



***World Bank Group Energy Financing:
Energy for the Poor?***

Heike Mainhardt-Gibbs and Elizabeth Bast
with Stephen Kretzmann

Oil Change International
October 2010

Executive Summary

The multiple challenges of energy poverty and climate change are daunting. Globally, more than 1 out of every 5 people lacks access to electricity. Nearly 2 of every 5 still rely on wood and biomass for basic cooking and heating. Many of the people without access to modern energy services live in rural areas of sub-Saharan Africa and Asia. In many cases, these populations will be the same ones that face disproportionate climate change impacts to their agricultural and natural resource-based livelihoods.

Increasing clean energy access is key to confronting a host of development challenges. The World Bank Group (“the Bank”) is well-placed to address energy access and support clean energy¹, but its current energy lending portfolio remains heavily biased towards conventional fossil fuels instead of on energy access, renewable energy, and energy efficiency.

To conduct this study, the authors completed an independent review of the Bank’s fossil fuel lending for fiscal years 2009 and 2010. They also requested and received from Bank staff the Bank’s own assessment of which of their projects met their own definitions of improving access. There is a high degree of congruence between these two studies, and the analyses differ only in the classification of two natural gas projects.

This study finds that ***none of the World Bank Group’s fossil fuel finance directly targets the poor or ensures that energy benefits are reaching the poor.*** Specifically:

- *None* of the 26 fossil fuel projects independently reviewed clearly identify access for the poor as a direct target of the project.
- *The Bank and the authors agree that no coal or oil projects can be classified as improving energy access.* Note that this includes the controversial Eskom loan earlier this year.
- In FY2009 and FY2010, funding for upstream fossil fuel projects and fossil fuel power plants dwarfed Bank spending on access projects by 225 percent or \$7.2 billion compared to \$3.2 billion for access (according to the Bank’s own assessment, which includes two questionable gas projects).
- Most often, the World Bank’s public project documentation does not identify the intended consumer of the energy services.
- At least six fossil fuel projects identified industrial demand as a direct target of the project.

¹ This paper is focused on the Bank’s energy portfolio as a whole and does not deal with the climate finance funds of the World Bank. The fact that the Bank’s portfolio continues to heavily emphasize fossil fuel lending that is not targeted at the poor, however, does raise the question of whether the Bank is the most suitable location for globally-agreed climate funds.

- Overwhelmingly, energy project documents do not indicate plans to monitor the number of poor receiving energy services from the project.

An institutional focus by development institutions on energy access projects could begin to fill the financing gap to achieving universal energy access. To meet the most basic energy needs of the world's population, the International Energy Agency (2010) estimates \$36 billion a year is needed in additional financing. Renewable energy projects, like small hydropower, solar, and biomass, are often the most effective solutions for the rural areas where many of those who lack access live.

For the World Bank Group to take advantage of the opportunities around clean energy access, it should:

- Prioritize investments that ensure increased energy access for the poor, focusing on technologies that are cost effective and have positive social and environmental impacts.
- End support for all fossil fuel projects (other than assistance with transition such as mine closure) that do not have as their sole purpose energy access for the poor.
- Require all energy projects to evaluate, track, and publicly report on energy access for the poor.
- Increase lending for small scale and large scale renewable energy, which can help both improve access and shift to a low carbon economy, and streamline energy efficiency across Bank lending, inside and outside the energy sector.
- Work with countries and stakeholders to clarify the benefits and develop plans for low-carbon, renewables-based, and efficient energy development pathways.

As it has in the past, the World Bank Group has an opportunity to put its grants, credits, and below-market lending towards projects with positive social and environmental impacts. How the Bank chooses to use its dollars can either support and incentivize energy access and clean energy pathways in developing countries or continue countries on dirty energy pathways that fuel climate impacts, undermining sustainable development and poverty reduction goals.

Energy Access, Fossil Fuels, and Climate Change

Worldwide, some 1.4 billion people, or over 20 percent of the world's population, still have no access to electricity and approximately 2.7 billion people rely on traditional biomass² as their primary source of energy (IEA, 2010). The large majority of electricity-deprived people – around 85 percent – live in rural areas of the developing world, mainly in Sub-Saharan Africa and South Asia (IEA, 2010). Access to energy has been shown to facilitate other development indicators, and the United Nations has made clear that access to affordable, modern energy services is essential for the achievement of sustainable development and the Millennium Development Goals³ (UN Millennium Project, 2005). Clearly, there is an urgent and critical need for the development of energy services for the poor.

The sources of energy utilized for energy access and the manner in which energy services are produced and consumed are of crucial importance to sustainable development and, in particular, to the poor. A number of sources cite the greater suitability of renewable energy as compared to conventional fossil fuel energy, particularly for decentralized, off-grid and mini-grid uses (IEA, 2010; AGECC, 2010; Ballesteros and Nakhouda, 2010). Renewable energy is often a quicker and more affordable option than extending the grid to remote, rural areas, and these projects often have significant job creation and small business development potential. A number of renewable energy technologies already in use for remote applications include: small hydropower or solar photovoltaics for local electricity, small wind power for water pumping and local electricity, biogas for decentralized cooking and electricity, and solar collectors for water and space heating (REN21, 2005).

Conversely, fossil fuel sources, including oil, gas, and coal, have a number of drawbacks that are often not considered in economic analyses of projects. Fossil fuels are subject to price fluctuations and also have hidden costs to public health and to the local environment from associated pollution. They also contribute to climate change. Climate change caused by fossil fuel use will disproportionately impact poor countries, as they rely heavily on climate-sensitive sectors, such as agriculture and forestry, and their lack of resources, infrastructure, and health systems leaves them at greater risk to adverse impacts.

Low-carbon energy production is key to combating climate change, as the combustion of fossil fuels (oil, gas, & coal) is responsible for more than 75 percent of the human-caused increase in carbon dioxide emissions, the main heat-trapping greenhouse gas (GHG) (IPCC, 2007). The IPCC further states that, "[o]ver the next half-century, climate change could impede achievement of the Millennium Development Goals."

² Traditional biomass includes wood, agricultural residues and dung used for cooking and heating.

³ The UN Millennium Development Goals adopted in 2000, include: 1. Eradicate extreme hunger and poverty, 2. Achieve universal primary education, 3. Promote gender equality and empower women, 4. Reduce child mortality, 5. improve maternal health, 6. Combat HIV/AIDS, malaria and other diseases, 7. Ensure environmental sustainability, and 8. Develop a global partnership for development. Specific targets were set for 2015.

The World Bank Group: Opportunity to Influence Energy Development

The World Bank Group occupies a unique position to influence the nexus between low-carbon energy development paths and poverty reduction in developing countries. The overall mission of the World Bank Group is to fight poverty. The Bank provides low-interest loans and grants to developing country governments and commercially attractive finance (debt, equity and guarantees) to private sector actors on behalf of the international community. In addition to direct project financing, the Bank influences policies, regulations, and institutions that govern the power sector through analytic and lending support for policy reform.

The Bank has made a commitment to increasing energy access and supporting clean energy pathways in developing countries. As part of the UN Secretary General's Advisory Group on Energy and Climate Change, the World Bank Group called for commitment and concerted action on the goals of universal access to modern energy services and improved energy efficiency (AGECC, 2010).

Further, according to the World Bank Group (2009), the Bank's proposed new energy sector strategy, which is currently under review, *"will articulate a way forward to help developing countries achieve the twin objectives of:*

- *improving access and reliability of energy supply; and*
- *facilitating the shift to a more environmentally sustainable energy development path."*

However, if the Bank continues to fund fossil fuel projects at current rates, both of these objectives are at risk. In FY2010, the Bank provided \$13 billion to energy sector investments. Of this total, \$6.3 billion went to fossil fuel projects, including a record high of \$4.4 billion to coal-based generation, and \$3.4 billion for new renewable energy and energy efficiency projects, which also was a record for the Bank (Mainhardt-Gibbs, 2010). In FY2009, the Bank provided \$8.3 billion to overall energy sector investments. Of this total, \$3.0 billion went to fossil fuel projects, including \$966 million to coal-based generation, and \$3.1 billion for new renewable energy and energy efficiency projects.

Using the breakdown of Bank energy sector financing by fuel source⁴, in FY2010 fossil fuels represented 63 percent, with coal alone representing 44 percent. This is troublesome given coal is the most carbon-intensive source of energy; even high efficiency coal plants (e.g., supercritical) emit more than twice as much carbon dioxide per MWh than combined cycle natural gas plants. The Bank often contends that it needs to continue to support coal projects because coal provides affordable energy for the poor. The key unanswered question, however, is whether or not those coal plants are actually benefitting the poor.

⁴ This represents only World Bank Group financing associated with specific fuel sources. Total World Bank Group contributions to the energy sector also include financing for policy and institutional reforms that are not tied to a specific fuel.

As a purveyor of low-interest loans, interest-free credits and grants, the World Bank Group is inherently incentivizing certain development paths. If the Bank is to use this influence to increase energy access for the poor and shift developing countries to low-carbon pathways, its energy portfolio cannot continue to be so heavily skewed towards fossil fuel projects that in turn appear to be subsidizing dirty energy for industry or for higher income consumers.

Energy Access: Definitions and Indicators

While there is increasing interest in the topic of energy access for the poor, there is still no generally accepted definition or list of indicators for the term ‘energy access’. This section outlines some of the definitions and important uses of energy by the poor that are treated in literature and programs of organizations related to energy, development, and poverty.

According to the International Energy Agency (IEA), “individuals’ access to electricity is one of the most clear and un-distorted indications of a country’s energy poverty status.” The IEA further breaks down energy access into incremental levels of 1) basic human needs; 2) productive uses and 3) modern society needs. ‘Basic human needs’ is the level that is used for forecasts of costs for universal energy access. This includes “electricity for lighting, health, education, communication and community services (50-100 kWh per person per year)” and “modern fuels and technologies for cooking and heating (50-100 kgoe of modern fuel or improved biomass cook stove),” (IEA, 2009).

The AGECC report makes the case for ‘productive uses’ to be included in energy access. This would include “electricity, modern fuels and other energy services to improve productivity,” “agriculture: water pumping for irrigation, fertilizer, mechanized tilling,” “commercial: agricultural processing, cottage industry,” and “transport: fuel.”

UN Energy (2005) uses the term ‘energy services’, which refers to “the benefits produced by using energy supplies,” and that, “the poor obtain energy services by gaining access to modern fuels, electricity and mechanical power.” UN Energy compares traditional fuels that provide low quality energy services with “good quality heating and lighting, modern fuels and electricity” that “provide mechanical power for agro-processing, refrigeration for clinics, motive power for transport and telecommunications for education and public awareness.”

The World Bank Group publicly defines access projects as “projects aimed at increasing access to electricity services. For IDA countries, these include all generation, transmission and distribution projects, as they are all needed for increased electrification. For IBRD countries, only projects specifically aimed at increasing electricity access (e.g., rural electrification projects) were included.” (World Bank Group, b.)

World Bank Group Energy Access Assessment: Purpose and Methodology

As described above, the current reliance of the World Bank Group's energy sector on fossil fuels in and of itself has negative implications for climate change and the poor. The following study focuses on whether the Bank's fossil fuel investments are in fact focused on the positive goal of increasing access to energy services for the poor.

First, the study independently evaluates Bank financing for fossil fuel projects in FY2009 and FY2010 to determine whether or not projects directly targeted energy access (project-by-project results are provided in the Annex). Second, the study reviews and compares the independent evaluation to the Bank's own assessment on energy access over for the same time period. Although the study focuses on fossil fuel projects, large hydropower projects and a handful of new renewable energy projects are also included for comparison.

The study starts by evaluating three questions for each project:

1. What technologies and energy fuel sources were being developed?
2. What purpose is the power or fuel source destined for?
3. Does the project target energy access for the poor?

In order to determine whether or not a project targets energy access for the poor (Question 3), a set of indicators was used. Since a generally accepted list of indicators on energy access for the poor was not available, indicators were developed by compiling definitions and important uses of energy by the poor from reviewing literature and organizational programs from various institutions including: the International Energy Agency, the United Nations Energy Program, the World Bank Group, the World Resources Institute, and developing country submissions to the World Bank Group's Energy Sector Strategy Review (please see previous section).

The following indicators were used by the study to evaluate projects for addressing energy access for the poor:

1. The project focuses on a targeted number of new electricity connections or energy services to low-income households.
2. The project focuses on electricity for services important to the poor, such as health clinics, schools, or telecommunications.
3. The project focuses on improving the reliability of electricity services in an area that largely serves low-income households and/or electricity services important to the poor and currently has intermittent or unreliable access.
4. The project focuses on provisions to make energy affordable for the poor – e.g., effective, transparent safety nets to ensure that poor people can afford energy for basic needs, such as subsidies targeted at access, not consumption (as opposed to only having measures aimed at cost recovery – such as tariff increases).
5. The project involves power grid extension to new peri-urban or rural areas (as opposed to simply feeding into the existing grid system).

6. The project involves rural, off-grid solutions for providing energy services.

While indicators 1) and 2) include the most basic energy services, the improvement of reliability to low-income households and communities (indicator 3) and provisions for making energy affordable (indicator 4) are also important in achieving a base level of energy access for all. Indicators 5) and 6) do not reflect energy access per se, but these indicators provide a proxy for initiatives that are likely to improve access when looking at projects.

Summary of Findings

Overall, the study finds that the majority of World Bank Group energy sector finance does not directly target the poor or ensure that energy benefits are reaching the poor, such as through monitoring project results. In general, the public documents available for World Bank Group energy projects typically do not identify the intended consumers, i.e., direct project beneficiaries. Instead, project documents claim that they address a “development need” of a given country often stated in broad terms. Frequently, there are general statements on providing energy to the country and how this will help poverty reduction, but these claims appear to be unsubstantiated.

Specifically, the independent assessment finds that none of the projects aimed at developing fossil fuels as an energy source directly targeted energy access for the poor (please see Annex for details). ***The only targeted end-users indicated for fossil fuel projects are industrial or commercial consumers.*** Moreover, there are no provisions to make either connections available to the poor or energy services affordable for the poor.

According to the Bank’s own assessment of its energy access financing, in FY2010, only \$1.0 billion of \$13.0 billion in overall energy financing went to energy access and in FY2009, \$2.2 billion went to energy access of \$8.3 billion in total energy financing (World Bank Group, a.). Although the Bank does not point this out, the Bank’s own assessment reveals that none of the coal plants or oil projects financed during these two years qualified as promoting energy access, even though the rhetoric of energy access was used in urging some of the projects’ approvals (e.g., the \$3.05 billion South African Eskom coal power project). Just the spending on these coal plants alone dwarfs the Bank’s spending on projects aimed at access by 66 percent or \$5.4 billion compared to \$3.2 billion respectively (according to the Bank’s assessment).

| World Bank Group Energy Lending | FY2009 | FY2010 | FY09&10 |
|---|---------------|---------------|--------------------|
| Overall energy lending (Bank assessment) | \$8.3 billion | \$13 billion | \$21.3 billion |
| Energy access lending (Bank assessment) | \$2.2 billion | \$1.0 billion | \$3.3 billion |
| Oil and coal lending for energy access (Bank & independent assessments) | \$0 | \$0 | \$0 |

There were only two fossil fuel projects classified by the World Bank Group's analysis as "access" projects – both of them for natural gas: one in Nigeria and one in Bangladesh. However, the independent evaluation found the Bank's access classification for both projects questionable. Given these projects planned to supply gas power to existing urban-based electricity systems and there were no measures to ensure or track that the additional gas generation would reach any poor, the projects were determined to only "potentially" provide access or increase reliability of energy to the poor (please see Box 1 and the Annex). The Bank's approach to energy in IDA countries makes it a foregone conclusion that any electricity generation or transmission project translates into access for the poor. Such an approach is highly vulnerable to perpetuating an energy scenario consisting of access only for industry and the well off – potentially leaving the poor yet again in the dark.

The World Bank Group would be able to better gauge its progress on energy access for the poor, if it required projects to clearly identify targeted consumers (direct beneficiaries) for energy projects. In some cases, this could potentially stimulate more direct benefits to the poor, such as having an energy project include additional provisions that provide energy services to the poor, aside from the planned industrial or existing grid-provided services.

Specific findings of the assessment include (please see Annex for details):

- *None* of the 26 fossil fuel projects independently reviewed clearly identified access for the poor as a direct target of the project.
- *The Bank and the authors agree that no coal or oil projects can be classified as improving energy access.* Note that this includes the controversial Eskom loan earlier this year.
- In FY2009 and FY2010, funding for upstream fossil fuel projects and fossil fuel power plants dwarfed Bank spending on access projects by 225 percent or \$7.2 billion compared to \$3.2 billion for access (according to the Bank's own assessment, which includes two questionable gas projects).
- Most often, the World Bank's public project documentation does not identify the intended consumer of the energy services.
- At least six fossil fuel projects identified industrial demand as a direct target of the project.
- Overwhelmingly, energy project documents do not indicate plans to monitor the number of poor receiving energy services from the project.

In addition, only three of the projects independently assessed, one large hydropower and two new renewable energy projects, appear to meet at least one of the five access indicators. A biofuel project in India was the only project to clearly indicate how many rural poor households are expected to receive energy services from the project.

Box 1. Is it Energy Access for the Poor?

The World Bank Group (2010a) classifies two fossil fuel projects in FY2009 as energy access projects. However, whether energy services will actually reach the poor is questionable in both projects as described below.

1. IDA-financed & -guaranteed Nigeria Electricity and Gas Improvement Project – The Bank qualifies this as an access project because the project “*allowed gas to continue to flow to critical power generation facilities.*” According to project documents, the project involves a \$400 million IDA Partial Risk Guarantee (PRG). It is believed that the PRG will ensure a regular and sufficient supply of gas, which in turn will increase power generation from existing public sector power plants because the PRG will “*back-stop the payment obligations of the public power utility under proposed Gas Supply and Aggregation Agreements with oil companies.*” In addition, \$180 million of IDA-finance will partially go to “*reinforce distribution networks to increase electricity supply in selected cities.*” It is unclear from the project information whether increased generation from urban-based existing power plants will provide access or increased reliability of energy services to the poor.

Moreover, the Bank project documents point out that “[g]iven the low access rates and given that around 50 million people in the rural areas are living in darkness, it is critical that the Bank supports Government’s efforts to expand rural electrification. Promoting use of renewable energy is equally important given the need to diversify energy resources and high costs associated with extending the grid to hitherto unconnected areas. These can be addressed in a future operation exclusively designed to address these issues...” This Bank statement seems to suggest that future operations, not the current gas project, will specifically target Nigeria’s energy poverty issues.

2. IDA-financed Bangladesh Siddhirganj Peaking Power Project - The Bank qualifies this as an access project because the project “*provided 300MW of natural gas-fired power to help close Bangladesh’s nearly 2,000MW daily power shortage.*” According to project documents, the project involves construction of a simple cycle gas turbine power plant at an existing power generation site to the southeast of Dhaka (the capital and largest city in Bangladesh). It will also finance a 60 km natural gas pipeline from Bakhrabad to Siddhirganj that will improve the reliability of gas supply to the Siddhirganj power plant, and an 11 km electricity transmission line so that power from the plant can be distributed to consumers.

Given there are no planned new connections to the Dhaka grid that the plant feeds into or a specified part of the city to be served, it is difficult to determine if any poor will benefit. The power generation could be to serve industrial demand in Dhaka or the new growth in middle class high-rise apartment buildings. Although these energy needs may be important, the point stands that the increased energy generation does not necessarily result in access for the poor. The current assessment rated this project as potentially providing access or increased reliability of energy services to the poor. The Bank-supported gas project would need to be monitored to determine actual benefits to the poor.

Recommendations and Conclusion

Based on the findings above, the Bank's role in financing increased energy access for the poor, and the importance of increasing renewable energy and energy efficiency to combat local pollution and climate change, the World Bank Group should:

- ***Prioritize investments that ensure increased energy access for the poor, focusing on technologies that are both cost effective and have positive social and environmental impacts.*** The Bank's energy projects need to directly target the poor not simply assume that providing additional power will result in benefits to the poor or increase access. In addition, it is clear from the Bank's own lending that new renewable energy projects can help increase energy access. The Bank should focus on these investments over other projects in its energy portfolio.
- ***End support for all fossil fuel projects (other than assistance with transition such as mine closure) that do not have as their sole purpose energy access for the poor.*** The Bank's continued subsidization of fossil fuels is not addressing energy access and is harming local environments and the climate. The climate impacts from fossil fuel emissions are already undermining development efforts in developing countries. Fossil fuel lending must stop unless it is solely geared at energy access for the poor.
- ***Require evaluation, tracking and public reporting of energy access for the poor.*** The Bank does not consistently evaluate, track and report project results on energy access. The Bank should increase its transparency around the intended targets of its energy investments and track how these projects improve the lives of the world's poorest.
- ***Increase lending for small scale and large scale renewable energy, which can help both improve access and shift to a low carbon economy, and streamline energy efficiency across Bank lending, inside and outside the energy sector.*** Shifting to cleaner means of producing energy globally will be key to meeting climate challenges moving forward. The Bank is in a position to help cover the incremental costs of investments in renewable energy and should use its subsidies to help developing countries shift to clean energy pathways. Energy efficiency is often the lowest cost way to increase the reach of existing energy investments. Energy efficiency should be incorporated across the Bank's lending portfolio – inside and outside the energy sector – to decrease the impact of the Bank's lending on energy use and climate change.
- ***Work with countries and stakeholders to clarify the benefits of low-carbon, renewables-based, and efficient energy development pathways and develop plans that focus on the best energy options.*** Governments and project developers will often approach the Bank at the last minute for support for large energy projects that are not clean options nor are they the least cost options. The Bank



Energy for the Poor?

should work with governments and stakeholders to carefully weigh needs and options to meet countries' energy needs while reflecting the true costs of possible energy sources.

As an international development institution with a mission to fight poverty, the World Bank Group must expand its support of energy access for the world's poorest. Further, the institution can no longer ignore the climate impact of its fossil fuel lending, which will clearly undermine development goals. In order to live up to its rhetoric around energy access and climate change, the World Bank must shift its energy lending focus towards these goals.

Literature Cited

AGECC (2010). *Energy for a Sustainable Future: Summary Report and Recommendations*. New York: The Secretary-General's Advisory Group on Energy and Climate Change (AGECC), April 28, 2010.

www.un.org/millenniumgoals/pdf/AGECCsummaryreport%5B1%5D.pdf

Ballesteros, Athena R. and Nakhooda, Smita (2010). *Investing in Sustainable Energy Futures: Multilateral Development Banks' investments in Energy Policy*. World Resources Institute and International Institute for Sustainable Development, 2010.

http://pdf.wri.org/investing_in_sustainable_energy_futures.pdf

Bazilian, Morgan, Patrick Nussbaumer, Anil Cabraal, Raffaella Centurelli, Reid Detchon, Dolf Gielen, Holger Rogner, Mark Howells, Hilary McMahon, Vijay Modi, Nebojsa Nakicenovic, Brian O'Gallachoir, Mark Radka, Kamal Rijal, Minoru Takada, and Florian Ziegler (2010). *Measuring Energy Access: Supporting a Global Target*. New York: The Earth Institute at Columbia University, June, 2010.

http://www.unido.org/fileadmin/user_media/Services/Energy_and_Climate_Change/EPP/Publications/bazilian%20et%20al%202010%20measuring%20energy%20access%20supporting%20a%20global%20target.pdf

IEA (2009). *World Energy Outlook 2009*. International Energy Agency.

www.worldenergyoutlook.org/docs/weo2009/WEO2009_es_english.pdf

IEA (2010). *Energy Poverty: How to make modern energy access universal? Special Early Excerpt of the World Energy Outlook 2010 for the UN General Assembly on the Millennium Development Goals*. OECD/IEA, September 2010.

http://www.worldenergyoutlook.org/docs/weo2010/weo2010_poverty.pdf

IPCC (2007). *Fourth Assessment Report: Climate Change 2007 Synthesis Report*.

Geneva, Switzerland: Intergovernmental Panel on Climate Change, 2007.

http://www.ipcc.ch/publications_and_data/ar4/syr/en/contents.html

Mainhardt-Gibbs, Heike. 2010. *World Bank Group Energy Sector Financing Update*.

Bank Information Center, September 2010. www.bicusa.org/en/Document.102339.aspx

REN21 Renewable Energy Policy Network (2005). *Energy for Development: The Potential Role of Renewable Energy in Meeting the Millennium Development Goals*.

Washington, DC: Worldwatch Institute, 2005. www.worldwatch.org/system/files/ren21-1.pdf

Stern, Nicholas (2009). *The Global Deal: Climate Change and The Creation of a New Era of Progress and Prosperity*. New York: Public Affairs, 2009.

UN-Energy (2005). *The energy challenge for achieving the Millennium Development Goals*. New York: UN-Energy. Available at: <http://esa.un.org/un-energy/pdf/UN-ENRG%20paper.pdf>

UN Millennium Project (2005). *Energy Services for the Millennium Development Goals: Achieving the Millennium Development Goals*. Washington, DC and New York: The International Bank for Reconstruction and Development/The World Bank and the United Nations Development Programme. <http://content.undp.org/go/cms-service/download/publication/?version=live&id=2095090>

World Bank Group (2009). *Energy Strategy Approach Paper*. October 2009. <http://siteresources.worldbank.org/EXTESC/Resources/Approach-paper.pdf?resourceurlname=Approach-paper.pdf>

World Bank Group, a. *Classifications Used in World Bank Group Energy Lending Reporting*. Accessed on the Internet September 27, 2010. <http://siteresources.worldbank.org/INTENERGY2/Resources/WBGDefinitions.pdf>

World Bank Group, b. *Energy Data*. Accessed on the Internet September 27, 2010. <http://go.worldbank.org/ERF9QNT660>

World Bank Group, c. *Energy Access at the World Bank Group 2003-2010*, provided via email to Steve Kretzmann, Oil Change International by Roger Morier, September 27, 2010 available at <http://priceofoil.org/wp-content/uploads/2010/10/wbgenergyaccess03-10.doc>

World Bank Group, d. *Preliminary List of Energy Access Projects*, provided via email to Steve Kretzmann, Oil Change International by Roger Morier, September 27, 2010.

Photo credit, cover: The World Bank Group

Annex 1. World Bank Group Energy Sector Projects: Access for the Poor (FY2009 –FY2010)

| Institution | Country | Project Name | Amount (mil. \$) | Fuel Source | Technology/Project Purpose | Targeted Consumers | Access for the poor? | Improved reliability for the poor? |
|---------------|---------|--------------------------------------|------------------|--------------------------|---|---|----------------------|------------------------------------|
| FY2009 | | | | | | | | |
| GEF | India | Coal-fired generation rehabilitation | 45.5 | Fossil fuel: Coal | Restore original coal generation capacity, <u>extend plant life</u> , improve availability, and modify some equipment to enable coal units to operate with higher fuel efficiency. | Unspecified consumers, no indications to expand connections. | No | No (poor not specified) |
| IBRD | India | Coal-fired generation rehabilitation | 180 | Fossil fuel: Coal | Same as above. | Same as above. | No | No (poor not specified) |
| IFC | Chile | CTA - Central Termoelectric a Andino | 740* | Fossil fuel: Coal | Construction and operation of circulated fluidized bed (CFB) thermal power units (300MW) in northern Chile to be fired by a combination of coal, petroleum coke, and biomass fuels. | 21-year power purchase agreement (PPA) with Codelco, a Chilean state-owned copper mining company , for 150 MW capacity sales. CTA also entered into a turn-key contract with Cobra, a company of ACS S.A. (Spain). Additional electricity will be sold on the spot market. | No | No |
| IFC | Tunisia | Topic Tunisia | 30 | Fossil fuel: Oil and gas | Oil and gas production – off shore and on shore | TOPIC will have an obligation, as per Tunisia’s Hydrocarbon Code, to sell 20% of its oil production to the local Tunisian market at a 10% discount to international prices. | No | No |

Energy for the Poor?

| | | | | | | | | |
|-----------------|-------------------|---|------------|--------------------------|--|---|--|--|
| IFC | Laos and Thailand | Salamander UJV | 25 | Fossil fuel: Oil and gas | Oil and gas exploration | Thailand is expected to be the principal market for Laotian gas. Discovery of gas may lead to development of gas-fired electricity generation in Laos, with any excess electricity exported to Thailand. This will help further development of the infrastructure in the region which already exists for the export of hydro power from Laos to Thailand and the import of gas-fired generated electricity from Thailand to Laos during the dry season. | No | No |
| IDA | Bangladesh | Siddhirganj Peaking Power Project | 350 | Fossil fuel: Gas | Gas power generation and pipeline | Does not specify target consumers. States: 11 km electricity transmission line so that power from the plant can be distributed to consumers. <u>Bank classifies as access</u> , for one because it is an IDA country and ‘to help close Bangladesh’s nearly 2,000MW daily power shortage’. Not clear poor population is connected to the existing grid. (For further details, see Box 1.) | Potential (needs to be monitored) | Potential (needs to be monitored) |
| IDA / Guarantee | Nigeria | Nigeria Electricity and Gas Improvement Project | 180^ / 400 | Fossil fuel: Gas | Gas supplies and gas power generation | Increase domestic gas supplies for power generation. Does not specify target consumers or any new connections. Not clear that poor are connected to the urban-based grid. <u>Bank classifies as access</u> , for one because it is an IDA country. | No | Potential (needs to be monitored) |
| IFC | Ghana | Kosmos Energy | 100 | Fossil fuel: Oil | Oil production - develop the Jubilee deep water offshore oil field | Export and domestic use - Does not specify target consumers. | No | No |
| IFC | Ghana | Tullow Oil | 115 | Fossil fuel: Oil | Oil production - develop the Jubilee deep water offshore oil field | Export and domestic use - Does not specify target consumers. | No | No |
| IFC | Turkey | Delta petroleum | 45 | Fossil fuel: Oil | Oil distribution – port construction | Domestic and export - Does not specify target consumers. | No | No |

Energy for the Poor?

| | | | | | | | | |
|------|---------|-----------------------------|-----|------------------|--|--|----|----|
| IFC | Albania | Bankers Petroleum | 65 | Fossil fuel: Oil | Oil investment - enhanced oil recovery in heavy oil reserves | Does not specify target consumers - Albania has possibly sizeable heavy oil reserves, which if developed with the help of advanced technologies can help increase domestic oil output. | No | No |
| IFC | Turkey | Palmet Enerji | 15 | Fossil fuel: Gas | Gas power generation | Increased gas power generation and distribution. Endusers unclear. | No | No |
| IBRD | Egypt | EG-Ain Sokhna Power Project | 600 | Fossil fuel: Gas | Gas super critical power plant | Ensure continuous electricity supply to meet growing demand – unclear industrial or residential demand (99% of population already connected – does not target access for the poor) | No | No |
| IFC | Haiti | E-Power S.A. | 18 | Fossil fuel: Oil | Construct and operate heavy fuel oil power generation plant. | Project will sell its capacity and electricity to the state-owned utility, Electricité d’Haiti (“EDH”), under a 15-year Power Purchase Agreement. It is located in an industrial park - no mention of power distribution outside of park. | No | No |
| IFC | Turkey | IZGAZ | 50 | Fossil fuel: Gas | Gas distribution - network expansion and refinancing of gas payables and general corporate needs of İzgaz. | Network expansion in the Kocaeli region, one of the most industrialized areas in Turkey. | No | No |

Energy for the Poor?

| Institution | Country | Project Name | Amount (mil. \$) | Fuel Source | Technology/Project Purpose | Targeted Consumers | Access for the poor? | Improved reliability for the poor? |
|-----------------|----------|--|--------------------------|-------------------|--|--|----------------------|------------------------------------|
| FY2010 | | | | | | | | |
| IBRD | India | Fifth Power System Development Project | 1,000 | Fossil fuel: Coal | Coal power infrastructure – primary activity to strengthen transmission network for large bulk power transfers from two newly commissioned thermal coal plants, the Sasan Ultra Mega Power Project and Tata Mundra UMPP (an IFC 2008 loan). | Targeted outcome: infrastructure services for private sector development. Facilitate the transfer of power from energy surplus regions to towns and villages in under-served regions of the country. The Bank does not classify as access. There is no plan to track how much electricity will be transferred to under-served regions or how many additional households will be served. | No | No |
| IBRD /guarantee | Botswana | Morupule B Generation and Transmission Project | 136.4 / 242.66 guarantee | Fossil fuel: Coal | Construction of a coal-fired power station (600MW) (circulating fluidized bed (CFB) boiler technology) and associated power transmission lines and water supply system. Part of the project will also go towards developing a “low-carbon” strategy. | Mainly replacing electricity generation that Eskom will no longer provide - not an extension of services. New plant will be adjacent to the existing Morupule A Power Station. “Greater availability of affordable electricity to households and industry will benefit the economy as a whole. The economic growth made possible by increased and secure access to electricity will enhance social welfare, help create jobs, and allow some of the country’s rural populations to benefit from electricity.” Note: The Bank does not classify as access. None of the performance indicators track for additional connections - or access for the poor. | No | No |

Energy for the Poor?

| | | | | | | | | |
|------|--------------|--|-------|--------------------------|---|--|----|----|
| IBRD | South Africa | Eskom Power Investment Support Project | 3,050 | Fossil fuel: Coal | Construction of the Medupi coal-fired super critical thermal generation plant (4,800 MW). The project also involves \$750 million for renewable energy and energy efficiency. | The electricity is mainly to address electricity shortages stemming from industrial processes, including large smelters. Residential consumers will also be serviced. However, Eskom is raising electricity tariffs substantially, in part to help pay for Medupi. Thus, the project is not considered to directly target access for the poor. | No | No |
| IFC | Argentina | Pan American Energy G San Jorge | 250* | Fossil fuel: Oil and gas | Oil and gas exploration and production – increase production of Cerro Dragon, Piedra Clavada and Koluel Kaike in the Golfo San Jorge Basin - provide funding for company's investment plan. | Domestic oil and gas supply shortages: industrial demand and natural gas vehicles. | No | No |
| IFC | Egypt, Yemen | Kuwait Energy Co. | 50 | Fossil fuel: Oil and gas | Accelerate oil and gas exploration and production | Unspecified enduse - aim is to simply increase production as oil production is declining in both countries who are highly dependent on oil revenues (Egypt – 99% population have electricity). | No | No |
| IFC | Chile | Tranquilo and Otway UJVs (GeoPark) | 20 | Fossil fuel: Oil and gas | Oil and gas exploration and production | Unspecified enduse target | No | No |
| IBRD | Egypt | EG-Giza North Power Project | 600 | Fossil fuel: Gas | Gas power generation and policy. Also includes \$200,000 (or .2) for energy efficiency. | Increase energy reserve margin to guarantee connections to a number of large industrial facilities which have been planned for construction. More generally to ensure power generation keeps up with expected GDP growth & electricity demand. | No | No |

Energy for the Poor?

| | | | | | | | | |
|-----|------------|---|------|--------------------------|--|--|-----------------------------------|-----------------------------------|
| IFC | Ghana | Jubilee FPSO (Floating Production Storage and Offloading) | 629* | Fossil fuel: Oil and gas | Oil and Gas production and storage for the offshore oil field Jubilee. | Unspecified enduse target | No | No |
| IFC | Argentina | Diadema III - Companias Asociadas Petroleras S.A. | 60* | Fossil fuel: Oil and gas | Oil production - polymer injection to increase production of mature oil fields | Unspecified enduse target | No | No |
| IFC | Brasil | Constellation | 100 | Fossil fuel: Oil | Oil production – offshore oil drilling operation | Unspecified enduse target - equity to support the construction and/or acquisition of drilling rigs, drillships and/or floating production, storage and offloading facilities for lease to Petrobras. | No | No |
| IFC | Cameroon | Dibamba | 31 | Fossil fuel: Oil | Oil – thermal power plant using heavy fuel oil | Emergency thermal power plant to avoid load-shedding during the dry season - to provide peaking and reserve capacity in electricity generation to meet the growing public sector electricity demand and industrial expansion. The off-taker is AES Sonel, the privatized electric utility of Cameroon | No | No |
| IDA | Kazakhstan | Moinak Electricity Transmission Project | 48 | Large hydro | Large hydropower - improve transmission and supply | Increase and improve the supply of electricity to business enterprises and households in southern Kazakhstan in an economically and environmentally sustainable manner. | Yes (needs to be monitored) | Yes (needs to be monitored) |
| IDA | Lao | Lao Sixth Poverty Reduction Support | 2.8 | Large hydro | Large hydropower - Development Policy | Mining, hydropower DPL aimed at commercial use | No | No |
| IFC | India | Bhilwara Energy | 25 | Large hydro | Large hydropower generation | Expanding the availability of electricity, <u>potential</u> areas include low income areas like Arunachal Pradesh and Nepal, but enduse is unspecified | Potential (needs to be monitored) | Potential (needs to be monitored) |

Energy for the Poor?

| | | | | | | | | |
|-----|--------|---|------|--------------------|--|---|-----|-----|
| IFC | Panama | Pando Montelirio | 45 | Large hydro | Large hydropower generation - construction of two run-of-river hydroelectric power plants to be operated in cascade, totaling 85 MW in installed capacity (Pando, 33 MW and Monte Lirio, 52 MW) | Lower the cost of production in the Panamanian and regional grid by displacing more expensive diesel-fired generation. Power demand in <u>Central America</u> is expected to grow at a compounded annual rate of around 4.1% in the coming years, resulting in large new power generation investment needs. The Project will clearly contribute to reduce the regional power infrastructure investment gap. | No | No |
| IFC | India | Auro Mira Bio Systems Kanyakumari Pvt. Ltd. | 5.25 | Renewable: Biomass | Biomass | Power produced will be sold to the grid or to commercial and industrial users or to power trading companies. | No | No |
| IFC | Brazil | ERSA Energias | 45 | Renewable | Small hydro power | Helping meet medium- and long-term electricity demand in Brazil, thus contributing to sustainable economic growth and improved living standards by supporting the provision of additional power, increasing renewable energy supply. | No | No |
| IFC | India | Applied Solar | 21 | Renewable | Solar | Off-grid power to telecom towers in rural India. | Yes | Yes |
| IFC | India | Husk Power | 1.25 | Renewable | Biofuel | Off-grid power to rural India, 500 households. | Yes | Yes |
| IFC | Turkey | AkEnerji | 75 | Renewable | Small hydropower | Unspecified consumers | No | No |
| IFC | Mexico | EURAS | 50 | Renewable | Wind | Unclear - Cemex México SA de CV (6% owner) is supplying itself with the Project's output pursuant to a 20-year power purchase agreement ("PPA") with the Company. Cemex México originally initiated development of the Project for a source of clean, low cost, and fixed price energy. | No | No |

Energy for the Poor?

| | | | | | | | | |
|-----|-------|-------------|----|-----------|--|---|--|--|
| IFC | India | Azure Power | 10 | Renewable | Solar - Solar power 4MW expansion in Punjab and a 8MW power plant in Gujarat by the end of FY 2010. The first private MW scale grid connected solar power plant is expected to be commissioned in Punjab by December 2009. | The site for the 5MW power plant in Punjab has been chosen as the Awan village. Located about 40kms from Amritsar, in Punjab province in India, the site has an area of 12acres (50,000m2) and has a relatively well-developed physical-infrastructure, with access to transport, utilities and a skilled workforce. Site selection for the 15MW power plant in Gujarat is still underway. <u>IFC classifies as access.</u> | Potential (needs to be monitored) | Potential (needs to be monitored) |
|-----|-------|-------------|----|-----------|--|---|--|--|

Table Notes: All project information in this table was obtained from project documents available on the World Bank and IFC websites. The funding amounts only represent the portion going towards oil or gas development. *These projects involve both IFC A and B loans. Under B loan structures, the IFC makes a loan to a private-sector borrower, thereby becoming the "lender of record," i.e., the sole contractual lender on the books of the borrower. However, instead of maintaining the entire loan on its own books, the IFC maintains only a portion-the "A" loan-and participates the remainder-the "B" loan-to commercial banks and/or institutional lenders. The IFC loan agreement ensures that both "A" and "B" loans receive identical treatment under the IFC loan package. The IFC reports B loan amounts separately in its annual aggregate reporting. **For FY2010, B loans = \$749 million.**