricity. This will be followed by the planned Third Rural Energy Project (starting in 2010), to complete coverage to isolated or scattered households and communities in mountainous areas and on islands, and a Rural Distribution Project (proposed for 2008).



Providing Electricity to Poor Rural Provinces of Lao PDR

Challenge

The project set out to provide electricity to seven poor rural provinces of Lao PDR and strengthen the capacity of the country's sole electricity provider, Electricité du Laos (EdL), to expand its reach to the rural poor through electrification investments and to operate on a commercial basis.

Approach

IDA resources provided the Electricité du Laos (EdL) with the needed investment to expand its network, while helping it become financially sounder through improved cost recovery efforts. IDA also supported the Ministry of Energy and Mines to pilot and establish sustainable off-grid electrification delivery systems. IDA established close working relationships with key policy makers in reforming the power sector.

Results

Access to electricity across the nation has tripled in the past 10 years.

Highlights:

- At the time of the project closing (June 2005), these partner MCOs were serving about 100,000 active clients (four times more than in 2002).
- In 1995, only 15 percent of households in Lao PDR had access to electricity. By 2004, grid access had almost tripled to cover 44 percent of the rural population. This project accounted for 26 percent of that increase.
- Through this project, more than 51,000 households (averaging five people per household) in 721 rural villages are now receiving electricity through the main power grid. Another 6,097 households have been connected to off-grid systems, such as solar and village hydro schemes. New small-scale, home-based businesses have thrived, with increased productivity. Children are now able to study at night.

- A comprehensive social economic survey conducted after completion of the project showed a growing number of new businesses in newly electrified villages, especially retail stores, weaving and knitting shops and rice mills. The use of electric tools and appliances has improved living standards and allowed for other productive activities.
- Technical assistance to Electricité du Laos (EdL) has built the agency's capacity in master planning, design, procurement, installation, and environmental and social impacts assessment. The successful implementation of EdL's Financial Recovery Plan has enhanced the financial sustainability of the utility and the power sector as a whole.
- The project applied innovative techniques to connect households in very remote areas. Solar home systems and small, village-based hydro schemes helped electrify more than 6,000 households in villages without grid coverage. Village electricity committees were set up to assist in the planning, development and implementation stages. This helped promote the participation of small- and medium-sized enterprises in providing the off-grid electrification systems.



- Through better monitoring, losses from the electricity grid have been reduced from 19 percent in 1998 to about 16.4 percent in 2003. The project has attracted public financing from users—about US\$100 per grid-electrified household and about US\$100-200 for each off-grid household, creating a better sense of ownership.

IDA Contribution

Total project costs were US\$41.4 million, of which US\$34.4 million came from IDA, US\$0.74 million from the Global Environment Facility and US\$6.3 million from the government.

Partners

Due to the success of the project, other donors are now stepping in. The next phase of the program (until 2012) has been developed through dialogue with the government. Lao PDR has received grants from other international agencies for rural electrifica-

tion in the country (US\$10 million from NORAD—the Norwegian Agency for Development Cooperation) and public financing (US\$4.36 million from local community contributions).

Next Steps

The government faces two major challenges: to connect 70 percent of the country's households to reliable electricity supplies by 2010 and 90 percent by 2020; and to develop its huge hydropower resources to enhance revenues from the export of electricity. Building on the success of this project, IDA plans to continue its support to the government through two rural electrification projects and a Greater Mekong Sub-region power trade project. These projects will further scale up rural electrification through the construction of the transmission facilities to allow electricity export; support development of Laos' hydropower resources; and the development of a national load dispatching center.

Country Indicators	1992/93	2004/05
GNI per capita (Atlas method, US\$)	290	460
Inflation (CPI, average annual rate, %)	6.3	7.2
External debt (% of GNI)	148.8	111.1
Poverty incidence (% below national poverty line)	46.0	28.7
Primary school enrollment (% of age group)	58 (1991)	84
Under-five child mortality rate (per 1,000)	163 (1990)	98
Population (millions)	4.4	5.6
Population growth rate (% per year)	2.5	2.0

Source: World Bank, *World Development Indicators*.

Low-cost Private Power Generation in Bangladesh

Challenge

Bangladesh suffered a full-blown power crisis in the mid 1990s characterized by a critical shortage of generation capacity. Weak finances and inefficient operations of the two main power companies—Bangladesh Power Development Board and Dhaka Electricity Supply Authority—determined the introduction of privately financed, independent power producers (IPPs).

Approach

A framework for attracting private power generation investments was created with IDA support. It resulted in the development of two cost-effective IPPs—the 360 MW Haripur and 450 MW Meghnaghat plants, with AES as the original sponsor of both projects. IDA also assisted Bangladesh with the development of transparent procurement approaches, regulatory frameworks, and risk sharing mechanisms for private sector infrastructure promotion and operations.

Results

Two new well-maintained and reliable power plants in Bangladesh generate 30 percent of the country's power.

Highlights:

- *Reliable plants:* Haripur, for example, was available over 99 percent of the time in its most recent contract year.
- *Cost-effective:* Haripur 2006 unit costs of 1.9 cents per kWh and Meghnaghat's of 2.3-cents compare well to the all-IPP average cost of 3.4-cents and the Bangladesh Power Development Board's own generation cost of 3.8.
- *Bangladesh's most energy efficient:* the plants introduced state-of-the-art, gas-fired combined-cycle technology in the country.

- The plants have a spotless environmental record and have received the highest level of ISO certification, having gone through a rigorous on-site review of environmental, safety and health issues and procedures.
- Haripur came into commercial operation in December 2001; and Meghnaghat in November 2002 together adding 810 MW. The facilities now account for 20 percent of Bangladesh's installed capacity, but are so reliable and cost-effective that they provide 30 percent of the total amount of generated power.

IDA Contribution

- An IDA partial-risk guarantee (PRG) supported the 360 MW Haripur Power Project, which was the first major private power plant developed in Bangladesh. (The guarantee provides comfort to international commercial lenders on certain risks related to government policy and regulatory behavior.) The Haripur IDA PRG covered US\$60.9-million in support of commercial debt financing, out of a total financing of US\$ 107 million, project cost being US\$ 180 million and equity US\$73 million.
- Meghnaghat received US\$80-million debt finance (with a senior loan of US\$20 million and subordinate loan of US\$60 million) from IDA through the Private Sector Infrastructure Development Fund, out of a total financing of \$220-million.
- IDA's US\$141-million support leveraged an additional \$259-million.
- In the case of the Haripur guarantee, as with other PRGs, loans were provided to the project company at lower interest rates (only 2 percent premium to US Libor) and longer tenor (15 years), than would otherwise have occurred, thus lowering the overall cost of capital for the project.
- For Meghnaghat, the long-term financing placed into the project through PSIDP was fundamentally unavailable in the market otherwise.

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- IDA's impact is underscored by the fact that, without IDA support (unavailable for other projects because of procurement transparency concerns), no other IPPs have been financed in the past five years. IDA assistance was also provided for institutional development of the government contracting agency, and development of the legal and regulatory framework.

Partners

The International Finance Corporation, part of the World Bank Group, provided additional financing.

Next Steps

- The government is seeking Bank Group advisory services (IFC), and financing and risk mitigation support (IDA/IFC/MIGA). IFC and IDA are working closely with the government and other donor partners, particularly the Asian Development Bank, to ensure that transparent and competitive processes are used to attract investors; that the

resulting deals reflect a fair balance of risk and reward for investors; and that, as with Haripur and Meghnaghat, new deals represent good value for Bangladeshi consumers.

- In parallel, IDA is addressing immediate shortages of peak generation through the US\$300-million Siddhirganj gas-to-power project. This project will also emphasize the integrity of procurement processes and build capacity in three state-owned entities for project implementation, operation, and contract management.



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