



OVERVIEW

World Bank Group Support to Electricity Access, FY2000-2014

AN INDEPENDENT EVALUATION



IEG
INDEPENDENT
EVALUATION GROUP

WORLD BANK GROUP
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EDITION**



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1818 H Street NW
Washington DC 20433
Telephone: 202-473-1000
Internet: www.worldbank.org

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The full evaluation is available on IEG's website at:
<http://ieg.worldbankgroup.org/publications>.



Careful observation and analysis of program data and the many issues impacting program efficacy reveals what works as well as what could work better. The knowledge gleaned is valuable to all who strive to ensure that World Bank goals are met and surpassed.

acronyms and abbreviations

GDP	gross domestic product
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IEG	Independent Evaluation Group
IFC	International Finance Corporation
M&E	monitoring and evaluation
MIGA	Multilateral Investment Guarantee Agency
SE4All	Sustainable Energy for All
SHS	solar home system
T&D	transmission and distribution

All dollar amounts are in U.S. dollars unless otherwise indicated.

acknowledgments

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Fernando Manibog provided support on the evaluation design and approach at the Approach Paper stage. Elena Bardasi provided inputs and guidance on the gender aspects of the evaluation. Aurora Medina Siy led the review of the International Finance Corporation (IFC) and the Multilateral Investment Guarantee Agency (MIGA) portfolio and coordinated the inputs related to private sector aspects of the evaluation. Mari Noelle Roquiz provided research and portfolio review support to Aurora throughout, and Alexandra Liaplina helped with such review in the early part of evaluation. Istvan Dobozi prepared background papers on off-grid electrification and power sector financial viability aspects with support from Sofia Chiarucci and Chiara Rogate, respectively, and provided inputs to the overall messages. Arun Sanghvi provided inputs to the evaluation throughout, especially on the sectorwide frameworks, and served as advisor to the team on sector-related aspects. Romyne Pereira was responsible for the administrative aspects. William Hurlbut, Barbara Rice, and Cheryl Toksoz provided editorial support.

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Rasmus Heltberg and Anahit Aghumian (Co-Task Team Leaders, IEG) carried out a complementary review of four partnership programs active in energy access, which is attached as a separate annex to this evaluation *Together for Energy: How Partnership Programs Support Energy Access*. Some of the main findings of this complementary review are integrated in the electricity access evaluation. This complementary review was carried out under the supervision of Geeta Batra and the general direction of Nick York. Andres Liebenthal and Anna Amato completed the review team which was supported by Yasmin Angeles. Fernando Manibog was the peer reviewer.

highlights

overview

THE WORLD BANK GROUP has committed to achieving universal access to electricity by 2030 under the Sustainable Energy for All (SE4All) initiative. This is a daunting challenge: more than 1 billion people do not have access, and another 1 billion have chronically inadequate or unreliable service. Most of those without access are poor, and the largest share is in Sub-Saharan Africa. Achieving universal access within 15 years for the low-access countries (those with under 50 percent coverage) requires a quantum leap from their present pace of 1.6 million connections per year to 14.6 million per year until 2030. The investment needed would be about \$37 billion per year, including erasing generation deficits and meeting demand from economic growth. By comparison, in recent years, low-access countries received an average of \$3.6 billion per year for their electricity sectors from public and private sources, including \$1.5 billion per year from the World Bank Group.

Development outcomes of the Bank Group's assistance were generally favorable compared with other infrastructure sectors. However, performance in improving financial viability of country electricity sectors was below expectations. There were significant gaps in the Bank Group's coverage of low-access countries, mostly in Sub-Saharan Africa. Median implementation time of World Bank investment projects was nine years, with time overruns attributable to inadequate project design and borrower capacity. Support for off-grid electrification was low and sporadic, with a few notable exceptions. The Bank Group's growing non-conventional renewable energy portfolio is dealing with technology and regulatory challenges. Tracking welfare and gender impacts in World Bank projects has improved, and International Finance Corporation (IFC) has made

a beginning in addressing these issues. The Bank made some significant pilot contributions to addressing the affordability of electricity connections. Collaboration grew among World Bank, IFC, and the Multilateral Investment Guarantee Agency (MIGA) through joint projects, which helps break ground for the private sector in some high-risk and fragile countries, and supports a few large and complex projects.

There are several good practice national access scale-up experiences worldwide, some with significant Bank Group involvement—Vietnam, the Lao People’s Democratic Republic, Indonesia, and Bangladesh—and more recently, Rwanda and Kenya’s national electrification programs combining grid and off-grid means. These experiences illustrate common underlying principles adapted by each country to its own institutional framework, broadly stated: adherence to a nationwide least-cost national access rollout plan using coordinated grid and off-grid delivery as appropriate to achieve universal access nationwide; maintaining the financial sustainability of the sector and the commercial viability of its agent(s) to draw investment financing requirements on a sustained basis; addressing equity by targeting the poor nationwide to ensure affordability; and not the least, guided by a unifying government vision and committed leadership that stays the course over the duration of the implementation program.

The scale of the SE4All challenge requires the Bank Group to reposition itself as a global solutions provider in the sector, going well beyond the confines of its own direct support for access. This evaluation points to the urgency for the Bank Group’s energy practice to adopt a new and transformative strategy to help country clients orchestrate a national, sustained sector-level engagement for universal access. A major challenge in this effort is to deploy the Bank Group units’ individual and collective strengths beyond Bank Group-led projects and transactions to stimulate private sector investments for closing the financing gap—especially in generation—for low-access countries.

LACK OF ACCESS TO

ELECTRICITY is a major constraint to economic growth and increased welfare in developing countries. This has been reemphasized by the United Nations and the World Bank Group as co-chairs of the global SE4All initiative, which was launched in 2011, with the goal of achieving universal access to energy within the next 15 years, along with improving energy efficiency and increasing the use of renewable energy. Providing access to electricity is also integral to the Bank Group's corporate goals of increasing shared prosperity and ending extreme poverty by 2030.

More than 1 billion people—one-seventh of the world's population and mostly poor—do not have access to electricity. About the same number do have access but receive electricity services that do not meet standards for the quantity and reliability of service that an efficiently performing sector should provide. These shortcomings in performance have a variety of effects:

- Lack of electricity access impairs progress in human welfare and quality of life. Directly or indirectly, electricity access enables transformative progress in education, health care, access to water, essential communications, and information, and access to financial services and opportunities for income generation.
- Power supply inadequacy (shortages in generation and supply) undercuts the productivity of manufacturing and commerce and reduces overall economic growth. An inadequate supply of electricity increases the costs of doing business by, among other things, resulting in costs to self-provide electricity generation, which is far more expensive than efficient grid supply would be.
- Poor electricity service reliability—high frequency and long-duration outages—adversely affects business performance and productivity, with cascading adverse implications for enterprises upstream and downstream in supply chains. Further, unplanned interruptions often impose more costs stemming from damage, spoilage, cleanup, and startup after the outage, and lost or deferred sales and transactions.

The Scale and Geographic Dimensions of Electricity Access

The access challenge in the next 15 years (2015–2030) is concentrated in Sub-Saharan Africa. Of the 1.1 billion people without electricity access, 99 million are in East Asia and Pacific region, 378 million in South Asia, and 591 million in Sub-Saharan Africa. East Asia is broadly on track to nearly close its access gap by 2030, and South Asia can also largely eliminate its access deficit if it maintains the pace of new connections it implemented in recent years. Therefore, the challenge is most acute in Sub-Saharan Africa, which accounts for 40 of the world's 51 low-access countries—defined in this study as countries where less than 50 percent of the population has electricity access. The challenge is daunting: 22 countries in the Region have less than 25 percent access, and of those, 7 have less than 10 percent access.

Unless there is a big break from recent trends, the population without electricity access in Sub-Saharan Africa is projected to increase by 58 percent, from 591 million in 2010 to 935 million in 2030. Furthermore, 20 countries are projected to have access levels below 25 percent by 2030, 5 of which would continue to have access levels below 10 percent. Thirty-nine countries in the Region would still be in the low-access category. Note that more than 40 percent of Sub-Saharan Africa's population is under 14 years old—if the current level of investment in access continues, yet another generation of children will be denied the benefits of modern service delivery facilitated by the provision of electricity.



DOMINIC CHAVEZ / WORLD BANK

The largest share of people without access to electricity is in Sub-Saharan Africa.

Achieving universal access in low-access countries within the next 15 years requires a quantum leap in the pace of new connections and in levels of investment. The implementation rate for new connections will need to increase from the average annual rate of 2.0 million during 2000–2010 to about 14.6 million per year for the next 15 years. The requirements for additional generation capacity and for transmission and distribution (T&D) to meet the demand from new connections will be an estimated \$17.1 billion per year—\$11.9 billion for T&D and \$5.2 billion for new generation capacity. These figures are in addition to the annual expenditures needed for refurbishing and expanding existing electricity infrastructure, meeting suppressed demand, and improving

service reliability for those who already have access, for which about \$20 billion per year would be needed for low-access countries in Sub-Saharan Africa alone. Thus, the total requirements amount to \$37.1 billion per year—\$25.2 billion per year for generation investment, and \$11.9 billion per year for grid T&D investment. This is more than 10 times the current average annual investment financing (which averaged \$3.6 billion during 2000–2014 from all sources, including multilateral banks and donors, together with government counterpart funding and the private sector), including \$1.5 billion per year from the Bank Group.

In contrast to low-access countries, medium-access countries are likely to come close to universal access by 2030. The average annual rate of 6.2 million

connections made during 2000–2010 would need to be raised to 6.7 million; the Bank Group can continue to have a significant supporting role, apart from addressing adequacy and reliability issues, which will also continue to be relevant in high- and universal-access countries.

Evaluation Approach

To support the World Bank Group effort to achieve the SE4All goals, this evaluation assessed the contributions of the International Bank for Reconstruction and Development (IBRD), International Development Association (IDA), IFC, MIGA to increasing electricity access during fiscal year (FY)2000–2014. The evaluation assessed both quantitative and qualitative results data at the



DAVE LAWRENCE / WORLD BANK

The Bank Group’s support for off-grid electrification was generally low and sporadic, with significant exceptions in Bangladesh and Mongolia.

individual projects level (IBRD and IDA), investments (IFC), and guarantees (World Bank, IFC, and MIGA). It sought to answer the question: To what extent has the World Bank Group been effective in the past and, going forward, how well is it equipped to put its country clients on track to achieve universal access to electricity that is adequate, affordable, and of the required quality and reliability?

The evaluation takes an integrated view of the challenge of providing electricity access. Electricity access is more than a connection to electricity service. The timely and sustainable provision of adequate, reliable, and affordable electricity requires balanced attention (design, planning, implementation, operation, and maintenance) to the synchronized development of all components of the electricity supply chain—from generation to T&D to customer connections.

Bank Group Engagement for Access in the Past 15 Years

The Bank Group provided \$63.5 billion to the electricity sector during FY2000–2014, about 9 percent of its commitments for all sectors during the period. The World Bank accounted for \$45 billion (71 percent); IFC, \$13.6 billion (21 percent); and MIGA, \$4.9 billion (8 percent). The electricity sector was 10 percent of World Bank commitments, 8 percent of IFC commitments, and 18 percent of MIGA exposures.

Despite the size of the Bank Group’s overall engagement in and financial assistance to the electricity sector, low-access countries received the lowest share of Bank Group assistance, especially those in Sub-Saharan Africa. The following patterns underscore this situation:

- Low-access countries received only 22 percent of World Bank lending

commitments and 6 percent of IFC investment commitments for the electricity sector in the past 15 years.

- The Bank Group’s engagement was shallow and sporadic in the electricity sectors of most low-access countries. During FY2000–2014, in the 51 low-access countries—including 22 fragile and conflict-affected states (FCS)—the Bank Group did not approve any projects in 14 countries, and approved only one project each in 10 countries and two projects each in 7 countries. IFC was absent in 29 of the 51 low-access countries and had only one or two operations each in 15 countries. MIGA operated in only 8 of the 51 low-access countries.
- Low-access countries accounted for a small share of all physical infrastructure supported by the Bank Group in the electricity sector during FY2000–2014. Low-access countries received 8 percent of the generation capacity (in gigawatts), 7 percent of the electricity connections, and 3 percent of the kilometers of T&D network.

The median duration of a World Bank electricity sector investment project is 9 years, including project preparation, planned implementation, and time overrun. If project durations and scale and depth of engagement do not improve, most low-access countries are likely to benefit from just two to four World Bank projects in the next 15 years, which seems well below its potential for helping countries to improve their electricity access.

The evaluation recognizes that the approximately 78 percent of the WBG portfolio invested outside of low access countries—that have reached medium to near-universal access— focused to a greater extent on other dimensions

of electricity access including quality and reliability, and energy efficiency and renewable energy, which are key goals of the SE4ALL Initiative. Notwithstanding this, overall, the Bank Group's commitment to the SE4All goal to achieve universal electricity access in 15 years clearly requires the institution to commit or organize resources and activities that are several orders of magnitude greater than it has so far in low-access countries.

Portfolio Performance for Electricity Access

The Bank Group's electricity sector portfolio during the past 15 years showed strong performance in the provision of physical infrastructure compared with other infrastructure sectors. Nearly 90 percent of IFC's conventional generation projects—the vast majority of its investments—were rated successful or better, compared with 71 percent for the World Bank

and 33 percent for MIGA, each based on their own rating criteria. The vast majority of T&D projects were executed by the World Bank, 73 percent of which had outcomes rated moderately satisfactory or better. The physical achievements supported by the Bank Group (based on the results reported at completion in project documents) for projects that closed during FY2000–2014 are:



The Bank Group's growing renewable energy portfolio is dealing with technology and regulatory challenges.

- An estimated 60.2 gigawatts of generation capacity
- 122,135 kilometers of T&D network
- 10.9 million grid connections
- 2.3 million off-grid connections, mainly solar home systems (SHS) that provided households with basic electricity services—lighting, small appliances, television, and cellphone charging—and improved community services such as schools, clinics, community centers, and administration centers.

For perspective, the grid-based connections supported by the Bank Group are estimated to be about 4.4 percent of all connections added during FY2000–2014 by all country clients, and 4.8 percent of all connections added by low-access country clients for the same period.

The Bank Group’s support for off-grid electrification was a small part of its overall portfolio. Results were modest overall for individual home systems (mainly SHS), with notable exceptions of good practice, mainly in Bangladesh and Mongolia. Significant contributions

were made for promoting solar lighting products through the joint IFC-World Bank Lighting Africa program. Attempts to promote isolated mini- and micro-grids did not yield significant results. The good practice experiences for SHS are relevant for several Sub-Saharan Africa countries that are in fragile situations, have dispersed populations, or whose sector conditions are not minimally in place for systematic and rapid scale-up.

Collaboration among World Bank, IFC, and MIGA through joint projects grew with time, though initially in an ad



BORIS RUMENOV/BALABANOV / WORLD BANK

The Bank Group showed strong performance in the provision of electricity infrastructure.



WORLD BANK

Several countries, including Indonesia, Lao PDR, and Vietnam have moved from low to high or universal access within two decades.

hoc manner, and is relatively higher in lending assistance in low- and medium-access countries compared with high- and universal-access countries. These operations helped break ground for the private sector in some high-risk countries, and supported a few large and complex projects. Still, the scale of these joint efforts is a relatively small portion of Bank Group commitments to the sector. The challenge is to deploy the Bank Group units' individual and collective strengths to stimulate private sector investments beyond Bank Group-led projects and transactions to facilitate the syndication of the financing gap, especially in generation for low-access countries.

Attention to welfare and gender-related outcomes of electricity access

interventions appears to be increasing in World Bank projects, and with satisfactory impacts. However, there is a long way to go for welfare and gender impacts to be mainstreamed in IDA and IBRD electricity projects. IFC has made a beginning in addressing these issues.

Supporting Sector Financial Viability and Affordable Access

The Bank Group did not make much headway in improving the financial viability of the electricity sectors as a whole of country clients, despite its strong analytical work and lending efforts. The vast majority of development policy operations targeting

the financial viability of electricity sectors were directed to high- and universal-access countries. Half of the development policy operations had favorable outcomes. There was not much traction from the relatively fewer investment operations that relied on covenants to stimulate financial discipline in the electricity sectors of country clients.

The Bank produced sound analytical work on affordability as a barrier to new electricity connections, especially for the poor. But this is not adequately reflected in country partnership strategies. The Bank supported the implementation of some well-designed pilot interventions for ensuring affordability of connections in a targeted manner in Lao PDR,

Vietnam, and Zambia. However, there is no way to track the performance of these schemes after the projects end. Pilot projects implemented by the Global Partnership on Output-based Aid showed some positive results, but these are yet to be demonstrated on a significant scale.

Lessons from World Bank Group Experience on Expanding Access

Best practice country experiences show that the transition from low to high or universal access can be made within two decades. Indonesia, Lao PDR, and Vietnam recently accomplished this feat. The Bank Group had a key role in this process for Lao PDR and Vietnam, and in the early stages of establishing momentum and accelerating new connections in Indonesia's program. With the Bank Group's ongoing support, Bangladesh achieved a remarkable expansion of off-grid SHS that quickly brought basic electricity services to nearly 10 million people and is filling a void left by a greatly slowed or even stalled grid expansion.

The first sectorwide programs in the electricity sector, in Rwanda and Kenya, are showing better results than what can be achieved using a project-by-project approach. The Bank supported Rwanda and Kenya in developing national electricity access rollout plans based on geospatial mapping and using least-cost combinations of grid and off-grid electrification. These plans form the basis for structured engagement of government with multilateral banks, donors, and private sector partners. This arrangement, coupled with proven government commitment, led to

significant financing commitments from development partners. In particular, the private sector made commitments it may not have made without the sectorwide programs adopted by the two countries. After a long period of stagnation, access levels increased from 6 percent to 15 percent in Rwanda, and 23 percent to 30 percent in Kenya in the past four years.

Lessons from these successful examples point to some principles of success. Analysis of countries' electrification experiences shows that they succeeded through their own homegrown styles, and that neither the public sector nor the private sector alone can marshal the capacity, financing, quality, and policy for achieving universal access. They used innovative and cost-effective techniques, and made good use of their national energy endowments and institutional strengths. The common principles, regardless of specific institutional structures, are:

- Planning the rollout of national electricity access needs to be comprehensive and synchronized, integrating grid and off-grid means and bringing development partners together in a framework of "many partners, one team, one plan."
- Financial viability of the electricity sector and its agents depends on clear institutional roles and accountability, and may require appropriately targeted subsidies.
- Affordability, equity, and inclusion need to be addressed by targeting the poor and those in remote and inaccessible areas.
- Government vision and its engagement in all the above issues is the crucial binding factor.

Opportunities for Change in the World Bank Group's Electricity Access Efforts

This evaluation holds a mirror to the Bank Group's performance record with improving electricity access during FY2000–2014 to inform its approach to achieving universal electricity access by 2030. In the large array of relevant Bank Group efforts, several aspects are not well aligned with the scale and urgency of the universal access goal.

Specifically, the project- and transaction-based approach alone does not lead to meeting SE4All universal access targets. The Bank Group's own experience with scaling up shows that timely and efficient achievement of universal access requires a sectorwide, least-cost nationwide access rollout plan, and a programmatic framework for mobilizing investment financing that could be sustained for at least two decades.

Several strengths and promising trends can be built upon, such as IFC's potential for promoting public-private partnerships, and its experience and strength in building electricity generation capacity. The World Bank contributed extensively in T&D in the past 15 years. MIGA built valuable experience in providing critical risk mitigation comfort through its guarantees, particularly in low-access and low-income countries.

The off-grid experience in Bangladesh showed how to maintain the momentum of electrification where grid expansion is stalled or is yet to gain momentum; though ideally, grid and off-grid rollout should be undertaken simultaneously in a coordinated manner nationwide, based on relative cost-effectiveness *ceteris paribus*. This experience holds promise for undertaking rapid initial

scale up (“pre-electrification”) in the context low access countries where the main grid sector expansion is temporarily stalled until such time the necessary drivers of good practice performance—outlined above—are more or less in place.

The positive experience with sectorwide program prospectus financings in Rwanda and Kenya—especially for T&D investment for grid rollout as well as for coordinated off-grid investments—highlight the potential and scope for syndicating financial resources on a programmatic and aligned basis. This goes well beyond the scope of a conventional project-by-project and transaction-by-transaction approach; crowding-in investment financing from a wider range of stakeholders and in aggregate orders of magnitude higher than possible solely by World Bank resources alone, or other donors going it alone.

Finally, Bank Group cooperation needs to expand well beyond the present joint transaction-by-transaction approach across Bank-IFC-MIGA. It should involve upstream collaboration appropriate to the individual and collective strengths of the World Bank, IFC, and MIGA. This is particularly important for supporting low-access country governments to mobilize on a timely and ongoing basis, the required investment financing for generation expansion undertaken by third parties, which may not necessarily involve direct participation by the Bank Group. Furthermore, this needs to be balanced with ongoing T&D expansion to effectively power economic growth as well as enable the client countries to advance towards the SE4ALL goal of adequate, affordable and reliable universal access within 15 years.

Recommendations

Recommendation 1

Engage decisively and intensely on countries with low electricity access (most of which are in Sub-Saharan Africa). This evaluation highlights large gaps in country coverage and weak engagement in low-access countries. In line with the Country Partnership Frameworks, the Bank Group should broaden and deepen its engagement in low-access countries to help them address the huge shortfalls in investment, capacity building and knowledge resources needed to move towards universal access in 15 years.

Recommendation 2

Move from a predominantly project-by-project approach—which lacks the scale and speed to achieve universal access by 2030 in low-access countries—to a far greater use of a sector-wide organizing framework and process for mainstreaming the sustained engagement needed for implementing rapid access scale-up. The scope and timing of the sector-wide frameworks and engagement plans should be led and coordinated by the government, and take into account the starting sector context and readiness. The core principles and strategic drivers underlying the best practice programs should inform the new strategic framework and country plans, and the Bank Group’s operational engagement going forward. These are: systematic implementation of national electricity access, enabling sector policies and regulation, commercial viability of service providers, affordability of connections costs for the poor, and overarching government commitment and leadership.

Recommendation 3

Design an engagement strategy to enable low-access countries to mobilize sector-level investment financing on the scale required, and sustained over the next 15 years, 2015–2030. Specifically, design an investment financing platform led by the government to crowd-in necessary financial resources from both public and private sources well beyond what would be possible with the Bank Group’s own contributions under conventional project and transaction modes of operation. In this effort, IBRD, IDA, IFC, and MIGA should draw upon their strengths and expertise in generation and in T&D, respectively, and tailor syndication mechanisms, differentiated as appropriate for generation investments financing, and otherwise for transmission and distribution investments.

Recommendation 4

Improve the evidence-base related to electricity access and its alignment with the corporate goals of promoting shared prosperity and ending extreme poverty. (A) At the project level, (i) design results frameworks for electricity sector projects that go beyond simple headcount measures of access—grid, off-grid, SHS, end-uses served—to include attributes such as quality, reliability, affordability of service; and (ii) where joint Bank Group projects are undertaken, assess value-added of such joint projects to the private sector and country clients. (B) At sector and country level, help country clients to appropriately enhance their M&E systems, household surveys, census and similar undertakings to measure and monitor the economic, welfare, and gender-related outcomes from increased electricity access. (C) Across country clients, promote uniformity and comparability in indicators, and help improve country capacity for designing, implementing, and utilizing the M&E frameworks.

management response

WORLD BANK GROUP MANAGEMENT thanks the Independent Evaluation

Group (IEG) for undertaking an evaluation of World Bank Group Support

to *Electricity Access*. The Report highlights the challenges for the World Bank

Group in the electricity sector in pursuit of the goal of achieving universal access to

electricity by 2030 under the Sustainable Energy for All initiative (SE4ALL). World

Bank Group management acknowledges and is broadly in agreement with IEG's

recommendations. The report accurately identifies success in different countries

and areas for improvement. The report also provides a positive assessment of the

Bank Group's past efforts to contribute to the expansion of energy access, including

acknowledging the Bank Group's support for an addition of one-sixth of the total

generation capacity during the review period and 7 percent of new electricity

connections.

General Comments

Management appreciates the report's **definition of electricity access** which

includes elements that emphasize adequacy, affordability, quality, and reliability.

This is largely in line with the Multi-Tier Framework for measuring energy access for

SE4ALL, which will be introduced globally. The Multi-Tier Framework recognizes that

electricity access is more than just the connection. It offers a framework for grading

the quality and other attributes of available power. Accordingly, the Bank is working

on improving measurement under the SE4ALL Global Tracking Framework.

Acknowledging the definition of electricity access introduced in the report, it

nevertheless tracks progress on energy access in a traditional "binary" way; for

instance counting the number of connections, regardless of the type and quality

of service achieved. This is understandable, given the available data, but these

limitations may have also skewed the conclusions. Management sees this as a

missed opportunity. To measure impact, it is critical to evaluate energy access

with all its attributes, including availability, quality, reliability, safety and affordability.

Recognizing that virtually all Bank Group power sector engagements aim to improve

some element of service to the customer, such a multi-dimensional definition of

"access" could substantially change the assessment on the real access achieved

during the period covered in this report.

As the report notes, **strong government ownership and commitment** has been

one of the most important factors in successful electrification programs. Increased

Bank Group engagement is not enough to guarantee results. While the World Bank Group strives to expand support to low-access countries (51 countries, of which 22 are fragile and conflict-affected states or FCS), it has finite resources and must align those resources to support client priorities. Many low-access countries require support in almost all of the Bank Group's key sectors. Therefore, even though energy access may be a priority, it must also compete with other priorities for limited Bank Group program resources.

The World Bank Group also plays an important role in countries not considered as low-access countries.

The Bank Group helps these clients to strengthen reliable and affordable electricity provision—part of the multi-dimensional definition of access—to support economic growth. In many of these countries, institutional and financial indicators for utilities are not improving, indicating a continued need for the Bank Group to focus support in these areas.

The report provides a good assessment of the nature of **World Bank Group collaboration in the electricity sector**, mainly through joint projects featuring at least two of the three institutions. The Bank brings value-added through its upstream support and advice to country clients on policy and institutional frameworks, and partial risk and partial credit guarantees to backstop government payment obligations to private investors. The International Finance Corporation (IFC) offers various types of term financing, plus mobilization of other investors, which is rarely available in countries with underdeveloped financial markets and high investor risk. The report also highlights the Multilateral Investment Guarantee Agency's (MIGA) value

added in terms of: (i) providing long-term political risk insurance for high-risk countries not available from international commercial insurers; (ii) enhancing credit worthiness of projects; and (iii) mobilizing additional capital. While the report states that collaboration among the Bank, IFC, and MIGA through joint projects has grown in an ad hoc manner, management would like to note that there are some good examples of strategic Bank Group collaboration. For example, in four years of operations, the IFC-MIGA partnership has mobilized a total of US\$2.1 billion with a focus on investments in International Development Association (IDA) countries and FCS. The Bank Group has also been engaged in more intensive collaboration, including through Joint Implementation Plans (JIPs). The report provides useful evidence regarding the positive correlation between the value of Bank Group collaboration and the difficulties of the operating environment, i.e., the greater the challenges, the higher the value of Bank Group collaboration.

The report provides good examples of **Bank Group-supported projects that stimulated private sector investments** in the electricity sector and highlights the “ground breaking” nature of these projects. It correctly points out the challenge in stimulating private sector investments for electricity over and above Bank Group led operations, especially in low-income, low-access countries. The sector-wide operations offer good illustrations of their critical “de-risking” role in testing approaches and resolving uncertainty about legal and regulatory frameworks essential for leveraging private sector investments. The report also notes, in the success stories of Rwanda and Kenya where access levels have dramatically increased, the

commitment of the private sector on a level that may not have been possible in the absence of the sector-wide programs. Management agrees with this assessment and notes that such operations are often characterized by demonstration and replication effects fundamental to the private sector development process.

Comments on Specific IEG Recommendations

Engaging Countries with Low Electricity Access

With respect to the recommendation on engaging in countries with low electricity access, management concurs with the need for expanded support to low-access countries as well as broader and deeper Group-wide engagements identified in Country Partnership Frameworks (CPFs). Management acknowledges that the Bank Group's role is very important to help client countries achieve universal access to electricity that is adequate, affordable, and of the required quality and reliability. At the same time, management wishes to emphasize the crucial role of country governments, power utilities, and other development partners in achieving significant gains on electricity access. As noted above, decisions on where to engage and allocate resources are made based on multiple factors, taking into account competing priorities for limited development resources, opportunities for impact, and selectivity. Energy access is one of the priority areas acknowledged by the World Bank Group. To operationalize the global practice's (GP) commitment to energy access, an Energy Access Global Solutions Group and an Energy Access Global Lead are now in place in the

Energy and Extractive Global Practice (E&E GP). This group will, in particular, provide expertise, advice, and additional technical inputs to low-access countries that have identified energy access as a priority.

IFC management has already placed a priority on electricity access as a central part of IFC's overall business strategy. This strategy involves efforts in FCS countries as well as many countries that are part of the "low access country" list introduced in the evaluation. If population is factored into the calculation, IFC has portfolio or new business engagements that will potentially serve more than 50 percent of the people in the low access country list within Sub-Saharan Africa. Lastly, while IFC management thanks IEG for the low access country list and will continue to ensure that focus is placed on countries that have low access as part of its efforts, it is important to note that a focusing of our priorities on such a list could lead to sub-optimal outcomes, such as a lack of prioritization on key countries like Nepal and Bangladesh that are classified as high and medium access, respectively, based on the methodology used to prepare the list.

Sector-wide Framework and Engagement

Management also agrees with the recommendation on the greater use of a sector-wide organizing framework and process for rapidly increasing access, where appropriate, to achieve universal access by 2030 in low-access countries. The principle of sector-wide planning is anchored in the 2013 World Bank Group Energy Sector Directions Paper. The paper notes, "The World Bank Group will support a long-term approach with

sector-wide planning—nationally and, where appropriate, regionally—to achieve optimal and cost-effective results. This involves looking beyond individual projects to consider the full range of energy supply options in any particular country. While the World Bank Group will support consideration of all options at the planning stage, given limited availability of its resources, the eventual World Bank Group financing will be applied selectively to areas where it has comparative advantage." The same principle will be applied specifically to energy access. However, the scope and timing of the sector-wide frameworks and engagement plans should be set by governments, taking into account readiness factors and the local context. Management will remain flexible in applying different approaches (e.g., a sector-wide framework and engagement, a specific targeted project, a Bank Group joint project, etc.) to suit the given context.

Designing an Engagement Strategy

On the recommendation to design an engagement strategy, again it would be important to consider country conditions appropriate for the formulation of a sector-wide approach and a government-led investment financing platform. Management appreciates the report's acknowledgement that engagement approaches must reflect the country's conditions. Whenever applicable, management is committed to drawing upon respective institutional strengths and expertise and tailoring mobilization mechanisms. Depending on the country priorities, starting conditions, and capacities, the focus may be on the overall sector or on specific sub-sectors.

Results and Impacts of Electricity Access

Management is committed to advance the evidence on results and impacts of electricity access, including its contributions to the Bank Group goals of ending extreme poverty and promoting shared prosperity. However, some of the specific recommendations are too broad and go beyond the energy sector, and some are difficult to translate into measurable actions and indicators. As part of an effort to advance the evidence on results and impact, more impact evaluations are being done as part of ongoing energy access projects. The Bank will roll-out the SE4ALL Multi-Tier Framework to measure progress towards universal access, and track project contributions, starting with a pilot group of energy operations to be implemented in FY16, and expanded afterwards. IFC will continue to implement across sectors its eight-point action plan that resulted from IEG's evaluation on IFC's Poverty Focus, over a three-year timeframe. Management is also pleased that IFC is among the 25 international finance institutions that have agreed upon a list of 27 harmonized reporting indicators across 13 different sectors and industries. However, as energy access is often one of many influences over broader development impacts, a cautious approach is needed about including explicit links in the project's results framework. The causality and attribution of an access program to broader welfare gains are difficult to rigorously confirm. In addition, there is frequently a time lag between the project period and the emergence of welfare impacts that further clouds any direct links. The specific recommendation to assess "value-added" of Bank Group joint projects to private sector clients and the country would not be feasible in

the absence of counterfactuals and the absence of a Bank Group-wide methodology for such an assessment.

Other Specific Comments

Interpretation of the sample. While the report presents useful findings, the limitations of the sample should be recognized in interpreting the findings. For instance, the report uses the whole of the Bank's electricity lending as a proxy for support to electricity access, and compares that input with the results achieved in terms of increased connections. In fact, the Bank estimates that the projects directly supporting electricity connections (distribution or off-grid) account for only about 4 percent of the Bank's electricity lending. As reported in the evaluation, Bank Group engagement in off-grid electricity is 1.5 percent of the total portfolio, which seems "marginal." Yet, it is important to recognize that the off-grid share among the projects directly supporting new connections (about 4 percent of the Bank's energy lending) is slightly over one-third. For MIGA projects, the evaluation findings are based on 15 Project Evaluation Reports (PERs), from a population of 72 MIGA guarantee projects, which do not provide a robust sample for firm conclusions.

Lighting Africa. Management stresses the unique role and groundbreaking performance of the Lighting Africa program. As documented in its final evaluation, this initiative's achievements range from development of global product quality standards to number of beneficiaries reached, and from greenhouse gas emissions reduced to creating a model for a joint World Bank-IFC partnership and from investment and donor funds mobilized to financial sustainability. Above all, the program

has been influential in creating the conditions for the sector and the market to attract new entrants and rapid expansion to achieve scale. In terms of findings on Lighting Africa, management regrets missed opportunities to identify critical lessons, such as Bank-IFC collaboration leveraging on inherent strength, innovations, and impact to the beneficiary as a result of using a single evaluative lens across the four programs. Lighting Africa is a market-based approach and fundamentally different in nature from the other three umbrella multi-donor trust fund facilities. The report, in particular, mischaracterizes the program's donor reporting function, which was discontinued and replaced with overarching and periodic half-year program reporting. Impact results are publicly reported semi-annually through the Lighting Africa website, as well as on the Lighting Global and Lighting Asia websites.

IFC's support in FCS. Recognizing its critical importance for development, support for electricity access has long been at the center of IFC's strategy, with an increasing focus on low-income countries and FCS. As announced recently, management is strengthening IFC's commitment to FCS where supporting infrastructure, including electricity, is key. As FCS have among the lowest rates of electricity access worldwide, management believes that this strengthened commitment, backed by, inter alia, an enhanced risk envelope, new pools of risk capital and blended finance instruments, and boosted resources and talents in these markets, would help accelerate their improved electricity access. To improve electricity access, including reliability and quality, the Bank Group is engaged in more intensive collaboration on project-related as well as broader sector

and institutional challenges, including through JIPs. These efforts are showing initial signs of pay-offs in the form of growing pipelines in some of the most difficult business environments from the private sector perspective.

MIGA's role in World Bank Group support for electricity access. The report notes that MIGA accounted for only 8 percent of the \$63.5 billion provided by the Bank Group to the electricity sector over the period FY2000-2014 (World Bank-71 percent, IFC-21 percent). However, across the Bank Group, the sector's share in total MIGA commitments as well as the share of low-access countries within the electricity access portfolio was the highest in MIGA (18 percent and 35 percent, respectively), which denotes its relative importance. It would have been useful for the report to draw lessons from the experience, and provide a coherent explanation and guidance as to MIGA's roles and contributions in low-access, low-income countries.

Impacts of MIGA guarantee projects. The report finds it challenging to get evaluative evidence of the impacts of MIGA guarantee projects on end-users, especially the poor, and on its fiscal sustainability. The report also states that MIGA and IFC do not have any significant provision for tracking the welfare and gender outcomes related to their operations. The challenges faced with regard to MIGA's Development Data Gathering has been well recognized by IEG's 2013 assessment of self-evaluation systems in MIGA and IFC. Essentially, this challenge is inherent to MIGA's business model as a political risk insurance provider, including the arms-length nature of its relationship with the project company.

management action record

Engagement in Low-Access Countries

IEG FINDINGS AND CONCLUSIONS The Bank Group's engagement has been shallow and sporadic in the electricity sectors of the majority of low-access countries. During FY2000–2014, in the 51 low-access countries (including 22 fragile and conflict-affected states, or FCS), the Bank Group approved no projects in 14 countries, one project each in 10 countries, and two projects each in 7 countries. The International Finance Corporation (IFC) was absent in 29 of the 51 low-access countries, and had only one or two operations each in 15 countries. The Multilateral Guarantee Agency (MIGA) operated in only 8 of the 51 low-access countries. Low-access countries received only 22 percent of World Bank lending commitments and 6 percent of IFC investment commitments for the electricity sector over the past 15 years.

IEG RECOMMENDATIONS **Engage decisively and intensely on countries with low electricity access (most of which are in Sub-Saharan Africa).** This evaluation highlights large gaps in country coverage and weak engagement in low-access countries. In line with the Country Partnership Frameworks, the Bank Group should broaden and deepen its engagement in low-access countries to help them address the huge shortfalls in investment, capacity building and knowledge resources needed to move towards universal access in 15 years.

ACCEPTANCE BY MANAGEMENT Agree

MANAGEMENT RESPONSE Management wishes to emphasize the critical role of government's ownership and commitment for successful programs. World Bank Group engagements in electricity access are determined based on multiple factors, taking account of competing priorities for limited development resources, opportunity for impact, and selectivity.

The Bank Group will duly consider and support energy access needs of low-access countries, as identified in the country engagement process.

Energy access is one of the priority areas acknowledged by the World Bank Group. To operationalize its commitment, the Bank has recently created an Energy Access Global Solutions Group and an Energy Access Global Lead role. This Group will provide expertise, advice and additional technical inputs to low-access countries that have identified energy access as a priority.

IFC management has already placed a priority on electricity access as a central part of IFC's overall business strategy. This strategy involves efforts in FCS countries as well as many countries that are part of the "low access country" list introduced in the evaluation. If population is factored into the calculation, IFC has portfolio or new business engagements that will potentially serve more than fifty percent of the people in the low access country list within Sub-Saharan Africa. Lastly, while IFC management thanks IEG for the low access country list and will continue to ensure that focus is placed on countries that have low access as part of its efforts, it is important to note that a focusing of our priorities on such a list could lead to sub-optimal outcomes, such as a lack of prioritization on key countries like Nepal and Bangladesh that are classified as high and medium access respectively, based on the methodology used to prepare the list.

Sector-wide Frameworks

IEG FINDINGS AND CONCLUSIONS Achieving universal access in low-access countries over the next 15 years will require the implementation rate for new connections to increase from the average annual rate of 2.0 million during 2000–2010 to about 14.6 million per year for the next 15 years. The investment needs for this effort together with refurbishing existing assets are estimated at \$37.1 billion per year, which is more than ten times the current average annual investment financing which averaged \$3.6 billion over the period 2000–2014 from all sources (multilateral banks and donors together with government counterpart funding and the private sector), including \$1.5 billion per year from the Bank Group. The Bank Group's present project- and transaction based approach alone does not add up to meeting SE4All universal access targets. The Bank Group's own experience with scaling up shows that timely and efficient achievement of universal access requires a sector-wide least-cost nationwide access rollout plan, as well as a programmatic framework for mobilizing investment financing that has the potential to be sustained for at least two decades.

IEG RECOMMENDATIONS **Move from a predominantly project-by-project approach—which lacks the scale and speed to achieve universal access by 2030 in low-access countries—to a far greater use of a sector-wide organizing framework and process for mainstreaming the sustained engagement needed for implementing rapid access scale-up.** The scope and timing of the sector-wide frameworks and engagement plans should be led and coordinated by the government, and take into account the starting sector context and readiness. The core principles and strategic drivers underlying the best practice programs should inform the new strategic framework and country plans, and the Bank Group's operational engagement going forward. These are: systematic implementation of national electricity access, enabling sector policies and regulation, commercial viability of service providers, affordability of connections costs for the poor, and overarching government commitment and leadership.

ACCEPTANCE BY MANAGEMENT Agree

MANAGEMENT RESPONSE The principle of sector-wide planning is anchored in the 2013 World Bank Group Energy Sector Directions Paper, which articulates the Bank Group's commitment to support a long-term approach with sector-wide planning, where appropriate.

In countries where the CPFs identify energy access as a priority, the Bank will engage in a dialogue to start moving from the project-by-project approach to programmatic and sector-wide planning, taking into account country priorities, starting conditions and capacities. Management will however remain flexible in applying different approaches (e.g., sector-wide framework and engagement, a specific targeted project, a World Bank Group joint project, etc.) to suit the given context.

(Continued on the following page.)

Sector-level Investment Financing

IEG FINDINGS AND CONCLUSIONS The Bank's sector-wide programs in Rwanda and Kenya show the scope for syndicating financial resources far beyond a project-by-project approach. In both these countries, development partners (multilateral banks, donors, and private sector) have made significant financing commitments that go far beyond what might have been achieved by a project by-project approach. In this context, Bank Group cooperation needs to go beyond joint projects, and involves equal engagement by the World Bank, IFC and MIGA from the beginning, particularly in supporting low-access countries in raising more resources to move towards universal access within 15 years. Several strengths and promising trends can be built upon. Among them are IFC's experience and strength in building electricity generation capacity and its potential for promoting public-private partnerships. The World Bank, meanwhile, has been contributed extensively in T&D over the past 15 years. MIGA has built valuable experience in providing critical risk mitigation comfort through its guarantees, particularly in low-access and low-income countries.

IEG RECOMMENDATIONS **Design an engagement strategy to enable low-access countries to mobilize sector level investment financing on the scale required, and sustained over the next 15 years, 2015–2030.** Specifically, design an investment financing platform led by the government to crowd-in necessary financial resources from both public and private sources well beyond what would be possible with the Bank Group's own contributions under conventional project and transaction modes of operation. In this effort, the International Bank for Reconstruction and Development, International Development Association, IFC, and MIGA should draw upon their strengths and expertise in generation and in T&D, respectively, and tailor syndication mechanisms, differentiated as appropriate for generation investments financing, and otherwise for transmission and distribution investments.

ACCEPTANCE BY MANAGEMENT Partially Agree

MANAGEMENT RESPONSE Following the dialogue on programmatic and sector-wide engagements, the Bank will support implementation of the resulting energy access programs, including through mobilization of additional (public and private) resources, where feasible. The Bank will closely collaborate with IFC and MIGA, where applicable, to draw on the Bank Group's respective strengths and comparative advantages. However, depending on the country priorities, starting conditions, and capacities, the focus may be on the overall sector or on specific sub-sectors.

Monitoring and Evaluation

IEG FINDINGS AND CONCLUSIONS Monitoring and evaluation show weaknesses in all elements of design and implementation. This weakness is more marked in low- and medium-access countries, largely due lack of indicators, weak baseline data, and inadequate capacity for monitoring. The shortcomings are highest regarding the tracking of economic and welfare outcomes, including gender considerations, but there has been greater recognition of this matter in the World Bank and recent improvements in M&E frameworks in this regard. However, IFC and MIGA do not have any significant provision for tracking the welfare and gender outcomes related to their operations. Collaboration among World Bank, IFC, and MIGA through joint projects has grown over the years, albeit in an ad hoc manner. Feedback from both internal and external stakeholders point to a number of areas for improvement. In order to take effective action in this area, more and solid evidence is needed on the value added as well as on costs and benefits to private sector clients from such joint projects.

IEG RECOMMENDATIONS **Improve the evidence-base related to electricity access and its alignment with the corporate goals of promoting shared prosperity and ending extreme poverty.** (A) At the project level, (i) design results frameworks for electricity sector projects that go beyond simple headcount measures of access—grid, off-grid, SHS, end-uses served—to include attributes such as quality, reliability, affordability of service; and (ii) where joint Bank Group projects are undertaken, assess value-added of such joint projects to the private sector and country clients. (B) At sector and country level, help country clients to appropriately enhance their M&E systems, household surveys, census and similar undertakings to measure and monitor the economic, welfare, and gender-related outcomes from increased electricity access. (C) Across country clients, promote uniformity and comparability in indicators, and help improve country capacity for designing, implementing, and utilizing the M&E frameworks.

ACCEPTANCE BY MANAGEMENT Partially Agree

MANAGEMENT RESPONSE Management is committed to advance the evidence on results and impacts of electricity access, including its contributions to the Bank Group's goals of ending extreme poverty and promoting shared prosperity. To this end:

- (i) The Bank will apply the SE4ALL Multi-Tier Framework for measuring electricity access. The framework will be used to: (a) measure country progress towards universal access under SE4ALL; and (b) track project contributions, starting with a pilot group of energy operations to be implemented in FY16, and expanded afterwards. In addition, efforts will be made to facilitate the adoption of the framework by other parties to ensure consistency of reporting under SE4ALL and to assist clients to adopt a simplified version for their own tracking.
- (ii) The Bank will continue mainstreaming impact evaluations in the selected energy access operations.

The specific recommendation to assess “value-added” of Bank Group joint projects to the private sector clients and the countries would not be feasible in the absence of counterfactuals and the absence of a Bank Group-wide methodology for such an assessment.

IFC will continue to implement across sectors its eight-point action plan that resulted from IEG's evaluation on IFC's Poverty Focus, over a three-year timeframe. IFC will carefully take stock on its evidence-base in relation to the corporate goals across sectors and examine and discuss the next steps for improvement.

report to the board from the committee of development effectiveness sub-committee

The Sub-Committee of the Committee on Development Effectiveness considered the Independent Evaluation Group's (IEG) report, *World Bank Group Support to Electricity Access, FY2000-FY2014— An Independent Evaluation, Draft Management Response, and World Bank Group Support to Electricity Access, FY2000-FY2014: An Independent Evaluation—Annex*.

The Committee welcomed IEG's evaluation and assessment of the technical and financial constraints to reaching universal electricity access. They recognized that the World Bank Group has made progress in expanding access to electricity, but noted that to achieve universal access by 2030, a major shift had to be made. Members endorsed the recommendations and called for the World Bank Group to increase its support to countries with low-access to electricity, asking the World Bank and the International Finance Corporation (IFC) to engage decisively and step up their engagements. They were pleased to learn that by having targets on fragile and conflict-affected states, IFC was not ex-ante foreclosing its engagements across low-access countries; they were hopeful that the new Energy Access Global Solutions Group and the Energy Access Global Lead would provide a clearer vision on how the World Bank Group could maximize its efforts. Members noted the importance of securing government ownership and commitment to achieve universal electricity access. Management reiterated its strong concurrence with the report's recommendations and noted its commitment to developing a comprehensive action plan.

Members queried whether the World Bank Group possessed the skills in-house to reach the targets and the ambitious goals. Noting that the World Bank Group will not be able to deploy the needed \$33 billion to meet the 2030 goal, the Committee encouraged the World Bank Group to use its convening power to mobilize resources from other donors and the private sector. Members highlighted that there was space to scale up renewable energy and put an emphasis on non-conventional renewable energy in poor rural areas. Members agreed that the World Bank Group should move from a predominantly project-by-project approach to a sector-wide approach to include generation, transmission, and distribution investment and asked that the institution work closely with governments to set appropriate timing and sequencing. Management cautioned about the need to maintain a flexible approach at the country and sectoral context level. The Committee was pleased to learn that the tracking framework that integrates documentation from both governments and development partners is fully rolled out and will be updated approximately every two years. Management explained that the multi-tier framework had recently been presented to the Sustainable Energy for All (SE4ALL) initiative and that it was now being socialized with governments and donors who will ultimately be responsible for implementing the agreed monitoring and evaluation framework. The Committee welcomed the Bank's commitment to apply and promote the SE4ALL multi-tier framework and encouraged IFC to also apply it.

Members commented on the scope of the evaluation, noting that it would have benefited from addressing underlying problems (e.g. price distortions from fuel subsidies; poorly functioning power sectors, level of government commitment); assessing how World Bank Group interventions have impacted electricity tariffs; including investment advisory services and public finance management; and discussing private, public, and joint ownership of assets. Members expressed their interest for management to continue its full Board engagements on sustainable energy.

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WORLD BANK GROUP
World Bank • IFC • MIGA

The World Bank
1818 H Street NW
Washington, DC 20433

