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ENERGY SECTOR EXPERIENCE OF OUTPUT-BASED AID

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The Global Partnership on Output-Based Aid (GPOBA) is a global partnership program administered by the World Bank. It was established in 2003 to develop output-based aid (OBA) approaches across a variety of sectors — among them water, energy, health, and education. As of September 2015, through a portfolio of 44 projects with US$228 million in commitments for subsidy funding and ongoing technical assistance activities, GPOBA is demonstrating that OBA can deliver a diverse range of services and lasting results for the poor. The program's current donors are the United Kingdom's Department for International Development (DFID), International Finance Corporation (IFC), Directorate-General for International Cooperation of the Dutch Ministry of Foreign Affairs (DGIS), Australian Department of Foreign Affairs and Trade (DFAT), and Swedish International Development Cooperation Agency (Sida). For more information about GPOBA, please visit www.gpoba.org.

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ENERGY
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Summary

The mutually-reinforcing relationship between electricity access, economic development, and poverty reduction is well established. Electricity access also improves welfare outcomes. The challenge is that more than 1 billion people lack access to electricity, 87% of whom are in Sub-Saharan Africa and South Asia. Sustainable Development Goal #7 "Ensure Access to Affordable, Reliable, Sustainable, and Modern Energy for All" creates a framework for tackling the challenge of mobilizing the large investments required and making energy available at affordable prices.

SUMMARY OF MAIN FINDINGS

GPOBA has demonstrated the feasibility of the OBA approach in the energy sector and particularly in addressing successfully the affordability barrier in reaching low-income rural households. In Bangladesh, overcoming the affordability barrier through a combination of longer-term consumer credit, GPOBA subsidies and product choice opened the way to widespread adoption of solar home systems. A flexible design, adaptable to the conditions of each community and to the potential contribution of local governments, proved to be successful in maximizing the benefits in rural electrification in Bolivia. Often building over existing IDA operations, and integrated into the World Bank's country level work, GPOBA projects have offered an effective mechanism in targeting the poor and enhancing the quality of the product.

OBA approaches have advantages over traditional approaches in targeting subsidies and a stronger delivery focus, thus, helping improving sector performance. However, it should be recognized that OBA has limitations associated to its scale and, hence, its scope, and to some characteristics associated to its output focus. OBA should not be seen as a substitute for sector reform – which is an essential condition for scaling-up the approach – but one mechanism through which efficiency gains of sector reform and efficiency improvements can be shared with low income users. Also, it should be acknowledged that OBA's greater emphasis on delivery brings about a higher costs/risk to service providers and the use of additional resources in the verification process.

Overall, the performance of the energy portfolio has been mixed with a balanced on the positive side. This positive balance is quite evident when assessing the effectiveness and efficiency of energy projects, as well as the performance of the main participants involved (Borrowers and the World Bank). The portfolio's sustainability is perceived as being weaker, a drawback common to the universe of rural/poverty oriented projects, including OBA and non-OBA approaches.

The relevance of GPOBA's energy portfolio is confirmed when compared to the WBG energy strategy. The energy portfolio deals directly with two of the most important WBG energy goals: universal access and the expansion of renewable energy, as well as addressing key barriers to electrification. Also, the portfolio's technological and regional diversity –which included power grid extension and off-grid and mini-grid electrification, as well as gas related projects– was the appropriate strategy for a program aimed at testing new approaches within an environment of diverse needs.

Overall, the independent verification of delivery has functioned efficiently, contributing towards quality assurance and the timely delivery of outputs and subsidies disbursement. The World Bank placed special attention on this key component of the OBA approach as in most cases the IVAs were funded by the project and valuable technical assistance was provided.

There is evidence of an ongoing learning that is helping to improve the overall performance of the energy portfolio. An effective monitoring process that has been particularly helpful in: (i) improving the performance of projects –i.e. through project restructuring often aimed at amending the subsidy scheme, also taking into consideration the technological changes such as pre-paid meters; and (ii) enhancing the design of subsequent projects, including improvements in the OBA scheme with view to achieve greater sustainability and innovative financing mechanisms to address the pre-financing and affordability challenges.

SUMMARY OF LESSONS FROM PROJECT DESIGN AND IMPLEMENTATION

These lessons address design and implementation issues of energy access projects that would require special attention when scaling up an OBA approach.

The success of an OBA project relies greatly on the quality and thoroughness of its design. An experience common to all projects is that time spent in the design and preparatory effort is critical for a smooth implementation and the success of a project. Conversely, the lack of thoroughness, or gaps, in project design, is quite often the main cause of project failure. Specific lessons associated to the need of a sound design are:

- Time spent in project preparation pays.
- Scalability is more important than scale.
- Sound analytical work is required to confirm the economic viability of the proposed project and design effective subsidy schemes.
- An objective assessment of the energy sector challenges is essential to anticipate implementation problems and setting realistic targets for electricity access projects.
- Failure to identify physical and socio-political constraints may lead to implementation delays and, ultimately, to project failure.

A key lesson stemming from most projects is that flexibility of design is one of the main factors explaining the success or failure of OBA projects. By nature, pilot projects are aimed at introducing or exploring new approaches and, hence, its implementation is undertaken under considerable uncertainty. As projects advance, technology may change and unforeseen conditions may arise, particularly when dealing with renewable energy technologies that are still evolving.

GPOBA's experience confirms that an OBA approach shifts risks to service providers and incorporates a stronger focus on delivery and quality of service. Paying on outputs effectively transfers an important component of project implementation risks, including technical compliance and financial management, to service providers. However, the extent to which service providers can bear additional risks should be assessed carefully since shifting excessive risks to providers could hamper their ability to deliver outputs. In particular, issues to assess prudently are market risks that could be beyond the control of the provider or, specific economic conditions, such as exchange risks in financially unstable environments.

Access to financing to cover the up-front costs (pre-financing) of service providers and connection costs of users, when relevant, is critical to OBA schemes and can become a serious obstacle to the success of a project. There have been notable cases of success in addressing this challenge, such as in Bangladesh, where well-established microfinance institutions were instrumental in the functioning of the OBA model, and Armenia, where donor-supported credit lines were allocated transparently and commercially determined. However, in countries with limited or a weak microfinance environment it is necessary to undertake a thorough assessment of the credit needs associated to the project and ensure that donor financing is made available through a sound institutional setting that guarantees adequate financial management standards and an efficient allocation of resources. Failure to do so could put undue burden on the provider and/or result in tariffs unaffordable to users.

An OBA approach offers tangible advantages in terms of quality assurance and a stronger focus on output delivery. A well-designed OBA approach to rural electrification incorporates an independent monitoring and verification system that helps tracking the performance of service providers, confirming payments and ensuring that benefits reach the target population. Whereas an OBA scheme can include features that may offer some after sales benefits – such as selling systems on credit that, indirectly, offers the opportunity to provide maintenance services when collecting

payments – achieving sustainability may require other long-term approaches.

Extensive public outreach activities help training customers in the use of the technologies as well as in ensuring local commitment to electrification projects. Familiarizing customers in the correct use and primary maintenance of photovoltaic equipment helped in achieving the full benefits of electrification in Bolivia. Also, consumers' awareness and training fostered trust in new technologies in Armenia and Bangladesh and increased consumers' demand. An early public outreach can be paramount also in ensuring the active involvement of local governments in improving projects design and contributing towards their financing.

Subsidy requirements may change within the lifetime of a project, hence, subsidy schemes should incorporate enough flexibility to adapt to new conditions and, consequently, avoid delays and costly formal amendments. Experience in implementing OBA project reveals that the subsidy required to bridge the affordability gap could decrease either as a result of economies of scale, rising rural incomes, the development of a market for electricity services and/or bidding processes designed to maximize outcomes. Conversely, there are experiences, such as in India and Ethiopia, where subsidies proved to be too small to incentivize utilities or service providers in implemented projects as designed. Both cases point out the need of a flexible subsidy scheme able to undertake agile adjustments to subsidy levels and expected outputs.

RECOMMENDATIONS FOR THE WAY FORWARD

Besides incorporating into project design and implementation the lessons presented above, the following recommendations are made for future GPOBA activities and mainstreaming OBA:

Explore a broader range of RBF mechanisms. Focusing more on innovation and a systematic learning process –from own and others' experience– could enhance the program's global relevance and regain momentum of its early years. This effort could include the following:

- As global thinking has moved towards various RBF instruments, it is worth exploring other, more flexible, options such as disbursing the subsidy upon completion of intermediate targets or steps prior to the final output delivery (e.g. partial completion, resolution of specific hurdles, licenses) and/or seeking OBA ways to provide guarantees to winning bidders;
- GPOBA and partners should also extend piloting to related forms of RBF that may be applicable within sector-wide engagements and that make greater use of national systems. In particular, a promising option to consider working with other donors to develop output-based disbursement projects, given that it has been successfully adopted in other sectors (e.g. water project in Indonesia).

Seek opportunities to develop projects integrated into a larger (ideally multi-donor) and longer-term energy access/services program. These projects are more likely to succeed as they are consistent with the long-term nature of the electrification effort, and they benefit from the strengthening of the required institutional and regulatory framework as well as from the existing implementing capacity, more resources and a greater leverage in addressing the sector wide issues mentioned in the previous bullet. Adding a long-term scope to OBA approaches enhances sustainability.

CONTENTS

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AEI	Africa Electrification Initiative
AEPC	Alternative Energy Promotion Center (Nepal)
AF	Additional Financing
AFD	Agence Française de Développement
BSP	Biogas Support Program (Nepal)
CAS	Country Assistance Strategy
CDCF	Community Development Carbon Fund (Nepal)
CFL	Compact Fluorescent Lamp
CPS	Country Partnership Strategy
DALY	Disability-adjusted Life Year
DGIS	Directoraat Generaal Internationale Samenwerking, Netherlands
DO	Development Objectives
DPL	Development Policy Loan
EEPCo	Ethiopia Electric Power Corporation
ERT	Energy for Rural Transformation (Uganda)
GEF	Global Environmental Facility
GEO	Global Environmental Objective
GHG	Greenhouse Gas
GOA	Government of Armenia
GoB	Government of Bangladesh
GoN	Government of Nepal
GPOBA	Global Partnership on Output-Based Aid
GPRS	Ghana Growth and Poverty Reduction Strategy
GRM	Grant Reporting and Monitoring
GTZ	Gesellschaft für Technische Zusammenarbeit
HDI	Human Development Index
ICR	Implementation Completion and Results Report
IDA	International Development Agency
IDCOL	Infrastructure Development Company Ltd. (Bangladesh)
IDP	Index of Development and Peace (Colombia)
IDTR	Infraestructura Descentralizada para Transformación Rural (Bolivia)
IEA	International Energy Agency
IEG	Internal Evaluation Group
IFC	International Finance Corporation
ISR	Implementation Supervision Report
IVA	Independent Verification Agent
KEEP	Kenya Electricity Expansion Project
KfW	Kreditanstalt für Wiederaufbau
KPLC	Kenya Power and Lighting Company
LDC	Licensed Distribution Company (Uganda)
LED	Light-emitting diode
MDG	Millennium Development Goals
NDP	National Development Plan (Colombia)
NGO	Non-Government Organization
OBA	Output-Based Aid
PBS	Protection of Basic Services (Ethiopia)

PDO	Project Development Objective
PO	Partner Organization (Bangladesh)
PPP	Public-Private Partnership
PSNP	Productive Safety Nets Program (Ethiopia)
PV	Photovoltaics
RBF	Results-Based Financing
REA	Rural Electrification Agency (Uganda)
RERED	Rural Electrification and Renewable Energy Development (Bangladesh)
RIL	Reliance Infrastructure Limited (India)
R2E2	Renewable Resources and Energy Efficiency Fund (Armenia)
R&D	Research and Development
SE4All	Sustainable Energy for All
SHS	Solar Home System
SNV	Stichting Nederlandse Vrijwilligers, Netherlands
TA	Technical Assistance
TTL	Task Team Leader
UHP	Urban Heating Project (Armenia)
UNDP	United Nations Development Program
USAID	United States Agency for International Development
WBG	World Bank Group

I. INTRODUCTION

ELECRICITY ACCESS AND DEVELOPMENT

Sustainable Development Goals (SDGs) placed access to basic services at the center of international development in 2016-2030. Out of 17 goals, five address the access of poor people to basic services: to health in SDG3, to education in SDG4 and SDG5, to water and sanitation in SDG6, to energy in SDG7, and to urban services in SDG11. The Rio+20 Earth Summit of 2012 approved the thematic areas of the SDGs while demonstrating a great attendance and unanimity of the world leaders. This cohesion of priorities in international development and environmental activism has not been seen in the previous two Earth Summits in Rio in 1992 and in Johannesburg in 2002. This rising prominence of access to basic services in the future fifteen years is both a big step forward and a logical follow-on from the two previous fifteen-year cycles of global agenda setting – the Washington Consensus with its focus on macroeconomic stabilization and openness and the Millennium Development Goals with their focus on extreme poverty. Energy access agenda did not feature in the MDGs but was present indirectly, particularly through agendas on eradicating extreme poverty in MDG1 and on improving lives of slum-dwellers in Target 7.D as a part of ensuring environmental sustainability under MDG7.[1]

The mutually reinforcing relationship between electricity access, economic development, and poverty reduction is well established. Overall, countries with higher levels of electricity use are associated with higher levels of national income. Increased levels of electricity access are also associated with lower incidence of extreme poverty. These empirically observed relationships underline the link between electricity access and the goals of reducing poverty and improving shared prosperity.

The SDGs framed access to basic services as a matter of dignity. This framework was confirmed in 2014 in SDG synthesis report *The Road to Dignity by 2030* prepared by the UN Secretary-General. The report traces this framework back to the UN Charter of 1945 where the governments committed "to reaffirm faith… in the dignity and worth of the human person" (p.3). Explaining the progression from extreme-poverty alleviation to dignity, the report acknowledges that the MDGs furnished evidence of how "[t]ransparency was enhanced, multilateral approaches were strengthened and a results-based approach to public policy was fostered" (p.5), thereby laying the foundation for addressing dignity in international development. The SDG synthesis report also promotes self-reliance of developing countries rather than just the North-to-South aid, as the challenge of poverty and exclusion extends beyond charity to the hungry and the most deprived. SDG7 is poised to *Ensure Access to Affordable, Reliable, Sustainable and Clean Energy for All* by 2030 with the targets of (7.1) universal access, (7.2) substantial increase in renewable energy, (7.3) doubling of energy efficiency improvements, (7.4) international cooperation as to research on access and energy technologies, and (7.5) increase in energy infrastructure, especially in countries that are least developed, land-locked or small islands – in accordance with their respective programs.[2]

Electricity access improves welfare outcomes. Directly or otherwise, access to electricity results in progress in all dimensions of human welfare and development including education, health care, access to water, essential communications and information as well as simple financial transactional services, income generation, and environmental sustainability. Also, a positive relationship can be seen between electricity access and the Human Development Index (HDI).

[1] Target 7.D was the only one with the timeframe of 2020 (rather than 2015) because of the complexity of the challenge.

[2] From http://www.un.org/sustainabledevelopment/energy

THE CHALLENGE OF EXPANDING ELECTRICITY ACCESS

About 1.1 billion people lack access to electricity worldwide; the access challenge is most marked in Sub-Saharan Africa and South Asia. The population without access to electricity is concentrated in Sub-Saharan Africa and South Asia, which together, account for 87% of the world population without access (Table 1). These regions face a major challenge in mobilizing the large investments required for expanding access to electricity and making it available at affordable prices. In Sub-Saharan Africa, the number of people gaining access to electricity during 1990-2010 (156 million) was overwhelmed by population growth (340 million). South Asia fared better during this period by connecting 647 million people, while the overall population grew by 489 million.

Table 1 - Population with Electricity Access by Region

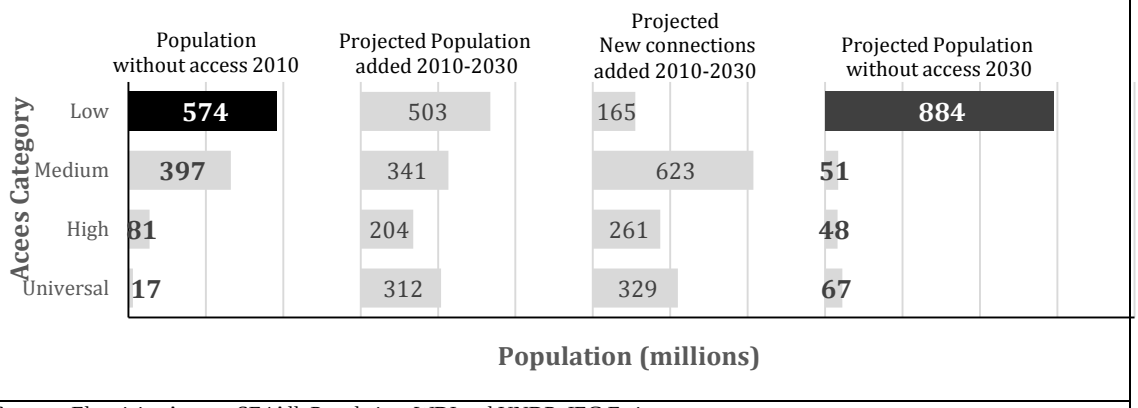
Region	Share of Population with Access 2010	Population added during 1990-2010 (Million)	Population gaining Access 1990-2010 (Million)	Population without Access 2010 (Million)
Europe and Central Asia	100%	13	20	0
Latin America and the Caribbean	95%	145	166	30
East Asia and the Pacific	95%	346	461	102
Middle East and North Africa	94%	104	118	18
South Asia	74%	489	647	417
Sub-Saharan Africa	32%	340	156	589
WORLD	**80%**	**1437**	**1568**	**1,157**
Source: SE4ALL (2013)				

Sub-Saharan Africa accounts for 86% of the population without access in Low Access countries (i.e. with a coverage of less than 50%) while most of the people without access to electricity in Medium Access countries (50% to 75%) are in South Asia (99.7%). A 'business-as-usual' scenario will result in the access figures shown in Table 2 for the year 2030. That is, unless there is a leap in scale and quality of electricity access efforts, the population –mostly poor– without access in Low Access countries will continue growing dramatically.

Achieving global universal access to electricity requires large-scale investments. The expansion of electricity access competes with other development opportunities in the allocation of scarce resources as well as opportunities for policy and institutional reform. The IEA estimates that achieving universal electricity access requires additional investments of about US$900 billion between 2010 and 2030. More than 60% of that would be in Sub-Saharan Africa, which needs an extra $19 billion per year to meet such target by 2030. Developing Asia accounts for 38% of the additional investments required in achieving universal electricity access. These requirements far exceed the scale of financing coming from multilateral and bilateral donors. For instance, the World Bank Group (WBG) contributed about US$4 billion per year towards investments in the energy sector during 1999-2013[3].

[3] Excluding Development Policy Loans (DPL) but including generation and transmission projects that do not always address the electricity access challenge.

Table 2 - Population `without Access to Electricity: 2010 and 2030 (projected): "Business-as-Usual"* Scenario



Sources: Electricity Access: SE4All, Population: WDI and UNDP; IEG Estimates
* Assumes new connections are added at annual average rate obtained during 2000-2010

EXTENDING ELECTRICITY ACCESS: STRATEGY AND DRIVERS OF SUCCESS

A country can set as its goal universal access or maximizing the net benefits of electrification. Their choice, which implies a compromise between economic efficiency and equity objectives, is a function of each country's values and development objectives. Given the importance of poverty reduction and the inequality dimensions of electricity access, countries often target large numbers of low-income households in their electricity access programs.

The electricity access challenge encompasses two main pillars: (1) the economic viability of electricity access, and (2) the need to ensure its financial and operational sustainability, including social and environmental objectives.

Countries like Brazil, China, South Africa, Thailand and Vietnam, have achieved near universal access during the last two decades, many under challenging circumstances. Bangladesh and Sri Lanka have made significant progress in off-grid electrification. Together, these countries span a wide range of low to middle income levels. Whichever the approach adopted, three important features that appear to be present in all successful programs are:

- ***Strong and sustained Government commitment*** to a nationwide electricity access program and implementation plan, backed by adequate resources, and focused on the poor.
- ***Supportive policy framework for enabling access targets linked to the national vision***; comprehensive institutional and regulatory arrangements with strong institutions accountable for results. Including provision for private sector participation, as appropriate.
- ***Ensuring the financial viability of utilities and the power sector as a whole***; the adoption of rational tariffs and well-designed subsidy policy and delivery mechanisms aimed at affordable electricity services for the poor.

These drivers of performance do not provide a universal recipe but point to principles constituting an umbrella of enabling environment for electricity access improvements.

WORLD BANK ENERGY SECTOR STRATEGY

The World Bank pioneered the access to basic services agenda. Its flagship World Development Report series published *Making Services Work for Poor People* in 2003 that focused on education, health, water, sanitation, and electricity as the "services that have the most direct link to human development" (p.1). Its main message is that accountability between poor people, service providers and policy makers is critical for service delivery. It provides a detailed account of why the services were failing: "public spending… is typically enjoyed by the non-poor,… even when public

spending can be reallocation towards poor people… the money does not always reach the frontline service provider,… even if the share [of subsidy for frontline service providers] is increased… the incentives for effective service delivery are weak,… [and] poor people [show] the lack of demand,… sometimes [because of] the poor quality of the service."[4] In 2004, the World Bank and the donors established a Global Partnership on Output-Based Aid with the UK to promote access to basic services for the poor by means of Output-Based Aid, a type of results-based financing (RBF) that disburses after the service such as electricity has been delivered and used by poor people, thus addressing the challenges described in the World Development Report.

The World Bank Group (WBG) engagement in the energy sector is aimed at securing affordable and reliable energy to reduce poverty and promote shared prosperity, as well as in assisting countries in pursuing environmentally, financially, fiscally and socially sustainable energy sector development. The WBG approach mirrors the objectives of the UN's Sustainable Energy for All (SE4All) Initiative[5], which has established three goals by 2030: (i) universal access to electricity and clean cooking fuels; (ii) doubling the share of renewable energy in the global energy mix (from 18% to 36%); and (iii) doubling the energy efficiency improvement rate.

The WBG recognizes that each country's transition to a sustainable energy sector involves a unique mix of resource opportunities and challenges, as well as a different emphasis on access, renewable energy and efficiency. In supporting these objectives, the WBG has established the following directions for its engagement in the energy sector:[6]

1) ***Focus on the Poor – Universal Access*****.** Supporting universal access to reliable modern energy is a priority. In countries with low energy access, the priority will be affordable and reliable energy, including grid, mini-grid, and off-grid solutions for electricity. Engagement in cleaner cooking and heating solutions will grow.

2) ***Accelerate Efficiency Gains*****.** Energy efficiency efforts will be scaled up according to countries' needs and opportunities. Options vary widely but include increasing the efficiency of the existing energy infrastructure, moderating demand for energy and adopting more efficient technologies.

3) ***Expand Renewable Energy*****.** Support and finance all forms of renewable energy, including wind and solar power, geothermal, biogas and biomass-based energy. Also, the sustainable development of hydropower projects that meet environmental and social safeguard standards will continue. To help manage trade-offs between financial and environmental costs, the WBG will support more expensive energy options with smaller global environmental impact if there is strong client ownership, and if concessional climate finance is available to cover the incremental costs.

4) ***Create an Enabling Environment*****.** Promoting: (i) a long-term sector-wide planning to achieve optimal and cost-effective results; (ii) regional integration, for a more cost-effective use of regional energy resources; (iii) market solutions, including: helping create the right policy and regulatory frameworks; strengthening institutions; ensuring the creditworthiness of public utilities; and providing guarantees where appropriate; (iv) innovation and technology transfer, through demonstration projects to promote clean energy, innovative policies and market mechanisms; and (v) opportunities to encourage local community involvement, and empower women to achieve sustainable solutions.

5) ***Intensify Global Advocacy*****.** To reduce the costs of cleaner energy and efficiency to levels affordable for poorer countries, the WBG will encourage developed countries to provide incentives for more efficient and environmentally sound energy production and consumption and support R&D for new energy technologies. Also, support will be offered to governments keen to address

[4] World Development Report *Making Services Work for Poor People*. pp.3-4

[5] which is co-led by the World Bank.

[6] World Bank. Toward a Sustainable Energy Future for All - Directions for the World Bank Group's Energy Sector. 2015.

underpricing of energy and minimize market distortions while providing social safety nets for the poor and vulnerable.

GPOBA's energy sector activities support the SE4All initiative, placing special attention into Universal Access, a goal that is strongly linked to poverty reduction. Also, GPOBA is strongly aligned to the expansion of renewable energy and energy efficiency.

BARRIERS TO ELECTRIFICATION

In addressing the Universal Access objective, the World Bank Group highlights the following barriers:[7]

1. ***High costs of supplying rural households***. Rural areas tend to have a low population density and many poor households whose energy consumption is very low. This results in high unit costs of supply. Due to technical reasons, rural systems also face higher operating costs and technical losses. High costs pose three additional challenges that are linked to each other:

- Households cannot afford to pay the high cost of electricity, including connection fees.
- Unless a cost-recovery tariff is in place, providing rural electricity services is not viable financially and, hence, utilities have no incentives to do so.
- Investments required to meet the electricity gap exceed the capacity of low-income countries to mobilize domestic sources of financing.

2. ***Absence of an appropriate incentives system***. The high costs of electricity supply in rural areas and the limited affordability of households make it difficult to attract investment in rural electrification. To do so requires a system of tariffs and subsidies that ensures sustainable cost recovery while minimizing price distortions. A key element is supplementing the utilities' revenues with subsidy funds to match the costs of an efficient service. However, such a scheme is absent in many countries, being common the presence of ill-designed subsidies that favor the majority of consumers. This is the case in Sub-Saharan Africa, where subsidies tend to be highly regressive.

3. ***Weak implementing capacity***. A well planned, carefully targeted, and effectively implemented electrification program requires technical and managerial capacity that is not always in place. Countries committed to extending electricity access need to go through an initial period of strategy development and capacity building. This process may entail new or amended legislation, strengthening of institutions, careful planning, defining selection criteria for projects, and establishing technical standards and regulatory procedures tailored to the case. Such a task requires a significant government commitment and, often, a good deal of technical assistance.

4. ***Power generation shortage***. An important obstacle to rural electrification in low access countries is their insufficient power generation capacity to serve existing grid-connected demand. Load shedding has been a problem in recent years, particularly in Sub-Saharan Africa, where several countries had to resort to short-term leases of emergency generating capacity or to bare the cost of power outages. It is unrealistic to expect that these countries can make more than modest gains in increasing electricity access by means of grid extension, until the capacity constraint is removed.

5. ***Rapid growth of population***. A further challenge in expanding electrification is the rapid growth of rural population. While the migration from rural areas to cities is accelerating in the developing world, the reductions in rural requirements resulting from this migration tend to be offset in many countries by rising population growth. This is a main factor explaining the 'business-as-usual' scenario (Table 2), which foresees an aggravation of the access problem in Sub-Saharan Africa.

6. ***Urban Electricity Access – Rapid Urbanization and Illegal Connections***. Of the 1.1 billion people without electricity about 200 million live in urban areas, mostly in Asia and Sub-Saharan

[7] World Bank. Addressing the Electricity Access Gap – Background Paper for the World Bank Group Energy Strategy. 2011.

Africa. The urban access gap has decreased in most regions, except for Sub-Saharan Africa which accounts for around two thirds of the urban population without electricity. Meeting the fast growth of urban demand is complicated by the following factors:

- A large portion of the rapidly growing demand stems from low-income households, who consume small amounts of electricity and cannot afford the full cost of supply.
- High levels of illegal connections and theft caused by households' limited affordability and/or their ineligibility to be connected exacerbate this problem.
- The weak financial position of utilities reduces their chance to access the financing required for a timely extension of their distribution grid.

GPOBA addresses directly most of these barriers, such as the limited affordability of poor households, rural and urban, and the lack of incentives to serve the poor. Through its technical assistance components, GPOBA can also support the strengthening of technical and managerial capacity required to implement electrification programs.

THE GPOBA AND OUTPUT-BASED AID APPROACH AND THE WORLD BANK

Results-based financing (RBF) is an instrument that links financing to pre-determined results, whereby success is measured in terms of the quality and quantity of actual actions or outputs. RBF is not new to the World Bank Group lending operations. This approach has been applied in a variety of forms initially supporting policy and institutional reforms –such as the Poverty Reduction Strategy Credits (PRSC) introduced in 2001– and, more recently, through the Program-for-Results (PforR) financing instrument. Output-Based Aid (OBA) is a type of RBF that focuses on explicit performance based subsidies in the delivery of basic services.

World Bank Group electricity access projects incorporated OBA concepts since the early years, as final payments were always made upon satisfactory delivery of outputs. However, these early projects did not include some distinctive components of a formal OBA approach, such as the pre-financing responsibilities of service providers, explicit targeting of subsidies and the presence of an independent verification entity. Hence, the focus on shifting of performance risk to service providers and targeting the poor was limited.

The WBG started a formal approach to OBA in the early 2000s. By 2003, there were 22 OBA projects among all sectors, a number that grew by the end of the decade to 127, of which 27 were in the energy sector. An additional 66 OBA projects were identified outside the WBG. While by 2010 the OBA portfolio of the WBG had increased in volume to US$3.5 billion, the overall share of OBA in projects' volume has always been small (from less than one percent to 8 percent). This is explained by the fact that OBA can be used only selectively and it is not suitable for large upstream investments, such as large power generation projects.

A systematic effort to test OBA pilot experiences was not performed until the World Bank-administered Global Partnership on Output-Based Aid (GPOBA) was established in 2003[8]. GPOBA's initial portfolio consisted mainly of energy and water projects.

GPOBA's mandate is to fund, design, demonstrate, and document output-based approaches to improve the delivery of basic services to the poor. Accordingly, GPOBA's vision is to increasingly incorporate OBA aid into infrastructure and social sectors and to become a Center of Expertise.

Through subsidy funding and technical assistance activities, GPOBA's goal is to mainstream OBA approaches within projects that are often carried out by other development practitioners, including governments, multilateral financial institutions, bilateral donors and private foundations. Such approaches have been tested in all regions and applied in six sectors, including energy, water and

[8] During its three years of existence, GPOBA provided technical assistance and dissemination grants to design and support WB OBA projects.

sanitation, health, solid waste management, education, and information and communication technology.

Increasing access to basic infrastructure and social services remains a challenge because of the gap between the cost to deliver a desired level of service and what can be funded through user fees, especially for the poor. OBA is designed to enhance access to basic services for the poor through the use of performance based incentives or subsidies.

Subsidies are targeted to benefit the poor through geographic targeting and/or self-selection targeting mechanisms.

OBA links the payment of aid to the delivery of specific services or "outputs," such as connection of poor households to electricity grids or off-grid services. Under such scheme, service delivery is contracted out to a third party—public or private—which receives a subsidy to complement or replace the required user contribution. The service provider is responsible for pre-financing the project, and is reimbursed only after the services or outputs have been delivered and fully verified by an independent verification agent (IVA).

STUDY OBJECTIVES AND SCOPE

This study is poised to analyze whether OBA has been tested enough in the energy sector, and if so, whether its experience be generalizable and useful for the global agenda on access to energy (SDG7 with its contribution of the idea of quality infrastructure) as well as for the "science of delivery" that includes questions of appropriateness and imbedded flexibility of project design and agile implementation.

The objective of the study is to analyze the project portfolio and capture global lessons from GPOBA energy sector projects, provide recommendations for mainstreaming OBA, synthesize lessons as well as reflect on the impact that the projects have made collectively in the sector. Relying on GPOBA's sector-wide best practices and lessons, the study aims at highlighting the areas of focus during project identification, structuring and implementation in the energy sector, as well as recommended lessons-gathering practices throughout the project cycle.

To this end, the study is based on the review and assessment of results and impact of GPOBA's energy portfolio, which includes seven completed projects. That is, it is essentially a case study approach that has been complemented by interviews with managers and practitioners in the field plus the preliminary review of nine ongoing GPOBA energy projects. The study benefits also from an earlier field visit undertaken by the author to one of the completed energy projects (Bolivia).

The review of completed and several ongoing projects aims at synthesizing relevant lessons within the context of the overall OBA approach to support increased access to electricity services for the poor. The synthesis considers, among others, the following questions: (i) effectiveness of the GPOBA energy portfolio; (ii) projects efficiency, including monitoring and evaluation; (iii) impact of the energy projects; and (iv) prospects for sustainability.

It should be noted that given the relatively small size of the portfolio being assessed – i.e. seven completed projects – this is a "small n" study that does not engage in any quantitative analysis of statistically significant trends. While the study focuses mainly on the set of completed projects, it addresses also experiences of particular interest among the ongoing projects, with an acknowledged challenge of reviewing older and newer projects' monitoring and evaluation frameworks that have not been standardized and sometimes without capturing performance indicators of interest. Furthermore, the relatively short period of operation of most of the projects that have been completed does not allow arriving to unambiguous conclusions on the projects' sustainability.

This study looks into questions of project performance to glean lessons for delivery of access to energy. The term "science of delivery" originates in healthcare and has been promoted by the World

Bank and its president Jim Yong Kim, MD/PhD. Calling for creating a science of delivery, he notes:

> "Many countries have strong, coherent development policies and programs on paper but... are not getting the results they want… [However,] delivery is crucial for the public sector… as part of government's social contract with citizens... [While] we can point to individual examples of delivery success in countries at all levels of income,… we need to move from isolated examples to broad global progress… There is an urgent need for a science of delivery… but that science does not yet exist. We must create it together... We must advance from the experiential know-how of individual practitioners to the level of analytical knowledge—the level of science."[9]

Combining lessons on project performance with insights about impact of completed projects allows to see the impact of access to energy on poor people's lives. An even more comprehensive approach which is termed as "quality infrastructure" includes both how infrastructure was built and is managed as well as what impact it achieves.[10] This report will look both into awareness campaigns which are part of project implementation and longer-term issues such as sustainability of energy services.

[9] From the Speech of The World Bank Group President at the World Knowledge Forum, Seoul, Republic of Korea, October 8, 2012 (http://www.worldbank.org/en/news/speech/2012/10/08/delivering-development-harnessing-knowledge-build-prosperity-end-poverty last retrieved on May 1, 2016).

[10] More background information and definitions of quality infrastructure can be found at the Partnership for Quality Infrastructure led by the Government of Japan of which the World Bank is a part. (www.mofa.go.jp/files/000117998.pdf last retrieved on May 1, 2016).

II. GPOBA ENERGY PORTFOLIO

GPOBA ENERGY PROJECTS

GPOBA's energy sector portfolio consists of sixteen projects in five regions. Seven of these projects have been completed while the remaining projects are under different levels of implementation. The total volume of GPOBA grants adds to US$97.9 million for an average of US$ 6.1 million per project. The grants awarded to the completed projects amounted US$ 46.3 million (i.e. US$ 5.8 million/project), indicating that the average size of grants has not change significantly in time. In most cases, GPOBA's financing was complemented by –or more properly, helped complementing– other sources of finance, being these IDA credits or other donors contributions, government, utilities or private sources and, most important, the contribution of customers. The aggregate contribution of customers to GPOBA's energy portfolio is expected to be in the order of US$ 37 million, a significant figure considering that a main objective of the program is to target poor households. A complete list of the energy GPOBA projects is presented in Table 3.

Table 3 - GPOBA Energy Portfolio

Country	Project ID	Year approved	Project Name	GPOBA Grant US$ million
Completed projects as of August 2015				
Armenia	P103071	2006	Gas and Heating	3.10
Bangladesh	P119546/49	2009	Rural Electrification and Renewable Energy Development	13.95
Bolivia	P102479	2007	Decentralized Electricity for Universal Access - SHSs	5.15
Colombia	P102095	2006	Access to Natural Gas	5.1
Ethiopia	P105651	2008	Electricity Access Rural Expansion	8
India	P104649	2009	Mumbai Improved Electricity Access for Slum Dwellers	1.65
Nepal	P103979	2007	Biogas Support Program IV	5
Ongoing projects as of August 2015				
Bangladesh	P119547	2010	Rural Electrification – Mini Grid Project	1.1
Bangladesh	P154576	2015	Scale-up for Bangladesh Rural Electrification	15
Ghana	P105617	2008	Solar PV Systems to Increase Access to Electricity Services	4.35
Kenya	P125388	2011	Kenya Electricity Expansion	5.15
Liberia	P110723	2011	Monrovia Improved Electricity Access	10
Mali	P146287	2013	Rural Electrification Hybrid System Project	5
Uganda	P120108	2012	Grid-Based OBA Facility - Energy for Rural Transformation II	5.5
Vanuatu	P133701	2013	Improved Electricity Access	4.85
Zambia	P146636	2014	Electricity Access for Low-income Households	4.95

Table 3 shows that four of the seven projects that have been completed or closed as August 2015 addressed electricity access objectives, while the other three projects were gas-related operations (e.g. natural gas, biogas). In contrast, all the nine ongoing projects aim at reducing the electricity access gap referred in chapter I. Also, another noticeable trend is the greater emphasis on the Africa region, as six of the nine ongoing projects are in Sub-Saharan African countries.

Overall, the actual and expected beneficiaries of the GPOBA energy portfolio, for both completed and ongoing projects, amounted around one million households (approximately four million people), of which about 90 percent corresponded to electricity access projects.

The electrification projects supported by GPOBA have a diverse nature, as some focus on grid extension efforts and others on off-grid and/or mini-grid services, particularly solar home systems (SHS). All off-grid and/or mini-grid projects address renewable energy technologies. GPOBA's recent focus on electricity access, as opposed to gas related projects, is consistent with the World Bank energy strategy as it acknowledges the magnitude and importance of the global challenge and the strong links between electricity access and the MDG goal of reducing poverty.

GPOBA energy activities include also a set of technical assistance and dissemination grants aimed at supporting its mandate through knowledge products, analytical work associated to project preparation, training and scaling-up studies.

THE STRATEGIC CONTEXT

Overall, all completed projects were aligned to –and consistent with– the Development Objectives of the World Bank's corresponding Country Assistance Strategy (CAS or CPS) and the World Bank Energy Strategy, and this practice has continued with the ongoing projects. A main project objective that is shared with the CAS of practically all countries is the reduction of poverty, which is common to all GPOBA projects. Other objectives consistent with the respective countries' CAS are the promotion of private sector led economic growth, increasing access based on community institutions and micro-credit, improving living conditions and the empowerment of rural people, supporting the development of rural economies and the provision of an adequate physical infrastructure as a critical element for sustained economic growth.

Several projects benefited from an early GPOBA grant that was useful in project design and in disseminating the OBA approach among all players, i.e. implementing agencies as well as potential service providers and micro-financiers. Given the pilot nature and, hence, the limited scope of all GPOBA project, other important enabling efforts such as regulatory and structural reforms as well as the removal of sector barriers to a better implementation, were not usually part of the project's preparatory effort but, when available, were addressed by other larger and complementary operation, such as an IDA project.

CRITICAL FEATURES OF PROJECT DESIGN

The design of GPOBA projects presents many common features that are determined by the OBA approach and poverty focus that characterizes the program in spite of the diversity in terms of country contexts, technology and energy sources involved.

The recipient of GPOBA grant is usually the Government of the respective country through its ministry of finance or, alternatively, an entity that acts on behalf of the Government, such as a utility –when project implementation involves an existing grid (e.g., India, Kenya)– or an entity established specifically to promote rural energy or alternative energy development (e.g. R2E2 Fund in Armenia, *Fundación Promigas* in Colombia, Reliance Infrastructure Limited-RIL in India). Often times, the latter type of recipient acts also as the project's implementing agency.

Typically, the role of the implementing agency is to carry out the project according to an Operational Manual agreed with GPOBA, which includes provisions for financial management and procurement as well as for monitoring and reporting activities. The implementing agency is responsible also for establishing the eligibility of service providers, setting technical standards (directly or through a technical unit/committee). The verification of outputs is done by an independent verification agent (IVA), which is appointed by the implementing agency although there are cases where this agent is internal, or linked, to the implementing agency, particularly when

dealing with a public sector model (e.g. Bolivia). In the Ethiopia project, monitoring and verification was a World Bank executed activity.

Implementing agencies can either manage directly the funds, thus constituting a special purpose fund or a financing entity/intermediary (e.g. R2E2 Fund in Armenia, IDCOL in Bangladesh, Apex Bank in Ghana, AEPC in Nepal), or simply assume project management responsibilities, while authorizing payments that are made effective by another entity (e.g. Ministry of Finance in Bolivia).

Specific features of the OBA scheme for the seven completed projects and selected ongoing projects are presented in Annex 1. Some important similarities and differences are addressed below:

- ***Pre-financing***: a cornerstone of the GPOBA approach is the shift of risks to service providers, including risks associated to overall project performance and pre-financing, thus introducing a stronger emphasis on the delivery of a quality and timely service for the poor. Service providers are, therefore, expected to pre-finance fully or partially the provision of expected outputs. Depending on the financial markets of each country, the financial strength of service providers, as well as the capacity to pay of households and the presence of other donors participating in the project, pre-financing requirements were addressed through borrowing in local market (micro-financing), suppliers credits, households down payment, or other donors grants or credits, and usually a combination of these options. In countries with a strong micro-financing tradition, such as Bangladesh, service providers (Partner Organizations) did not have difficulties in getting short-term credits; others required additional donors support including, in exceptional cases, advance payments from the GPOBA grant (e.g. Bolivia, India). In spite of several cases of success, pre-financing remains as one of the main challenges of the OBA approach in low-income and institutionally weaker countries.
- ***Exploratory subsidy design***: GPOBA grants are aimed to address directly the affordability gap that prevents poor households to receive an appropriate energy service. Accordingly, the grant constitutes a subsidy to bridge such gap. In most cases, the size of the subsidy was analyzed and determined during project design as a 'grant to the poor' required for achieving a financially viable operation, i.e. the subsidy required to cover the gap between the unit cost of connection and what households can afford to pay.[11] Special features of the subsidy experience are:
    - **Discovering subsidy size.** Subsidies were usually structured in a progressive manner, i.e. they increase in relative terms with decreasing size of the equipment, thus favoring poorer households. Subsidies could vary within a broad range, from 11% to 95% of the installation and/or connection cost, depending on the characteristics of each case. The size of the subsidies is considered flexible and, in fact, can vary with time. For example, in Bangladesh subsidies have been gradually reduced as costs of solar panels have decreased, LEDs (light-emitting diode) introduced to the market and a competitive local market for SHS services was developed. The Bolivia experience involved a particularly interesting case whereby the size of the subsidy was not fixed a priori but was established within a bidding process that aimed maximizing the number of households to be served by a fixed grant volume, i.e. the winning bid was decided on the basis of the lowest unit subsidy proposed.
    - **IVA.** Service providers are paid the value of the subsidy upon independent verification of a satisfactory installation. This could be a full payment, though in

[11] Such cost comprises the connection to the grid in grid-connected projects or the cost of supply of an off-grid energy source (e.g. solar home systems-SHS). It should be acknowledged that often the subsidy is influenced also by the government's social and economic policy.

more recent projects (Ghana, Uganda), a certain percentage of the subsidy (20% to 33%) is released afterwards, upon satisfactory demonstration of maintenance and/or good functioning.

- ***Targeting***; two main approaches used are geographical targeting and self-selection, being a combination of both a frequent feature. Geographical targeting is a common strategy in off-grid projects as governments often select remote rural areas of widespread poverty (sometimes based on a poverty mapping exercise or a social protection program, e.g. Kenya, Uganda, Bolivia, Colombia, Armenia). Self-selection mechanisms are also used, such as households connected after 1-1.5 years since the gird arrived to the village (Uganda, Ethiopia) and/or eligibility criteria that combine technical and/or legal aspects (e.g. ownership or tenancy) with a measure of households' ability to pay (Nepal).
- ***Sustained technical assistance***: all projects included an important, though in a relative sense small, component of technical assistance that was used either for project preparation (often as seed money prior to the approval of the main grant, e.g. Bolivia, Congo), including establishing technical standards and awareness/education programs on the OBA scheme or specific technologies, as well as for the supervision and monitoring (verification) of outcomes.

III. ASSESSING THE ENERGY PORTFOLIO

This chapter aims at evaluating how well did the seven completed projects performed in delivering their development objectives, both in terms of quantity and quality, focusing in particular on the projects' effectiveness, efficiency, and the impact and sustainability of their development outcomes. The assessment is based principally on existing ICRs and related documents, complemented by the feedback obtained in interviews with several TTLs, managers and practitioners in the field. Experiences of particular interest of selected ongoing projects are also incorporated into the evaluation.

As mentioned earlier, it is worth noting the limitations of this exercise. Besides the relatively small size of the sample –of only seven completed projects, that does not allow for quantitative results of statistical significance– the monitoring and evaluation process has not always followed a standard approach. For example, the reporting format of ISRs and, to a lesser extent, ICRs, has changed during the period of analysis (2005-2014), thus making more complex a comparative analysis. Other two caveats are: (i) the relatively short period of operation of most of the completed projects does not help in arriving to robust conclusions on the sustainability of projects; and (ii) the overall results of GPOBA's energy portfolio have not been compared to the much broader universe of non-OBA energy access interventions, nor OBA projects implemented outside the GPOBA program.

The lessons learned from this exercise are presented in chapter IV. A summary of the portfolio's performance is presented in Table 4, which includes the ratings available for the main performance indicators for the completed projects. In cases where the ICR did not provide a rating for a specific category, the table includes a brief text aimed at capturing the qualitative assessment of the corresponding ICR. A more detailed account of the projects' performance is included in Annex 2.

Overall, the performance of the energy portfolio has been getting better from earlier pilots to OBA's more recent subsidies. Five projects were rated positively for their overall outcome (raging from highly satisfactory-HS to moderately satisfactory-MS), and two earlier projects – urban grid electrification in slums of Mumbai in India and rural grid electrification in Ethiopia – rated unsatisfactory (U and HU).[12]

The assessment of performance of the grantees and the World Bank is tilted towards positive, as the performances are rated satisfactorily – from highly to moderately satisfactory – with the exception of the aforementioned projects in India and Ethiopia. It is important to note that there is evidence of an effective monitoring process that has been particularly helpful in: (i) improving the performance of projects –i.e. through project restructuring often aimed at amending the subsidy scheme, e.g. Bolivia, Nepal; and (ii) enhancing the design of subsequent projects, including improvements in the OBA scheme with view to achieve greater sustainability (e.g. Ghana, Uganda) and innovative financing mechanisms to address the affordability challenge (e.g. Kenya, Ghana). That is, there is an ongoing learning process among the main participants (Borrowers and the World Bank) that is helping to improve the overall performance of the energy portfolio.

The sample includes four electricity projects and three projects related to different forms of gas supply. We cannot avoid noticing that there were differences in the performance of these two groups. The two unsatisfactory projects addressed electricity access objectives while all the 'gas-related' projects performed well. However, given the pilot character of the program being assessed, and the size of the sample, these anecdotal results cannot be used in supporting any conclusions in favor or against a specific type of energy project.

[12] It should be noted that the Mumbai Improved Electricity project was closed in June 2013 having utilized less than 3 percent of the grant proceeds and, consequently, no ICR was required. Ratings from this project are taken from a GRM Completion Report, covering the period 4/27/2009-09/30/3013.

Table 4 – GPOBA Energy Portfolio: Performance Ratings

Project	*Ratings*						
	Overall Outcome	**Participants performance**		**Relevance of Objectives/ Design**	**Achievement of PDOs - Effectiveness**	**Efficiency**	**Sustainability – Risk to Development Outcome**
		WB	**Borrower**				
Armenia - Gas and Heating[13]	S	S	S	H	S	Project achieved DOs in cost effective manner.	Moderate
Bangladesh – Rural Electrification and Renewable Energy Dev.	HS *GEO*: S	S	S	H	S	S	Moderate
Bolivia – Decentralized Electricity for Universal Access - SHSs	MS	MS	MS	MS	MS	S	Significant
Colombia – Access to Natural Gas	HS	S	HS	Project consistent with CAS objectives.	Main objectives were achieved.	Project achieved health outcomes cost effectively.	Low or Negligible
Ethiopia – Electricity Access Rural Expansion	U	MU	U	H	U	MU	High
India – Mumbai Improved Electricity Access for Slum Dwellers	GRM completion report assigns HU ratings for the Achievement of Grant Objectives as well as for the implementation of Grant Financed Activities. No rating was given for the project's Overall Outcome.						
Nepal – Biogas Support Program IV	S	S	S	Objectives remain relevant	Project was rated Satisfactory against revised PDOs.	Ex-post financial & economic indicators surpassed appraisal estimates.	Low

H: High; HS: Highly Satisfactory; S: Satisfactory; MS: Moderately Satisfactory; MU: Moderately Unsatisfactory; U: Unsatisfactory; HU: Highly Unsatisfactory.

THE ENERGY PORTFOLIO AND COUNTRY ASSISTANCE STRATEGIES

As mentioned, all completed projects were aligned to the Development Objectives of the World Bank's Country Assistance Strategy (CAS or CPS), though this link was not always made explicit. Typically, all CASs include among their main areas of focus, two objectives or pillars that are linked to the energy sector: (i) a macroeconomic objective aimed at fostering sustained economic growth; and (ii) a human development objective that often includes a special emphasis on poverty reduction. Annex 3 presents the main elements of each CAS and their performance, as well as their

[13] Ratings correspond to IDA's Urban Heating Project. There are no ratings for the specific GPOBA project which complemented IDA's project.

links with energy. A review of the CASs objectives and performance vis-à-vis the GPOBA project's integration into the corresponding CAS, and their performance, led to the following findings:

- Overall, the energy sector does not play a predominant role in the CAS. In fact, references to the energy sector or energy sector projects are quite infrequent, and the CAS evaluation very seldom includes energy indicators. This subordinate role of energy in the CASs may indicate that the role of energy in contributing towards human welfare and reducing poverty has yet to be fully acknowledged.
- A comparison of the CASs vis-à-vis the GPOBA energy projects' did not reveal a clear correlation between the performances of CASs and energy projects, i.e. while there are cases where positive performances coincided (e.g. Armenia, Colombia), there were also cases of poor project performance within a favorable country environment (India) and, conversely, satisfactory projects in countries of mixed performance (Bangladesh, Bolivia).
- It is common that pro-poor initiatives, such as GPOBA, are implemented in poor performing countries. However, this is not necessarily an impediment for success, as evidence reveals that a satisfactory implementation is possible within a country environment with uneven performance, provided that some key conditions are met, such as sustained government support (Bangladesh, Bolivia), a favorable business climate (Bangladesh) and a thorough preparatory process.

PORFOLIO EFFECTIVENESS

A key question is, how well have GPOBA projects performed in terms of achieving the Development Objectives they were intended for?

A review of the energy portfolio indicates that the quality at entry of most projects was satisfactory. Overall, Project Development Objectives were relevant during appraisal as well as at projects' closure, in harmony with the CAS for each country, and fully consistent with the World Bank Group energy strategy. As expected, some projects had specific, though not major, design limitations, with the exception of the India project that presented serious design problems associated to the subsidy scheme, an unbalanced allocation of risks and an incomplete assessment of the market and working environment.

Five of the seven projects had a positive performance in terms achieving their PDOs, while two were unsatisfactory in this respect. The five successful projects were able to meet fully, or almost fully, their targets. Two of these projects were restructured; one, Bolivia, in order to adjust the service provider model to market conditions (reducing the maintenance service period from 4 to 2 years) and the second, Nepal, to amend the subsidy scheme (increasing the subsidy level due to higher than expected costs). Both cases experienced a slow start –a common problem among rural projects– and, consequently, required closing date extensions to fulfill their objectives.

Findings of special interest are:

- Three successful projects, Armenia, Bangladesh and Bolivia, were designed and implemented as an integral part of larger programs whereby their role was to incorporate an OBA approach targeting lower income users. These projects benefited from the existing implementing capacity of the recipient and, thanks to a well-coordinated design and implementation, were able to take advantage of potential synergies. In Bolivia, GPOBA's energy project was aimed at enhancing the OBA approach that had been initiated in a previous IDA lending operation complement and was subsequently followed by a third project. The successful performance of the three projects mentioned above confirms that the integration of GPOBA projects into larger energy programs is a suitable way to scale up the program's activities. In fact, an important advantage of their integration to a larger

program was the greater leverage that this exerted in addressing crucial sector wide issues, such as regulatory or tariff barriers.

- The main causes of Ethiopia's unsatisfactory performance were related to a design that did not anticipate a set of barriers associated to: (i) other concerns of the Government, which gave priority to a power shortages crisis as opposed to addressing poor households needs); and (ii) institutional weaknesses of the Government and/or the implementing agency EEPCo (e.g. in procurement and monitoring). In spite of these challenges, the GPOBA grant accounted for about 75% of total EEPCo's connections in the country over two year implementation period.
- The implementing agencies of both unsuccessful projects (Ethiopia and India) were the existing utilities, public and private, respectively. This highlights the challenges of incentivizing utilities, public or private, in addressing objectives that are often perceived by them as social rather than commercial. In the India project the subsidy scheme presented design deficiencies that, to a great extent, explained the projects' underachievement.
- Based on the experience of the completed projects, innovative approaches have been incorporated into a second generation of ongoing projects to address the affordability gap, one of the key challenges in reaching the poor. These include: (i) a combination of GPOBA grant and IDA-financed consumer credit of up to three years channeled through local rural banks (Ghana) and; (ii) a revolving fund (supported by a third donor) to provide credit to the poorest households (Kenya).
- GPOBA technical assistance activities carried out through the evaluation period have proven to be instrumental in supporting the preparation of projects and disseminating OBA approaches. Positive examples of these activities include work on regulatory framework (e.g. Philippines energy), willingness to pay analyses (Liberia), dissemination efforts (AEI, Lighting Africa, Clean Cooking Solutions), impact assessments (Bangladesh, Ethiopia) and mainstreaming OBA approaches (Nepal).

IMPACT AND SUSTAINABILITY

In addition to its contribution as a pilot program, the GPOBA energy portfolio was instrumental in improving the living conditions of around 270,000 mostly poor households (around 1.3 million people) through the provision of energy services, which implies an average subsidy of US$ 312 per household. This figure falls short when compared to the aggregate target of around 490,000 envisaged at the appraisal of the seven projects. The deficit is explained mainly by the cancelation of the Mumbai project and the poor performance in Ethiopia (that achieved only 19% of its target output). It is envisaged that the ongoing portfolio of nine additional electricity access projects, will benefit around 350,000 households in mostly poor rural areas.

As expected from a poverty-oriented program, the social impact of the portfolio has been significant. Surveys conducted on the impact of several projects confirm the mutually reinforcing relationship between access to energy and improved living conditions. Besides the typical benefits of energy access, such as savings in traditional and less efficient sources of energy (e.g. kerosene, candles, batteries), it is reported that projects have contributed in several dimensions of human welfare and development, including the following: jobs generation (Bangladesh) and gender benefits (Bangladesh, Ethiopia), education and strengthening local institutions (Bolivia, Ethiopia), health (Colombia, Ethiopia, Nepal) and improved access to communications and entertainment in most cases. It is worth noting, however, that these benefits are not exclusive of an OBA approach but can be achieved, in greater or lesser degree, by other projects or programs aimed at delivering energy services to the poor. An OBA approach, and in particular GPOBA, offers the additional advantage of focusing on the poor through better targeting and placing greater emphasis on delivery.

Table 4 shows that, among the six completed projects, the risks to the projects' Development Outcomes are considered to be low or negligible in two projects (Colombia and Nepal), moderate in another two (Armenia and Bangladesh), and high or significant risks in the remaining two (Bolivia and Ethiopia). The reasons explaining this mixed expectations regarding the projects' sustainability are:

- ***For projects of low or negligible risks; the presence in Colombia and Nepal of an implementing agency (in fact, a utility) with a good service record and the proven capacity to pay of customers enhances project sustainability***. For example, the Nepal project benefited from a service (based on biogas plants) that: (i) does not require further financial nor technical assistance for its operation and maintenance; and (ii) is provided within a market that attracts new entrants and greater competition. That is, main factors favoring sustainability in these projects are institutional strength; a simple, easy to manage technology; and the development of a competitive market.
- ***Projects facing moderate risks in Armenia and Bangladesh enjoy the benefits of strong implementing agencies*** (i.e. an entity established with the objective of providing the specific energy service and a long term vision). However, in Armenia there are concerns about affordability of the gas-based heating due to uncertainty on future gas prices. On the other hand, concerns about the sustainability of Bangladesh's rural electrification effort are perhaps exaggerated since they are associated to the much higher expectations of this particular project: to make the SHSs business fully commercial, with service providers borrowing at market terms from commercial sources, i.e. with no donors support.
- ***High risks are reported in Bolivia, due to the uncertainty faced upon the conclusion of the two-year maintenance period***, when the providers of SHSs will no longer have any obligation and it is unlikely that the market would be sufficiently developed to ensure long-term sustainability. In ***Ethiopia***, the precarious financial situation of the implementing agency (a public power utility), which is aggravated by the lack of tariff reform, threatens the financial and operational sustainability of the sector as a whole and, hence, the sustainability of the project.

Long-term sustainability in energy access projects is clear if judged by lead indicators but it is yet to be proven by time. While all off-grid projects showed success, their challenge with longer-term sustainability may be greater because in the absence of a utility, operation and maintenance services have to be delivered by local providers that are more vulnerable in financial terms. However, with off-grid electricity access an OBA approach could offer the advantage of extending the obligations of service providers to the initial years of operation, as well as delaying subsidy payments till specific maintenance targets are met. Such an approach is already being followed by two GPOBA ongoing projects, in Uganda and Ghana, where 33% to 20% of the subsidy is released from three months to three years after installation, respectively, upon verification of a satisfactory service. It is important to note, however, that previous attempts to allocate the additional risk borne by service providers proved to be excessive. That is why an option of linking payments to intermediate deliverables – i.e. carrying out a Results-Based Financing operation that is less strict than OBA – is discussed in among recommendations in this report.

A more effective option for enhancing project's sustainability would appear to be their integration to a larger and longer term program, such as the electrification efforts of Bangladesh, that through the continuity of successive operations, and the subsequent strengthening of the institutional and regulatory framework, would guarantee a longer term presence of service providers, including monitoring and evaluation, and offer the resources to take corrective actions.

EFFICIENCY

Overall, the independent verification of delivery has been functioning efficiently, contributing towards quality assurance and the timely delivery of outputs and subsidies disbursement. It is evident that the World Bank placed special attention on this key component of the OBA approach as in most cases the IVAs were funded by the project and, in one particular case (Ethiopia), the verification activities were executed directly by the Bank since the grant recipient was the service provider (thus to avoid conflict of interest). An exception was during the initial stage of the Uganda Energy Rural Transformation Project, which is still under implementation.

Similar to the projects' effectiveness evaluation, five of the seven projects had a positive performance in terms of efficiency. This assessment was based mostly on the estimation of ex-post economic and financial internal rates of return which, with the exception of the unsatisfactory projects, yielded positive results that frequently surpassed appraisal estimates. These results are evidence of two main factors: (i) an efficient implementation of the projects that often achieved their Development Objectives in a cost-effective manner (e.g. Colombia's project achieved health outcomes more cost-effectively that other health care interventions; Bolivia's competitive approach in setting subsidy levels helped maximizing project benefits for a given budget); and (ii) the high economic value of energy –electricity or gas– to households that had no previous access to such services and, consequently, had to bear a much higher cost for an energy source of lower quality.

Subsidy schemes were usually based on sound analytical work undertaken during project preparation (e.g. costs analysis and households capacity to pay). Also, in most cases such schemes were structured in a progressive manner and, hence, conformed with GPOBA's mandate of focusing on the poor. Subsidies worked effectively in the five successful projects, incorporating a stronger incentive for a timely and quality delivery of outputs. Given the disparities of the sample, both in the type of technologies applied as well as in country conditions, the level of subsidies relative to total costs varied within a very broad range (from 11% in Bangladesh to 95% for the poorest households in Armenia). However, besides the Bolivia experience of setting the subsidy through a market mechanism, the flexibility revealed by most projects in terms of increasing (Nepal) or decreasing (Bangladesh) the subsidy proved to be the right way of incentivizing service providers while maximizing the impact of the grant. In fact, it can be argued that a key feature of the successful projects was their capacity to adjust subsidy levels in order to meet target outcomes, while moving towards an economically efficient level of subsidies.

The Ethiopia project was rated Moderately Unsatisfactory for project efficiency. While the economic benefits remained high, very low tariff levels influenced negatively the results of the financial analysis, which was further affected by a significant depreciation of the local currency. This experience highlights the importance of a favorable sector environment in the performance of a project. In this case, unstable macroeconomic conditions aggravated the project's problems; conversely, in Bangladesh a well-established institutional and financing framework was instrumental for the project's success.

THE PORTFOLIO AS A PILOT

GPOBA's mandate is to pilot output-based approaches to improve the delivery of basic services to the poor with view, in this particular case, to increasingly incorporate OBA into the energy sector. GPOBA has also the stated objective of becoming a Center of Expertise in the subject. A review of the portfolio from this perspective leads to the following conclusions:

- The relevance of GPOBA's energy portfolio is confirmed when compared to the WBG energy strategy. Through its selection of projects and Development Objectives the energy portfolio deals directly with two of the most important WBG energy goals: universal access (and its focus on the poor) and the expansion of renewable energy and energy efficiency

as well as addressing key barriers to electrification, such as the high cost of providing energy services in remote areas, the incorporation of an adequate incentive system and attending the needs of the urban poor.

- The scale of GPOBA energy projects (an average grant size of US$5.6 million) is consistent with this experimental or trial undertaking. Also, the initial technological and regional diversity –which included power grid extension and off-grid and mini-grid electrification, solar irrigation pumps as well as household gas related projects, and projects in the three regions of greater need– was the appropriate strategy for a program aimed at testing new approaches within an environment of diverse needs, as well as consistent with the directions established by the World Bank Group for a sustainable energy future.
- During recent years the energy program, i.e. ongoing projects, has narrowed its technology scope focusing exclusively on electrification projects including an important component of Sub-Saharan countries. This focus is consistent with the region of greater need and also coincides with the overall WBG energy program in rural areas.
- There appears to be consensus that during its initial years, GPOBA grants were instrumental in introducing OBA concepts into the provision of basic services. Grants helped gaining a momentum in this direction and, nowadays, OBA is becoming a common approach for expanding electricity access both in grid-connected projects and off-grid projects.
- Although GPOBA maintains its piloting objective, there are indications that projects of second generation are already going beyond this initial phase, and moving towards "mainstreaming" the OBA approach into a broader sector framework. Such is the case of the Uganda Energy for Rural Transformation Project, which is creating an OBA Facility (to be funded by IDA and other donors, as well as the Government) that will provide pro-poor output-based subsidies for utilities in the medium to long term.
- It is perceived the GPOBA pilots have offered useful practical lessons on the strengths and weaknesses of OBA. However, GPOBA's aim to become a global Center of Experience is still a work in progress and the initial innovative effort needs to be reinforced. An IEG review of the program arrived to the conclusion that "sponsoring a broader range of RBF mechanisms, focusing more on innovation and learning from own and other's experience, while strengthening in-house expertise, could enhance the program's global relevance and reach."[14]

[14] IEG, World Bank Group. World Bank Group Support to Electricity Access FY2000-FY2014. An Independent Evaluation. 2015.

IV. CONCLUSIONS AND RECOMMENDATIONS

MAIN FINDINGS

GPOBA has demonstrated the feasibility of the OBA approach in the energy sector and particularly in addressing successfully the affordability barrier in reaching low-income rural households. In Bangladesh, overcoming the affordability barrier through a combination of longer-term consumers credit, GPOBA subsidies and product choice opened the way to widespread adoption of solar home systems. A flexible design, adaptable to the conditions of each community and to the potential contribution of local governments, proved to be successful in maximizing the benefits in rural electrification in Bolivia. Often building over existing IDA operations, and integrated into the World Bank's country level work, GPOBA projects have offered an effective mechanism in targeting the poor and enhancing the quality of the product.

OBA approaches have advantages over traditional approaches in targeting subsidies and a stronger delivery focus, thus, helping improving sector performance. However, it should be recognized that OBA has limitations associated to its scale and, hence, its scope, and to some characteristics associated to its output focus. OBA should not be seen as a substitute for sector reform –which is an essential condition for scaling-up the approach–, but one mechanism through which efficiency gains of sector reform and efficiency improvements can be shared with low income users. Also, it should be acknowledged that OBA's greater emphasis on delivery brings about a higher costs/risk to service providers. It is therefore essential to ensure that these additional costs will not threaten the commercial viability of an OBA initiative.

Overall, the performance of the energy portfolio has been mixed with a balanced on the positive side. This positive balance is quite evident when assessing the effectiveness and efficiency of energy projects, as well as the performance of the main participants involved (Borrowers and the World Bank). The portfolio's sustainability is perceived as being weaker, a drawback common to the universe of rural/poverty oriented projects, including OBA and non-OBA approaches.

The relevance of GPOBA's energy portfolio is confirmed when compared to the WBG energy strategy. The energy portfolio deals directly with two of the most important WBG energy goals: universal access and the expansion of renewable energy, as well as addressing key barriers to electrification. Also, the portfolio's technological and regional diversity –which included power grid extension and off-grid and mini-grid electrification, as well as gas related projects– was the appropriate strategy for a program aimed at testing new approaches within an environment of diverse needs.

Overall, the independent verification of delivery has functioned efficiently, contributing towards quality assurance and the timely delivery of outputs and subsidies disbursement. The World Bank placed special attention on this key component of the OBA approach as in most cases the IVAs were funded by the project and valuable technical assistance was provided.

There is evidence of an ongoing learning that is helping to improve the overall performance of the energy portfolio. An effective monitoring process that has been particularly helpful in: (i) improving the performance of projects –i.e. through project restructuring often aimed at amending the subsidy scheme, also taking into consideration the technological changes such as pre-paid meters; and (ii) enhancing the design of subsequent projects, including improvements in the OBA scheme with view to achieve greater sustainability and innovative financing mechanisms to address the pre-financing and affordability challenges.

LESSONS FROM PROJECT DESIGN AND IMPLEMENTATION

The following lessons can be extracted from the energy GPOBA projects that have been completed as of today. These lessons, both positive and negative, address design and implementation issues

of energy access projects that would require special attention when scaling up an OBA approach.

The success of an OBA project relies greatly on the quality and thoroughness of its design. An experience common to all projects is that time spent in the design and preparatory effort is critical for a smooth implementation and the success of a project. Conversely, the lack of thoroughness, or gaps, in project design, is quite often the main cause of project failure. Specific lessons associated to the need of a sound design are:

- ***Time spent in project preparation pays***. Adequate time is required in adapting a model to new conditions or countries, in identifying implementing agencies and developing institutional arrangements in an environment where a specific technology or subsidy scheme, such as GPOBA's, has not been used previously. It is of utmost importance to assess the market conditions for pre-financing and the technical capacity of potential service providers
- ***Scalability is more important than scale***. A design open to timely adjustments and aimed at leveraging local strengths and new participants allows the scalability of a project as demand grows. The Bangladesh SHS program is perhaps the best example, as it began as a modest pilot project which became the largest off-grid electrification project ever supported by the World Bank, proving that scalability is more important than aiming from the beginning a large-scale program.
- ***Sound analytical work is required to confirm the economic viability of the proposed project and design effective subsidy schemes***. Such schemes were based usually on analytical work – i.e cost analyses, assessments of the households' capacity to pay – undertaken during project preparation. Subsidy schemes were structured in a progressive manner in consistency with portfolio's focus on the poor.
- ***An objective assessment of the energy sector challenges is essential to anticipate implementation problems and setting realistic targets for electricity access projects***. Sector challenges such as an inadequate or incomplete regulatory framework (in particular, cost recovery tariffs), limited power supply, transmission and distribution networks and the utilities' ability to pursue ambitious access programs, may constitute serious barriers that require special attention during project design (e.g. in Ethiopia, sector challenges influenced the performance of all access projects, including GPOBA). Regardless of a project's scale, its design needs to be adapted to the context of the sector within which it will be implemented.
- ***Failure to identify physical and socio-political constraints may lead to implementation delays and, ultimately, to project failure***. Specific difficulties in accessing rural and urban areas of service, such as poor access roads, as well as the presence of informal/illegal services run by cartels, can hamper the efforts of utilities and/or service providers in connecting new consumers. Such difficulties should be identified upfront and programs designed accordingly, including selection criteria that, upon other conditions equal, prioritize connections of smoother implementation.

A key lesson stemming from most projects is that flexibility of design and agility during implementation are the main factors explaining the success or failure of OBA projects. By nature, pilot projects are aimed at introducing or exploring new approaches and, hence, its implementation is undertaken under considerable uncertainty. As projects advance, technology may change and unforeseen conditions may arise, particularly when dealing with renewable energy technologies that are still evolving. GPOBA experiences that illustrate the need for a flexible design and implementation include:

- In Bangladesh, technology advancements reduced the cost and increased the efficiency of SHS. ***A flexible project design helped to update technical standards and make possible***

the use of new components without resorting to restructuring or lengthy administrative processes and, thus, reduced costs and the need for subsidies.

- Also in Bangladesh, the risk that SHSs might become unnecessary upon connection to the grid created concerns over up-take among rural households. ***To reduce the household's purchase risk, service providers offered the option to buy back SHSs in the case the grid arrived to the community earlier than expected***.
- ***A flexible design, in terms local contributions and the level of subsidy required, adaptable to the conditions of each community, as well as households' affordability, helped in maximizing benefits in Bolivia***.
- ***Project flexibility is needed to accommodate also to non-controllable, external, factors and modify incentives accordingly*** (e.g. subsidy amount and disbursement schedule). For example, upon the impact of high inflation in Ethiopia on the cost of working capital required upfront by EEPCo, and difficulties in adjusting the subsidy scheme, project implementation suffered considerable delays.
- ***Experience in implementing GPOBA projects suggests the need to follow an open approach in defining what should be covered by the subsidy and how should subsidies be designed***. Such approach should take into account cultural and socio-economic characteristics of the beneficiary communities, as well as being agile in adapting the subsidy to changing or unforeseen conditions. Cases of particular interest are the design of strategies to make the payment of connection charges affordable to grid connected poor households, and the convenience of covering the costs of internal wiring to ensure an adequate demand for a safe electricity service.

While most GPOBA projects had, to greater or lesser degree, some flexibility incorporated into their design, it is perceived by practitioners that this flexibility has declined in time. ***It would therefore appear that a more agile and less prescriptive approach to address market constraints and project design issues, as they are revealed during implementation, would improve performance***.

Another common factor of success in implementing OBA projects is the presence of an implementing agency with a strong sense of dedication and ownership on the program, and technical and management capability. It is essential t o have a credible implementing agency capable to interface effectively with all other parties involved, promote innovative concepts associated to the project and support service providers and local communities in targeting beneficiaries in an efficient manner. In a low capacity environment, it is important to assess the agency's ability to manage the project and provide technical assistance accordingly.

Successful pilots of new approaches require considerable support in the form of Technical Assistance. Given their innovative nature, OBA approaches require substantial technical assistance, both for its design as well as for greater awareness of participants about the subsidy scheme and in quality assurance: monitoring and verification phase. Regardless of the technology involved –e.g. solar home systems or biogas plants– it was found that assistance was needed in building capacity among private or public service providers.

GPOBA's experience confirms that an OBA approach shifts risks to service providers and incorporates a stronger focus on delivery and quality of service. Paying on outputs effectively transfers an important component of project implementation risks, including technical compliance and financial management, to service providers. However, the extent to which service providers can bear additional risks should be assessed carefully since shifting excessive risks to providers could hamper their ability to deliver outputs. In particular, issues to assess prudently are market risks that could be beyond the control of the provider or, specific economic conditions, such as exchange risks in financially unstable environments.

Access to financing to cover the up-front costs (pre-financing) of service providers and connection costs of users, when relevant, is critical to OBA schemes and can become a serious obstacle to the success of a project. There have been notable cases of success in addressing this challenge, such as in Bangladesh, where well-established microfinance institutions were instrumental in the functioning of the OBA model, and Armenia, where donor-supported credit lines were allocated transparently and commercially determined. However, in countries with limited or a weak microfinance environment it is necessary to undertake a thorough assessment of the credit needs associated to the project and ensure that donor financing is made available through a sound institutional setting that guarantees adequate financial management standards and an efficient allocation of resources. Failure to do so could put undue burden on the provider and/or result in tariffs unaffordable to users.

While an OBA approach offers tangible advantages in terms of quality assurance and a stronger focus on output delivery, there is no evidence that it contributed towards greater sustainability when compared to other approaches. A well-designed OBA approach to rural electrification incorporates an independent monitoring and verification system that helps tracking the performance of service providers, confirming payments and ensuring that benefits reach the target population. Whereas an OBA scheme can include features that may offer some after sales benefits – such as selling systems on credit that, indirectly, offers the opportunity to provide maintenance services when collecting payments – achieving sustainability may require other long-term approaches. For example, the sustainability of SHS is a challenge yet to be resolved that warrants exploring formulas to ensure greater involvement of local communities and/or the long-term involvement of a utility or electricity service provider.

Extensive public outreach activities help training customers in the use of the technologies as well as in ensuring local commitment to electrification projects. Familiarizing customers in the correct use and primary maintenance of photovoltaic equipment helped in achieving the full benefits of electrification in Bolivia. Also, consumers' awareness and training fostered trust in new technologies in Armenia and Bangladesh and increased consumers' demand. An early public outreach can be paramount also in ensuring the active involvement of local governments in improving projects design and contributing towards their financing.

Subsidy requirements may change within the lifetime of a project, hence, subsidy schemes should incorporate enough flexibility to adapt to new conditions and, consequently, avoid delays and costly formal amendments. Experience in implementing OBA project reveals that the subsidy required to bridge the affordability gap could decrease either as a result of economies of scale, rising rural incomes, the development of a market for electricity services and/or bidding processes designed to maximize outcomes. Conversely, there are experiences, such as in India and Ethiopia, where subsidies proved to be too small to incentivize utilities or service providers in implemented projects as designed. Both cases point out the need of a flexible subsidy scheme able to undertake agile adjustments to subsidy levels and expected outputs.

There is no evidence to support the view that an OBA approach helps achieving a greater ownership among customers or provides better information on the actual costs for the provision of infrastructure services. While an OBA subsidy scheme helps targeting poor households, this does not imply a greater participatory process as compared to other approaches. Furthermore, the 'cost discovery' benefit of implementing energy access projects in difficult environments –such a rural and/or remote locations typical of poverty-oriented projects– is not exclusive of an OBA approach.

THE WAY FORWARD

Besides incorporating into project design and implementation the lessons presented above, the following recommendations are made for future GPOBA activities and mainstreaming OBA:

Explore a broader range of RBF mechanisms; focusing more on innovation and a systematic learning process –from own and others' experience– could enhance the program's global relevance and regain momentum of its early years. This effort could include the following:

- As global thinking has moved towards various RBF instruments, it is worth exploring other, more flexible, options such as disbursing the subsidy upon completion of intermediate targets or steps prior to the final output delivery (e.g. partial completion, resolution of specific hurdles, licenses) and/or seeking OBA ways to provide guarantees to winning bidders;
- A more flexible and less prescriptive approach to address market constraints and project design issues, as they are revealed during implementation. Such flexibility and real-time learning is especially important in pilot projects;
- To such end, it is recommended to consider the allocating an adequate amount of funds for developing new innovative approaches consistent with GPOBA's mandate as well as also responsive to countries' needs, donors' interests and market conditions.
- GPOBA and partners should also extend piloting to related forms of RBF that may be applicable within sector-wide engagements and that make greater use of national systems. In particular, a promising option to consider working with other donors to develop output-based disbursement projects, given that it has been successfully adopted in other sectors (e.g. water project in Indonesia).
- Consider the use of a multi-tier framework – a more comprehensive approach that incorporates quality into the energy access definition – in articulating better a proposal and identifying efforts that are more cost effective.

Focus on the countries of Sub-Saharan Africa; while challenges are more difficult to overcome, it is in this region where an OBA approach would provide more value added as delivery problems are greater and, most importantly, where there is greater need: the share of population without access to electricity is by far the lowest in the world.

Addressing the energy access is a long-term effort that, in low access countries, requires a sustained effort and, ideally, an early success to gain momentum. Hence, there is merit in prioritizing projects that are more likely to succeed. GPOBA's energy experience confirms that projects can achieve satisfactory outcomes even when country conditions are not favorable or uneven. However, the following conditions should be sought:

- A strong and sustained Government commitment to a nationwide energy access program and implementation plan, backed by adequate resources and focused on the poor;
- A supportive policy framework for enabling energy access targets, including sound institutional and regulatory arrangements;
- When dealing with grid-connected projects, a well performing power sector where critical problems, such as power shortages and/or financial weaknesses, would not distract from the development and implementation objectives of the project;
- Overall, seek projects where there is a higher potential for value added, i.e. interventions where the main advantages of an OBA approach –a stronger delivery focus to serve the poor– are in greater need.

Seek opportunities to develop projects integrated into a larger (ideally multi-donor) and longer-term energy access/services program. These projects are more likely to succeed as they are consistent with the long-term nature of the electrification effort, and they benefit from the

strengthening of the required institutional and regulatory framework as well as from the existing implementing capacity, more resources and a greater leverage in addressing the sector wide issues mentioned in the previous bullet. Adding a long-term scope to OBA approaches enhances sustainability.

GPOBA should intensify its dissemination and outreach activities with regard to the experience and lessons of its energy portfolio to promote better understanding among stakeholders of the potential for OBA.


SUSTAINABLE DEVELOPMENT GOALS
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
Access
4 QUALITY EDUCATION
Access
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
Access
7 AFFORDABLE AND CLEAN ENERGY
Access
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
Access
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
Access
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS