

# Energy Services for Poverty Reduction and Economic Growth

**R**eliable 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 five 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 2050. The World Health Organization estimates that more than 3 billion people, most of them in IDA countries, use wood, dung, coal and other traditional fuels inside 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. The support of IDA in the sector encompasses investment as well as policy and institutional support to help countries improve energy services.

### 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.
- Electricity shortages affect some 30 African countries resulting in a negative economic impact estimated to be equivalent to two percent of GDP.
- The total spending needs for Africa to increase access by 10 percentage points and to eliminate electricity shortages are approximately US\$40 billion per annum. The region currently spends only about US\$11 billion, leaving a financing gap of about US\$30 billion.
- IDA leverages about two times the funding it commits. In Fiscal Year 2009, the total cost of energy projects financed by IDA was about US\$4.9 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.

Although IDA is often the largest external financier of power sector investments, 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.



## 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 in connecting poorly served populations.

Good government policies and investment programs in countries such as Bangladesh, Cameroon, Eritrea, Honduras, and Indonesia, have resulted in marked increase in electrification rates (Table 1).

However, in other countries, electrification rates have barely increased (as in Bolivia, Kenya, and Mozambique). In many of the poorest countries in Sub-Saharan Africa, national household electrification rates are at single digit levels.

**Table 1. National Household Electricity Access Rates [Year], Selected Countries**

Bangladesh	32.0 [2000]	40.6 [2004]
Bolivia	51.9 [2000]	67.1 [2005]
Cameroon	40.7 [1998]	46 [2008]
Chad	2.3 [1997]	3.5 [2004]
Eritrea	22.9 [1995]	33 [2007]
Honduras	54.8 [2000]	76.4 [2008]
Indonesia	62.8 [1994]	67 [2004]
Kenya	14.5 [1998]	16.0 [2003]
Mozambique	6.6 [1997]	8.1 [2003]

## IDA CONTRIBUTIONS

### Increased investments

IDA investment (grants and credits) 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 Millennium Development Goals can only be met*” by taking an approach that considers several sectors at a time.

Subsequently, IDA investment for energy rose to an annual average of US\$777 million in Fiscal Years 2003-2006, and more than doubled to an annual average of US\$1.72 billion in Fiscal Years 2007-2009 (Table 2).

### Leveraging funds

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

In Fiscal Year 2009, for instance, the total cost of energy projects partially financed by IDA was about US\$4.9 billion. IDA thus leveraged about more than two times the amount of funds it committed.

While much of the investment that was leveraged was from the public sector (recipient

**Table 2. IDA Investment for Energy Projects by Region, FY99–08 (US\$ million)**

Region	FY99–02	FY03–06	FY07–09
Sub-Saharan Africa	264	430	1,042
East Asia/Pacific	107	146	202
Europe/Central Asia	63	65	41
Latin America/Caribbean	3	10	13
Middle East/ North Africa	13	14	56
South Asia	181	112	366
<b>Total Energy</b>	<b>631</b>	<b>777</b>	<b>1,720</b>
Total IDA	6,180	8,570	12,365
Energy as percent of total IDA	10%	9%	14%

governments and donor co-financing), the private sector has also contributed significantly to IDA projects (Table 3).

### 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**, IDA is financing the Rural Electrification and Renewable Energy Development Project, approved in 2002, whose objective is to support Bangladesh's efforts to provide electricity to the entire rural population by 2020. The project's approach includes extension of electricity distribution grids and the introduction of renewable energy options in remote areas where grid extension is not feasible.

As of June 2009, the project has brought grid electricity to more than 600,000 consumers in Bangladesh. Access to electricity has increased to about 40% from 30% in 2002. At the same time 320,000 consumers have been provided with solar home systems, surpassing the original target of 50,000. IDA provided a US\$236 credit to the project, from which

**Table 3. Examples of Private Sector Capital Mobilization in IDA Transactions (millions)**

Project	Private Capital Mobilized	IDA Credit	IDA/IBRD Guarantee	MIGA Guarantee	IFC Investment (approx.)
Haripur Power	\$68		\$61		
Renewable Energy Development	\$49.8	\$202			
South African Regional Gas	\$512		\$30	\$72	\$18
Bumbuna Power	\$67	\$12	\$38	\$91	
Pamir Private Power	\$8	\$10			\$8
West African Gas Pipeline	\$590		\$50	\$75	

US\$56 million are dedicated to the off-grid, renewable energy solutions. The project has been able to leverage additional US\$8 million in financing from Global Energy Fund.

In **Mali**, the *Household Energy and Universal Access Project* promotes electricity services in semi-urban and rural areas; enhancing the quality and efficiency of health and education centers; and fostering sustainable management of forestry resources and biomass energy, such as fuel wood. Since the project's approval in 2004, 40,000 homes, 1,080 enterprises, 1,025 rural schools and 107 health clinics have been connected. Forested areas under sustainable management have grown from 350,000 hectares to 14 million hectares.

In **Sri Lanka**, the *Energy Services Delivery Project (1997-2004)* fostered opportunities 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, in 2004, 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 **Tanzania**, IDA is financing the Tanzania Energy Development and Access Expansion Project, approved in 2008, which, among others, supports local renewable energy development to boost the country's generation capacity and expand access in rural areas, where electrification rate is below 2 percent.

A comprehensive regulatory framework has already been adopted to streamline and simplify procedures for small power projects. As a result, 22 projects promoted by local sponsors are currently under development, amounting to over 70MegaWatts. IDA provided US\$105.0 million, of which US\$85.8 million focus on urgent investments in transmission and distribution grid of the national utility, US\$3.2 million for technical assistance, and US\$16 million for small renewable energy and off-grid access. The Global Energy Fund is supporting the project with US\$6.5 million.

### **Global reach, coordination, 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 greater alignment and coordination of donor support.

Sector-wide approaches, such as the one adopted in July 2008 by the government of Rwanda and its development partners, are

examples of this effort. Cooperation, including joint financing of projects, has been and continues to be critical as investment needs in the sector are greater than the resources available.

IDA's flexibility in supporting a variety of financing options is a particular strength. For example, adaptable program loans, 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, adaptable program loans 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 facilitator and contributor to the global discussion on energy. 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.

IDA supports the voice—meaning the representation and influence—of energy stakeholders. For example, it supports the Forum of Energy Ministers of Africa, an advocacy group created to raise the profile of energy issues in Africa and to promote regional cooperation in energy sector development.

## Clean energy and climate change

IDA is a major financier of energy efficiency, renewable energy and large hydropower projects.

In Sri Lanka, IDA has supported development of small hydropower projects. Since the program was initiated almost a decade ago, 109MW of power capacity has been installed, contributing 4 percent of the nation's gross generation. Local power equipment suppliers involved in the program have increased their expertise to the point where they are now internationally active.

In Uganda, the 250 MW run-of-river Bujagali Hydropower is a major project in the country's cost-effective energy sector expansion. IDA financing has been pivotal in mobilizing the financing package needed for what is the largest single private investment in Uganda—and among the largest in East Africa at an estimated cost of US\$870 million.

IDA is supporting the use of solar (photovoltaic) home systems to meet lighting needs of poor households in countries as diverse as Burkina Faso, Cambodia, Ethiopia, Mali, Mongolia, Nicaragua, Papua New Guinea, Tanzania, Uganda and Zambia.

### 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. It has joined forces with partners in a number of global efforts:

- The *Energy Sector Management Assistance Program* 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.
- *Energy for the Poor*, a component of the Infrastructure Action Plan, seeks to expand energy access and protect the poor from high and volatility energy prices. The initiative seeks to scale up public and private sector projects in energy access, energy diversification and energy efficiency that reduce the longer-term vulnerability of countries to higher oil price including. This will be implemented through co- or parallel financing by donors of projects that are already in the World Bank Group and donors' pipeline especially in IDA countries, which have been severely affected by volatile energy prices. A number of energy access projects in Africa are actively being considered for co-financing by several donors, including the Arab Bank for Economic Development, the Islamic Development Bank, the OPEC Fund for International Development, as well as Saudi and Kuwait development funds.
- The *Global Gas Flaring Reduction Partnership* 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 Global Gas Flaring Reduction Partnership currently comprises the governments and/or national oil companies of IDA countries such as Angola, Cameroon and Chad.
- The aim of the *Scaling-up Renewable Energy Program for Low Income Countries*, under the Strategic Climate Funds, is to demonstrate, as a response to the challenges of climate change, the economic, social and environmental viability of low carbon development pathways in the energy sector by creating new economic opportunities and increasing energy access through the use of renewable energy. Donors are finalizing their pledges to enable the fund to become operational during Fiscal Year 2010.

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

### Strengthening public-private partnerships

In the 1990s, power sector reforms, which 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 hoped that success with these models in these countries would suggest the approach could be adapted by other nations worldwide.

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 GigaWatt capacity) and income (per capita income above roughly US\$900), which determines the extent of power market reform that is feasible. Most IDA countries are below this threshold.

This has influenced approaches to the design of power markets in IDA countries so that in recent years there has been more focus on improving the performance of publicly owned utilities and on introducing forms of public-

private participation including leases, management contracts, and independent power producers.

### Enhancing the capacity of public sector entities

The public sector will remain an important, and often the main, source of investment where country and market risks deter private investors. Going forward, the focus will be on enhancing planning and operational capacity of public sector entities (such as ministries, utilities and regulators), and on improving sector governance in order to underpin public-private arrangements—such as management contracts, leases, concessions, and private 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 utilities as well as broader institutional and legal reform in the sector. IDA supported the reform through a combination of lending, investment credits, and technical assistance. Most of the agreed policy and institutional changes were implemented, but with some useful flexibility in their timing.

## 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 expanding 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 Millennium Development Goals by connecting 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).

## LOOKING AHEAD

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 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.

### A tailored strategy

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.

A sector syndication prospectus that would be prepared as part of this programmatic approach will set out: projects and sub-projects requiring financing; policies on which the government commits to implement; and access targets and service levels sought for household, public facilities and enterprises.

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