

2. Assistance, Focus, and Performance, FY2000–2014

Highlights

- ❖ The World Bank Group’s support to the electricity sector is a significant share of its overall engagement with country clients.
- ❖ Within the electricity sector, countries with low- and medium- electricity access received a smaller share of assistance relative to high- and universal-access countries.
- ❖ There were significant gaps in coverage of low-access countries, with low engagement and continuity mostly in Sub-Saharan Africa, the Region with the largest population without access.
- ❖ Support for off-grid electrification was low and sporadic, with a few significant exceptions.
- ❖ The World Bank consistently raised issues and strategies to country clients for adequacy, reliability of electricity services, and financial viability, but less so for affordability and welfare.
- ❖ The Bank Group—on its own and through global partnerships—contributed substantially to knowledge development in electricity access for country clients.
- ❖ Development outcomes were favorable overall compared with other infrastructure sectors, but outcomes for low-access countries were somewhat lower relative to other categories.
- ❖ Infrastructure projects performed better than policy loans. The growing renewable energy portfolio is scaling the learning curve for dealing with technology and regulatory challenges.
- ❖ Median implementation time of World Bank electricity sector investment projects was nine years, with time overruns attributed partly to quality of project design and borrower capacity.
- ❖ Monitoring and evaluation performance of World Bank projects was poorer in low- and medium-access countries compared with high- and universal-access countries.
- ❖ Tracking welfare and gender impacts in World Bank projects improved; a beginning has been made in this respect by IFC.

Lending and Focus on Electricity Access

The World Bank Group provided \$63.5 billion to the electricity sector during FY2000–2014, about 9 percent of its support for all sectors during the period. WB support is regarded as commitments and includes grants, credits or loans and guarantees; IFC investment support is regarded as financing and include loans and equity; MIGA support is regarded as insurance and includes guarantees. This portfolio concentration tracked the directional flow of global private investments, mostly involving high and universal access countries, and included sixty-one (61) of 88 countries that received repeated IFC and MIGA support during the past 15 years and

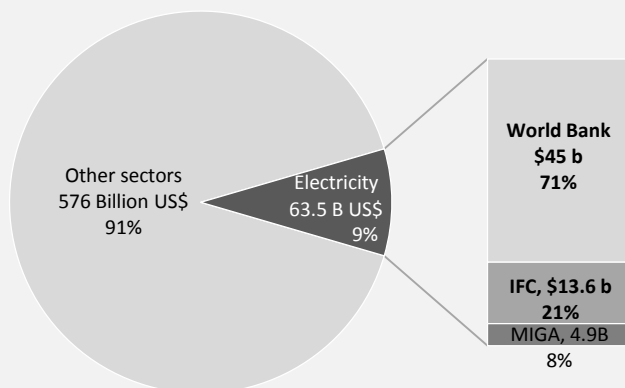
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were also noted to be in different stages of the reform trajectory. The latter group of countries are mostly IDA-eligible countries, primarily with low electrification rates. Using country risk as a filter, with regard to country risk and access levels, fifteen universal and high access countries with projects that received WB Partial Risk Guarantees (PRG), IFC financing and advisory work and/or MIGA political risk insurance (PRI) were rated high risk by Institutional Investor and the Economic Intelligence Unit. (figure 2.4).

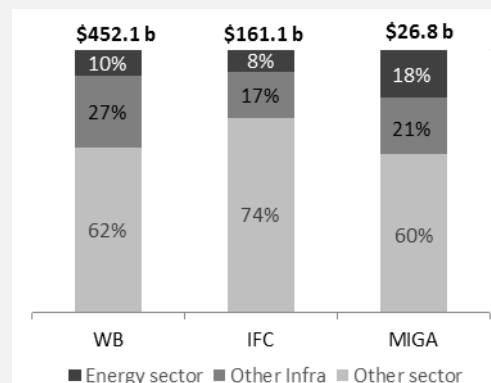
The World Bank (IBRD and IDA) accounted for \$45 billion (71 percent); IFC, \$13.6 billion (21 percent); and MIGA, \$4.9 billion (8 percent). The electricity sector was 10 percent of World Bank commitments, and all other infrastructure sectors (transport, water, and telecommunications) accounted for 27 percent of overall lending. IFC’s commitments for the electricity sector accounted for 8 percent of all IFC commitments, compared with 17 percent for all other infrastructure sectors. MIGA devoted 18 percent of its overall gross exposure to the electricity sector, compared with 21 percent for all other infrastructure sectors. Overall, this is a significant emphasis on the electricity sector (figure 2.1).

Figure 2.1. Bank Group Commitments for the Electricity Sector, FY2000–2014 (\$, billions)

A. Electricity Sector versus Other Sectors



B. Electricity Sector Share in World Bank, IFC, and MIGA Commitments



Source: World Bank Business Intelligence; IFC and MIGA databases.

Note: b = billion; IFC = International Finance Corporation; MIGA = Multilateral Investment Guarantee Agency; WB = World Bank.

When viewed by access levels, however, the share of Bank Group electricity sector commitments for low-access countries during the period was not commensurate with the scale of the challenge for this group of countries. Only 22 percent of Bank Group commitments went to low-access countries, compared with 42 percent for universal-access countries; 6 percent of IFC commitments went to low-access countries,

compared with 58 percent to universal-access countries. MIGA has a more balanced portfolio compared with the Bank and IFC: the share of low-access countries was higher at 35 percent while the share of universal access countries at 39 percent is the lowest among the Bank Group (figure 2.2). The World Bank’s relatively low share for low-access countries can be partly attributed to limited IDA resources, which have multiple claims from a variety of sectors. Also, the large incidence of fragile and conflict-affected states (FCS) among low-access countries (22 of 51) limits Bank operations to small grants under the multi-donor trust fund. However, IDA support to the electricity sector increased in line with the expanding overall IDA commitments during FY2000–2014 (figure 2.3). 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.

Bank Group funding for private sector investments was also heavily skewed toward high and universal access countries. This portfolio concentration tracked the directional flow of global private investments, mostly involving high and universal access countries, and included sixty-one (61) of 88 countries that received repeated IFC and MIGA support during the past 15 years and were also noted to be in different stages of the reform trajectory. The latter group of countries are mostly IDA-eligible countries, primarily with low electrification rate. Using country risk as a filter, fifteen universal and high access countries with projects that received WB Partial Risk Guarantees (PRG), IFC financing and advisory work and/or MIGA political risk insurance (PRI) were rated high risk by Institutional Investor and the Economic Intelligence Unit¹ (figure 2.4).

Figure 2.2. Commitments by Country Electricity Access Category, FY2000–2014 (%)

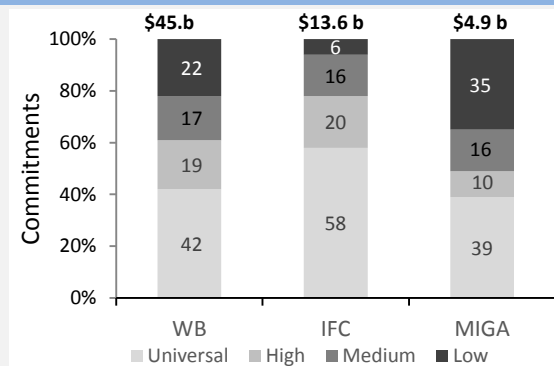
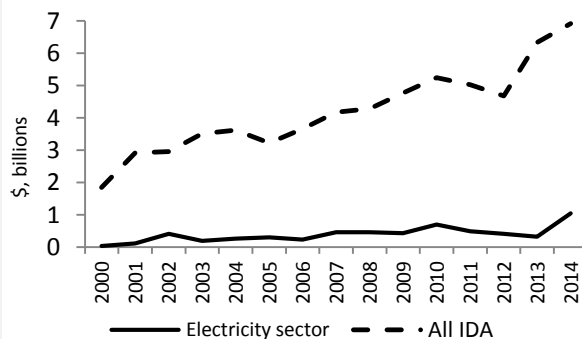


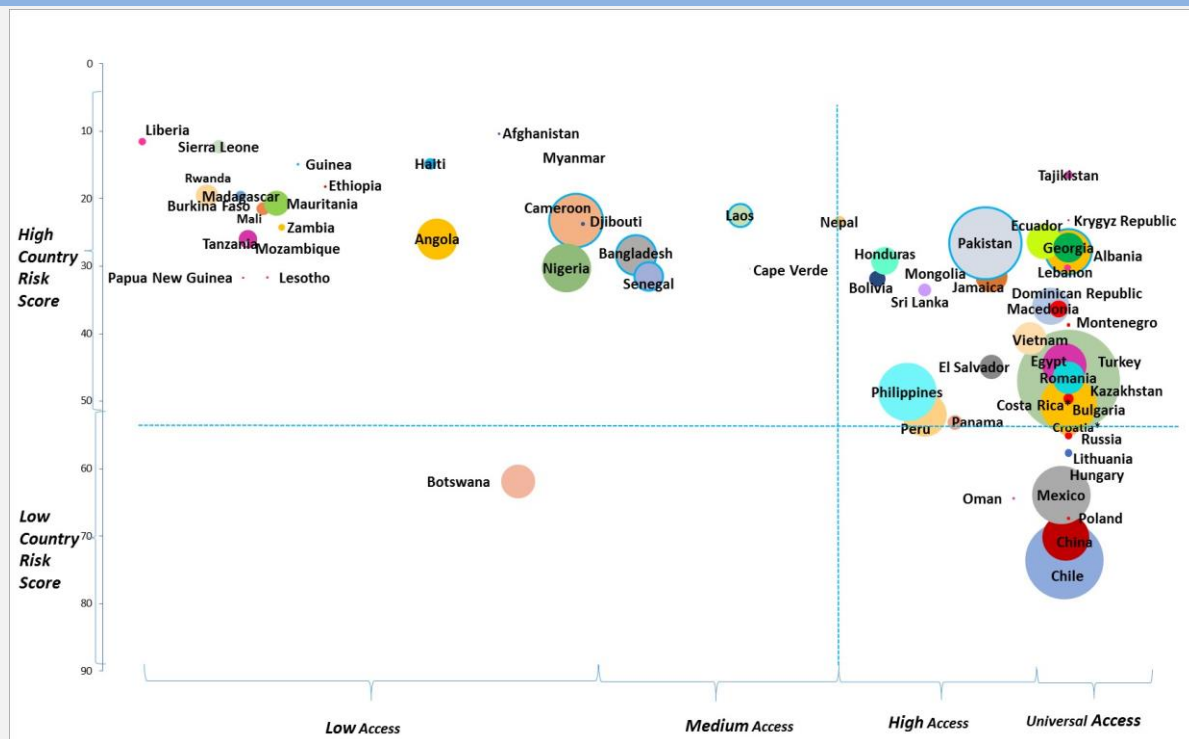
Figure 2.3. IDA commitments: Electricity Sector vs. Total. FY2000-2014



Sources: World Bank Business Intelligence; IFC and MIGA databases.

Note: b = billion; IDA = International Development Association; IFC = International Finance Corporation; MIGA = Multilateral Investment Guarantee Agency; WB = World Bank.

Figure 2.4. WBG Support to Private Sector Investments in Electricity Sector, by Electricity Access Category and Country Risk Scores (FY2000–2014)



Sources: World Bank Business Intelligence; IFC and MIGA databases; Institutional Investor Country Risk rating data, Economic Intelligence Unit (<http://www.eiu.com>).

Notes: Circle size denotes quantum of lending. Botswana, Mali, Mauritania, and Sierra Leone have projects supported only by World Bank Partial Risk Guarantees or Partial Credit Guarantees

The depth and continuity of the Bank Group’s engagement in low- and medium-access countries is poor compared with their access needs and the urgency of the Sustainable Energy for All (SE4All) goals. Of 51 low-access country clients, the Bank Group supported two projects at most in 31 countries during the past 15 years and did not engage at all in 14 countries. Similarly, of 18 medium-access countries, 11 had two projects or fewer, and five countries had no engagement at all. IFC’s engagement was sparser, with no engagement at all in 29 of the 51 low-access countries, and nine of the 18 medium-access countries (table 2.1).

Table 2.1. Depth and Continuity of Engagement in the Electricity Sector, FY2000–2014

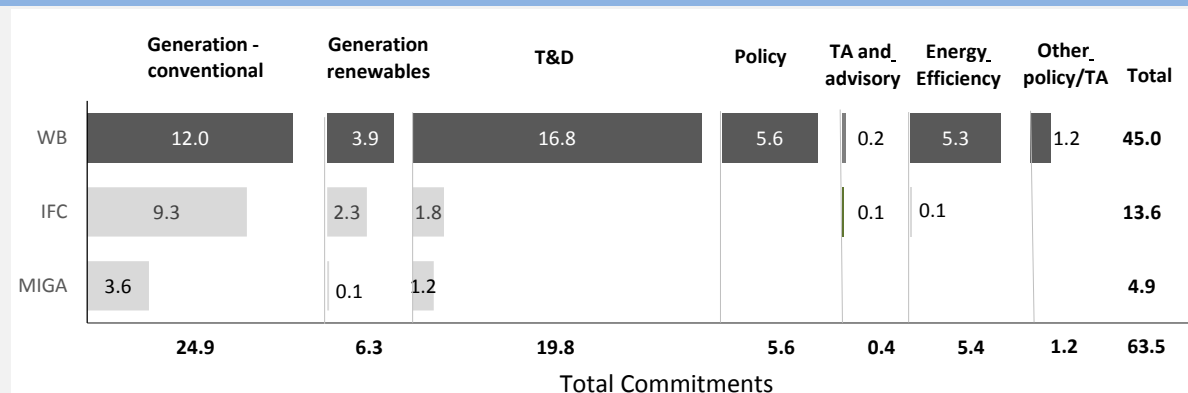
Country access category	Number of Bank Group country clients	Number of FCS	Number of World Bank, IFC, and MIGA projects			
			0	1	2	>=3
Low	51	22	14	10	7	20
Medium	18	5	7	2	2	7
High	30	1	12	6	–	12
Universal	60	4	15	8	3	34
Total	159	32	48	26	12	73

Sources: World Bank Business Intelligence; IFC and MIGA databases.

Note: FCS = fragile and conflict-affected states; IFC = International Finance Corporation; MIGA = Multilateral Investment Guarantee Agency.

World Bank lending for the electricity sector was concentrated in infrastructure, with generation and transmission and distribution (T&D) each accounting for about one-third of the FY2000–2014 portfolio; this is in line with demand and the capital-intensive nature of the sector. Two themes – improving energy efficiency and enabling policy framework – had shares of 12 percent each, and dedicated technical assistance projects had less than 0.5 percent. IFC’s investments were predominantly in generation, which made up 85 percent of its portfolio, with much of the remaining amount going to T&D. Advisory services and other categories accounted for less than 0.5 percent each. MIGA guarantees was also largely in generation, which absorbed three-fourths of its overall gross exposure, and the rest going to T&D (figure 2.5).

Figure 2.5. Commitments and Exposure by Project Type, FY2000–2014 (\$, billions)

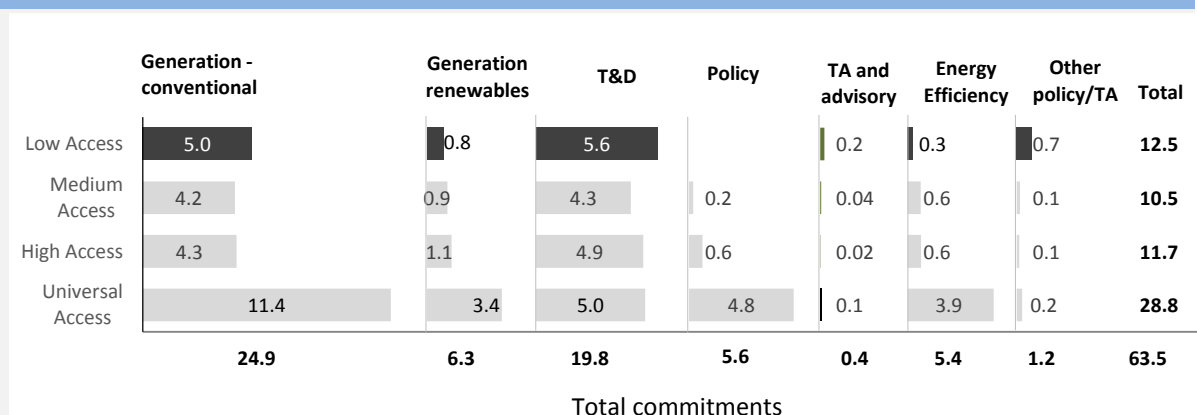


Note: IFC = International Finance Corporation; MIGA = Multilateral Investment Guarantee Agency; T&D = transmission and distribution; TA = technical assistance; WB = World Bank. WB and IFC commitments and MIGA gross exposure in large hydropower projects (defined as ≥ 10 MW) were classified under “Generation.” IFC Advisory Services amounts were classified under Technical Assistance and Advisory.

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Regarding access categories, the Bank Group’s lending and guarantees in low-, medium-, and high-access countries was mostly concentrated in electricity infrastructure. Bank lending for sector policy was significantly higher in high- and universal-access countries (\$5.4 billion of \$5.6 billion) and was delivered through dedicated projects reflecting the demand from these countries and availability of financing under IBRD terms. This pattern also reflects various elements of the Bank Group’s energy sector strategy as it evolved during the past few decades (as detailed in the section on Strategy for Electricity Access in chapter 1), and as it applied to countries at different levels of access and sector development. In low- and medium-access countries, policy-related support, technical assistance, and advisory assistance were typically channeled through relatively small components of infrastructure investment projects, which totaled \$674 million in low-access countries and \$135 million in medium-access countries. The outcomes from these approaches to policy and technical assistance support are discussed in various sections of this chapter and in chapter 3 (figure 2.6).

Figure 2.6. Electricity Sector Commitments by Country Access Category and Major Purpose, FY2000–2014 (\$, billions)



Sources: World Bank Business Intelligence, IFC and MIGA databases.

Note: T&D = transmission and distribution; TA = technical assistance. WB and IFC commitments and MIGA gross exposure in large hydropower projects (defined as ≥ 10 MW) were classified under “Generation”. IFC Advisory Services amounts were classified under Technical Assistance and Advisory.

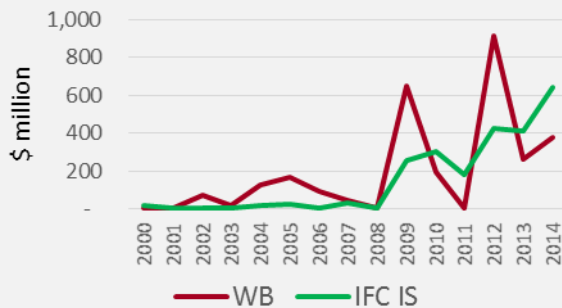
Non-conventional renewable energy accounted for nearly 25 percent of the Bank Group’s support for generation during FY2000–2014 (figure 2.5). Individually, the World Bank, IFC, and MIGA devoted significant shares of their resources to build generation capacity using non-conventional renewable sources, which absorbed 25 percent, 19 percent, and 27 percent of their portfolio amounts, respectively. The patterns observed in the growth of the Bank Group’s renewable energy portfolio are described in box 2.1.

Box 2.1. Bank Group Support for non-conventional Renewable Energy

Support for non-conventional renewable energy (solar, wind, biomass, mini-hydro, geothermal) trended upward during the past 15 years. IFC’s commitments, in particular, accelerated since 2008 after several years of slow growth, and exceeded World Bank commitments for this purpose in 2013 and 2014 (figure B2.1.1). Bank Group staff indicate that IFC’s investments in non-conventional renewable energy have built on previous and ongoing Bank support for policy and regulatory frameworks in countries where IFC operates. The proportion of lending for non-conventional renewable energy generation in low- and medium-access countries is still on the low side for IFC (17 percent) relative to the World Bank (33 percent). Overall, more non-conventional renewable energy projects by the World Bank had favorable development outcomes ratings (69 percent) compared with 50 percent of the small cohort of evaluated IFC investment projects in this sub-sector (discussed in the section on Bank Group performance). IFC investment projects in conventional generation (including large hydro) had better development outcomes compared with its projects in non-conventional renewable energy. Technology risks and regulatory uncertainty affected outcomes of non-conventional renewable energy projects. In particular, withdrawal of government subsidies and tax incentives plus policy reversals in some countries placed financial viability of non-conventional renewable energy projects’ at risk. Work quality shortcomings at appraisal also contributed to lower development and investment outcomes, particularly for IFC equity investments. Another IEG review of IFC’s renewable energy projects, which included large hydro projects, identified constraints in land acquisition issues and regulatory uncertainty as factors affecting outcomes. The review also highlighted recent and evolving experience by the private sector and governments in this sub-sector.

Figure B2.1.1. Bank Group Support for New Renewable Energy, FY2000–2014

A. By years



B. By access category and institution

	WB	IFC	MIGA	TOTAL
Low/ Medium	1.3	0.4	0.02	1.7
High/ Univer...	2.6	1.9	0.08	4.6
	3.9	2.4	0.1	6.3

Sources: IEG 2015a; IFC and MIGA databases.

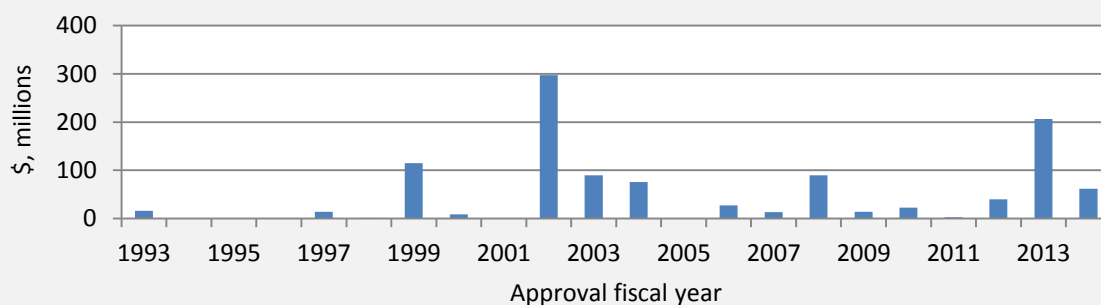
Note: IFC = International Finance Corporation; IS = Investment Services; MIGA = Multilateral Investment Guarantee Agency; WB = World Bank.

The World Bank promoted off-grid solutions—individual units, mainly solar home systems (SHS) and isolated mini- and micro-grids—as a fast way to provide energy services to rural and remote areas (World Bank 2014a). However, its assistance for

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off-grid electrification in the past 15 years is only a small part of its electricity sector portfolio. During FY2000–2014 the Bank Group committed \$1.1 billion² to off-grid electrification projects, which is 1.5 percent of its total commitments to the electricity sector during the period. There is no discernible trend in the World Bank’s support for off-grid electrification in the past 15 years, during which small spurts of lending were punctuated by large commitments to a few projects (figure 2.7; table 2.2).

Figure 2.7. World Bank Commitments for Off-Grid Electrification (\$, millions), Projects Closed or Approved during FY2000–2014



Source: World Bank Project Appraisal Documents, and Implementation Completion and Results Reports.

Note: FY = fiscal year.

Off-grid projects were heavily concentrated in a few countries that received 70 percent of the total support for this purpose (Argentina, Bangladesh, Ethiopia, Mali, Mongolia, and Sri Lanka). Two operations in Bangladesh (Rural Electrification and Renewable Energy Development Projects I and II) accounted for 41 percent of the Bank Group’s total off-grid support during FY2000–2014.³ Only two fully dedicated off-grid operations were financed during this period, in Mongolia and Nicaragua.⁴ Other off-grid interventions were components of larger projects (appendix G).

Table 2.2. Share of Off-Grid Electrification in World Bank Commitments for the Electricity Sector: Projects Closed or Approved during FY2000–2014

Project status	Electricity sector projects ^a	Projects with off-grid component	Lending commitment for electricity sector (\$, billions)	Off-grid commitments (\$, billions)	Off-grid share of total commitments (%)
Closed	538	27	43.5	0.64 ^b	1.48
Active	213	20	31.0	0.45 ^c	1.46
Total	751	47	74.6	1.10	1.47

Source: Project documents.

a. Only parent projects. The financing takes into account linked additional financing and/or project-related Global Environment Facility funding.

b. Per Implementation Completion and Results Reports.

c. Per estimate in project documents.

Only 30 percent of the World Bank’s off-grid support in the past 15 years was directed toward low-access countries. This contrasts with the potential of off-grid electrification to rapidly bring basic electricity services on a large scale to people who are not likely to be reached by the grid in the near future, or to remote or sparsely populated areas that are not likely to ever be cost-effective for grid expansion. The size and significance of off-grid electrification grew in many countries and thus could be important in scaling up electricity access, both on its own and as a pre-electrification complement to grid expansion. The Bank Group’s support for various business models for off-grid electricity and to create markets for basic lighting and charging products are discussed in chapter 4.

Coverage of Electricity Access Issues and Strategies in CAS/CPS

During FY2000–2014, the World Bank Group was generally diligent in diagnosing country needs, raising relevant issues, and proposing strategies for most components of the results framework for improving electricity access. This is evident from an analysis of Country Assistance Strategies (CASs) and Country Partnership Strategies (CPSs) for the 35 case study countries. The strategies consistently and comprehensively covered issues relating to the adequacy and reliability of electricity services. Similarly, the financial viability of sector utilities and other service providers was covered in depth in almost all the sampled countries. Off-grid electrification issues were taken up in the vast majority of both low/medium- and high/universal-access countries, but there was little continuity from one CAS/CPS to the next, and there was less attention to specific strategies. The CAS/CPS fell short on coverage of electricity affordability for the poor and on links between electricity access and welfare impacts. Just 10 of the 19 sampled low-

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and medium-access countries received an analysis of issues and strategic directions with respect to electricity affordability for the poor. Similarly, welfare outcomes were covered in only 14 of the 19 low- and medium-access countries (table 2.3; appendix H).

Table 2.3. Coverage of Policy and Strategy on Electricity Access Issues

Country access category	Number of sampled countries	Number of countries where CAS/CPS raised issues/strategy					
		Adequacy and reliability	Enabling framework	Financial viability	Affordability	Welfare impacts	Off-grid
Low/medium	19	19	18	18	10	14	16
High/universal	16	10	16	14	9	8	11
Total	35	29	34	32	19	22	27

Source: World Bank Business Intelligence; IEG ratings.

Note: CAS = Country Assistance Strategy; CPS = Country Partnership Strategy.

Knowledge Development for Electricity Access

The Bank Group made strong contributions to knowledge about electricity access development. This body of knowledge was generated by the Global Practice for Energy and Extractives (formerly the Energy Sector of the Sustainable Development Department), the Development Economics Group, various Bank Regions, and the Energy Sector Management Assistance Program (ESMAP) and Asia Sustainable and Alternative Energy (ASTAE), two global programs administered by the Bank Group that have devoted significant resources to energy access. This section also draws upon the findings of a parallel IEG learning product on global programs for electricity access covering ESMAP and ASTAE, and the activities of the Global Partnership on Output-based Aid (GPOBA) and the Lighting Africa program. A summary of the learning product is in appendix I.

This evaluation identified 321 knowledge products for FY 2000–2014, including 147 sectorwide economic, policy, and technical studies, 162 policy research working papers, and 12 policy notes covering one or more aspects of electricity access. Of the 321 studies, 187 (59 percent) related to various aspects of sector management (including generation and T&D), 66 (21 percent) focused on renewable energy, and 50 (16 percent) covered access-welfare linkages. For geographic coverage, about one-third dealt with multiple Regions, and 38 products (22 percent) looked primarily at Sub-Saharan African countries, followed by South Asia and East Asia and the Pacific with 46 products each (14 percent each). Thus the knowledge products had an even coverage in subject matter and set priorities for Regions with the most prominent access issues.

The global programs ESMAP and ASTAE contributed prominently to the mix of knowledge products. ESMAP is a global program for knowledge assistance that covers advice on legal, regulatory, and policy frameworks; training to strengthen the capacity of energy institutions; dissemination of best practices; and support to pave the way for World Bank investments. Energy access accounted for 38 (21 percent) of ESMAP's completed activities and \$12.3 million (26 percent) of total budget allocations during FY2009–2012 (World Bank 2013d).

The ESMAP has an important role in supporting knowledge products that are directly linked to access-related project preparation and implementation. ESMAP piloted the preparation of geospatial access rollout plans based on geographic information system techniques in Senegal and Kenya, where there was no systematic planning of this kind before. This process was also used in Rwanda and Kenya, which prepared credible and bankable prospectuses detailing the sector parameters, government policy commitments, and sectorwide programs to scale up electricity access in a staged manner (discussed in more detail in chapter 4). This process is yielding tangible results in both countries. Similar efforts are at an advanced stage in Indonesia (in three Eastern Indonesian provinces), Myanmar, Nigeria, and Papua New Guinea. An external evaluation of ESMAP for 2007–2011 found that it was successful in influencing World Bank lending operations and, in some situations, was successful in catalyzing private sector investment and moderately successful in influencing the donor community (Lafontaine and others 2012).

The ASTAE, a regional program for East Asia and the Pacific and South Asia, supported upstream project preparation, some implementation support work, and a few freestanding technical assistance projects, mostly consisting of knowledge products. IEG identified 34 completed and ongoing ASTAE-funded activities, totaling \$6.5 million, in FY2007–2013 that supported rural grid and off-grid electrification and renewable energy. This evaluation finds that ASTAE's inputs for project preparation were valuable – it provided quickly accessible funding for small-scale activities such as the preparation of an operations manual and implementation plan in Vietnam, capacity building in Bangladesh, geospatial mapping in Indonesia, and a beneficiary survey in Mongolia.

A sample of 16 analytical products covering electricity access issues was assessed as part of the learning product on global programs for electricity access, which covered ESMAP, ASTAE, GPOBA, and the Lighting Africa program. The learning product found that more than half of the sampled analytical products analyzed issues with objectivity and rigor, and generated new knowledge on energy access. The best publications contributed substantively to the global body of knowledge; their

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conclusions, lessons, and recommendations were useful for the intended purpose; and they were written for the target audience. However, less than half of the papers were suited to their intended purpose based on the overall relevance of the original objective, and on the facts and analysis underpinning their conclusions, lessons, or recommendations. Only four of the sample reports satisfied all the criteria of objectivity, rigor, fitness to purpose, and ease of understanding for the intended audience. A list of sample products and specific examples underpinning the above conclusions are part of a summary of the report on global programs in appendix I.

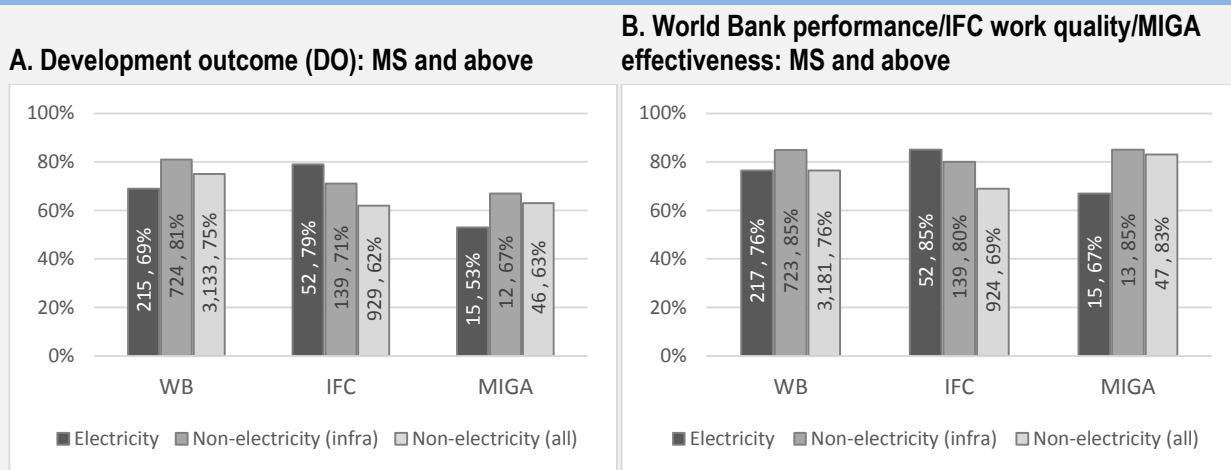
Development Outcomes: Adequacy, Reliability and Quality, Affordability, and Welfare

This evaluation analyzed the development outcomes for electricity sector projects that closed (IBRD and IDA) or have reached early operating maturity (IFC and MIGA) with evaluations completed during FY2000–2014.⁵ For the World Bank, 69 percent of the projects had outcomes rated moderately satisfactory or better, and 79 percent of IFC investment projects had outcomes rated successful or better. Of MIGA’s 15 evaluated guarantee projects, seven projects (53 percent) had development outcomes that were rated satisfactory and better. These performance measures are based on the respective evaluation methodologies of the World Bank, IFC, and MIGA, which are described in Appendix E (Table E.2). The World Bank portfolio performance reflects the portfolio’s diversity of investments in generation, T&D, and development policy operations with a greater spread of performance. Based on the XPSRs completed in FY2000-2014, IFC supported relatively more generation projects and those in middle-income and higher access countries. Aggregate outcome ratings of IFC investment projects were influenced by the higher proportion of conventional generation (85 percent) and T&D (85 percent) projects with successful development outcomes. Development outcome ratings of IFC power sector projects were buoyed by the projects’ “satisfactory and better” economic contribution⁶ and environmental and social (E&S) effects. Lower development outcome ratings of MIGA conventional generation projects (38 percent), although located in higher access countries, has affected the aggregate outcome ratings of its projects in the sector. MIGA’s renewable energy generation and T&D projects had slightly better outcomes.⁷

The World Bank’s performance in the electricity sector is somewhat lower than its performance in other infrastructure sectors combined (transport, water, and information and communication technologies), though in a similar comparison, IFC’s performance was better (figure 2.8). The complexity and diversity of energy sector activities and operations compared with those of other infrastructure sectors

may partly explain this difference. The relatively better outcomes of IFC's electricity projects, especially in conventional generation, benefit from the layers of contractual obligations defined under power purchase agreements covering technical, safeguards, and operational requirements. Multilayered contractual obligations are not found in other sectors, except for the extractive industries. IFC's performance also benefits from the sound technical capacity of its clients, and from its greater presence in countries with more favorable country and investment risk profiles. The aggregate outcome ratings of MIGA power sector projects relative to other sectors were affected by the older cohort of evaluated projects which lagged in environmental and social (E&S) sustainability effects. The lack of post-contract of guarantee follow-up and monitoring in this older set of evaluated projects was also a factor. A few projects experienced financial problems, which were further linked to weaknesses in project appraisal.

Figure 2.8. Development Outcomes and Institutional Performance



Source: IEG Implementation Completion Report Reviews; Expanded Project Supervision Report Reviews.
 Note: IFC = International Finance Corporation; infra = infrastructure; MIGA = Multilateral Investment Guarantee Agency; MS = moderately satisfactory; WB = World Bank. IFC outcomes pertain to evaluated investment projects only.

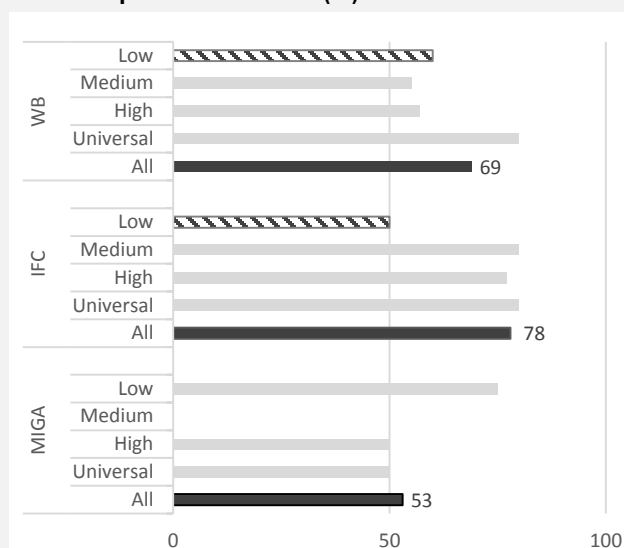
When classified by country access categories, development outcomes for World Bank projects in all low-, medium-, and high-access countries were significantly lower than for universal-access countries (figure 2.9). This result is broadly correlated with the less favorable World Bank performance (combining project design, quality at entry⁸, and project supervision) in low-access countries. Only 55 percent had results rated moderately satisfactory or better compared with 76 percent for the whole cohort. IFC ratings for development outcome reflects its portfolio concentration in higher access countries. IFC work quality was in the acceptable range for only one out of two evaluated projects in the low-access countries,

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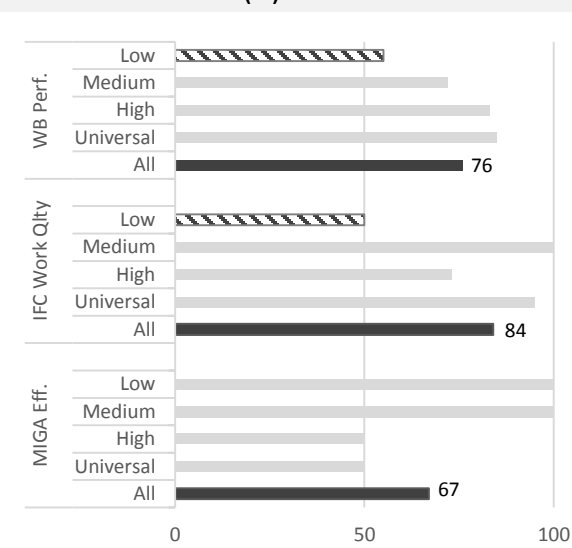
compared with 85 percent of all evaluated projects in the sector. Despite the small number of MIGA evaluations, three of the four evaluated projects in low access countries had satisfactory and better outcomes. Reasons for better performance vary by project and has. World Bank performance and IFC work quality are also affected by the weaker institutional and sector management capacities in low-access countries. The factors driving the lower World Bank performance in low-access countries are discussed with illustrative examples in the section on implementation efficiency later in this chapter.

Figure 2.9. Electricity Sector Portfolio Performance Ratings, FY2000–2014 (% projects rated moderately satisfactory/successful or better)

A. Development Outcomes (%)



B. World Bank Performance, IFC Work Quality, MIGA Effectiveness (%)



Source: World Bank Business Intelligence; IFC and MIGA databases.

Note: Eff. = efficiency; IFC = International Finance Corporation; MIGA = Multilateral Investment Guarantee Agency; Perf. = performance; Qlty. = quality; WB = World Bank.

When development outcomes for the electricity sector are analyzed based on the major project purpose, World Bank projects focused on policy lending – mainly financial viability issues – fare distinctly worse than projects focused on electricity infrastructure (table 2.3). The poorer performance of policy-oriented projects is of particular importance for the sustainability of electricity access. This issue, along with links to affordability of access to the poor, is covered in more detail in chapter 3.

For IFC, conventional generation and T&D projects had the most successful or better ratings. This was due to IFC’s corporate expertise, experience, and comparative

advantage in conventional generation and to the contractual features of power sector operations as discussed above. The lower ratings for IFC's new renewable generation projects is partially due to IFC's more recent engagement in this area, and hence the learning curve it faced in dealing with the technology and regulatory risks in this field (box 2.1). MIGA's performance was relatively better for T&D and renewable energy projects compared with conventional generation projects, but because of the small number of evaluated projects, further analysis is challenging. (table 2.4).

Table 2.4. Development Outcome Ratings for Projects Classified by Major Purpose: Moderately Satisfactory/Successful or Better (percent)

Category	World Bank	IFC	MIGA
Generation—conventional	71	85	38
Generation—renewable	69	50	67
T&D	73	85	75
Energy efficiency	63	–	–
Technical assistance	68	–	–
Policy	50	–	–
Others		75	–

Source: IEG ratings.

Note: IFC = International Finance Corporation; MIGA = Multilateral Guarantee Agency; T&D = transmission and distribution; – = data not available; 'Generation-conventional' includes large hydro (>10 MW)

IFC advisory services. IEG also reviewed 20 evaluated IFC advisory services activities relating to the electricity sector, which is about 16 percent of those evaluated for all sectors during FY2000–2014. The evaluated activities included assistance to clients to structure public-private partnership transactions, and structuring tenders and bids document that sought to improve the enabling environment for electricity sector investments. All 20 evaluated activities were rated satisfactory and above for IFC's role and contribution in helping improve the enabling environment for power sector investments, and generally displayed higher development effectiveness than the rest of the advisory services portfolio. In several projects, the advisory activities followed World Bank sector work but in few cases, IFC advisory work preceded the Bank's sector work. The actual impact of the advisory projects is difficult to assess because the evaluated projects' impacts were too early to judge, but there appears to be value in continuing the upstream-downstream linkage. Unbundling IFC's advisory operations would have to ensure that the focus on low-income countries' needs continue.

Key Performance Indicators for access attributes, financial viability, and welfare

This evaluation also assessed the performance of World Bank projects that closed during FY2000–2014 and which focused on the attributes of electricity access – adequacy, reliability and quality, and affordability. The assessment used detailed analysis of key performance indicators for a sample of 35 countries. Key performance indicators for financial viability and welfare outcomes were assessed using the same approach, and were consolidated at the country level for the entire period FY2000–2014. The sample of countries studied (listed in appendix C) accounts for nearly 60 percent of the Bank Group’s lending for the electricity sector and more than 80 percent of the population without access in Bank Group country clients.

Adequacy and reliability outcomes correspond broadly to generation and T&D infrastructure outputs, respectively, and were each addressed in 27 of the 35 sample countries. Between 55 and 60 percent of these countries had moderately satisfactory or better indicators and did not differ much between low/medium- and high/universal-access countries. Financial viability was addressed in the next largest set of 24 countries. Here the outcomes were distinctly better for high- and universal-access countries compared with low- and medium-access countries.⁹ Welfare indicators were present in projects for 20 countries, with positive results in 60 percent of them. Affordability received the least attention; projects in only 10 of the 35 countries took up this issue. Of these, outcomes were moderately satisfactory or better in six cases. The World Bank’s experience with supporting its country clients in improving electricity affordability for the poor is covered in detail in chapter 4 (table 2.5).

Table 2.5. Key Performance Ratings of Attributes by Country Access Category

Country access category	Number of countries in sample/ratings	Adequacy	Reliability / quality	Affordability	Financial viability	Welfare
Low	Number of countries	10	12	4	8	9
	Moderately satisfactory or better (%)	70	42	25	38	33
Medium	Number of countries	4	5	1	5	4
	Moderately satisfactory or better (%)	50	60	100	0	50
High/ universal	Number of countries	13	10	5	11	7
	Moderately satisfactory or better (%)	62	70	80	82	100
All	Number of countries where addressed	27	27	10	24	20
All	Moderately satisfactory or better (%)	17	15	6	12	12
		63	56	60	50	60

Source: Project documents; IEG assessment.

The evaluation also considered the differences in outcomes in the above attributes between low-access countries subdivided into two groups: 0–25 percent access and 25–50 percent access. The differences in ratings are not statistically significant except for sector finances, in which the 25–50 percent access group is performing worse. Overall, this data does not lend itself to much interpretation given the limited number of interventions in both country groups in this regard, and the generally poor performance of utilities in both these groups, as discussed in chapter 3.

The evaluation assessed the extent to which Bank Group projects, in their results frameworks, have linked electricity access with improved outcomes for productive activities, income, and welfare benefits (health, education, communication, and safety) together with gender-related tracking. IEG found that only a few of the World Bank’s dedicated rural electrification projects (a subset of all projects related to electricity access) incorporated welfare-related issues into project design, even though most of the projects considered improvements in welfare to be part of their objectives (IEG 2008b). The report recommended that tailor-made surveys be built into a greater number of Bank projects and designed to allow rigorous testing of the impacts of electrification. IFC projects covered by this evaluation do not yet include indicators on poverty and distributional effects. An IEG on evaluation of IFC’s poverty focus recommended that IFC should define, monitor, and report poverty outcomes for projects with poverty reduction objectives (IEG 2011).¹⁰ While IFC has made progress in addressing the recommendations, poverty measurement has not been fully integrated in its project approval documents and in its monitoring system.¹¹ Recently (last two years), IFC project approval documents had included an estimate of the number of women beneficiaries.¹² However, data collection and verifiability remains a challenge.

During FY2000–2014 16 World Bank electricity sector projects – a fraction of the 278 projects approved during this period – included indicators in their results frameworks for tracking productive uses and increased income from activities associated with electricity access. These projects were mostly in a mix of low-, medium-, and high-access countries – Bangladesh, Ethiopia, Indonesia, Mexico, Peru, Philippines, Senegal, Sri Lanka, and Uganda. The indicators related to adoption of electricity-using equipment for small and micro business or stores and farming activities.

Relative to productive uses of electricity, World Bank projects paid more attention to human welfare and gender-related outcomes (box 2.2). During FY2000–2014, 48 World Bank projects included performance indicators for welfare or gender-related aspects, and 36 of these were in low- and medium-access countries. Twenty-eight of the 48 projects were approved in FY2009 or later, pointing to continued and

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potentially increased attention to these issues in recent years. Seventy-five percent of projects approved (36 out of 48) were in low- and medium-access countries, suggesting a greater focus on the poor. Most of these indicators from closed projects showed satisfactory or better results. However, the quality of indicators for welfare outcomes was uneven, with most indicators focused only on the number of beneficiaries that obtained welfare benefits without quantifying the improvements, and most tracked outputs instead of outcomes. Significant exceptions were found in Bangladesh, Peru, and Sri Lanka, as explained in the following paragraphs.

Box 2.2. WBG Progress in Integrating Gender Issues

Since the adoption of its first gender strategy, *Integrating Gender into the World Bank's Work: Strategy for Action* in 2001, gender issues have become more integrated in the World Bank's energy operations. ESMAP supported a gender and energy program through the Africa Renewable Energy and Access program (AFREA, 2010) and published a guidance note on *Integrating Gender Considerations into Energy Operations* (2013). It is supporting World Bank teams on integrating gender considerations into projects by providing direct financial and technical support, such as in the case of the Bolivia's Rural Electrification Program; a regional gender assessment of India, Nepal and Pakistan; the second phase of the AFREA gender and energy program; a gender and energy subsidies research program in the Eastern Europe and Central Asia region; a technical assistance program on social accountability in the energy sector in Egypt; and the development of a new East Asia and Pacific Gender and Energy Program. IFC has also undertaken several steps to address gender in its investments and advisory services and promoted business opportunities for women in the private sector. In 2002, IFC set up a Gender Entrepreneurship Markets program, and has since advocated increasing the number of women board members in the companies in which it invests; in 2012 it addressed gender in its Sustainability Framework. These initiatives were also guided by the 2009 IEG evaluation of the Bank's Strategy between 2001 and 2005, which concluded that gender integration at the strategic level did not always translate into project-level design features, attributing this to the absence of results frameworks and weak monitoring and accountability mechanisms.

The portfolio review carried out under this evaluation revealed that the following need improvement in key performance indicators for gender: (i) a clear definition of beneficiaries vs. users, since they may be different groups; (ii) tracking of outputs and outcomes, not only headcount figures; (iii) measures of outcomes. Most projects limited themselves to tracking the "number of female beneficiaries (%)". In some instances, indicators were better designed, and tracked, for example: "Number of hours school aged girls in the household study at night; percentage of women getting access to news and information; and number of women knowledgeable about reproductive health, HIV/AIDS and other women issues"¹³; "Contribute to the increase of income of participating communities, with percentage distribution between women, men and youth (\$/year)"¹⁴; "Percentage of active loans to women-owned businesses (%)"¹⁵. However, these good practice examples did not track gender outcomes.

There is need for better monitoring of gender outcomes and impacts in WBG operations in order to support the corporate goals of promoting shared prosperity and ending extreme poverty and by 2030.

Source: World Bank 2014d; World Bank 2014e, World Bank, 2015.

In Bangladesh and Sri Lanka, a set of impact evaluation studies (Khandker, Barnes, and Samad 2009) and a monitoring and evaluation (M&E) study (RDC 2008) covered the productive uses, economic, welfare, and gender-related impacts of electricity access. The Bangladesh studies found positive impacts of grid electrification on household incomes, use of technology in the home, women's empowerment, and study time for boys and girls. The impact evaluation of the SHS program found a positive and significant impact of electricity access on study time; and a correlation between those households with a television, and health outcomes and impact on women's mobility, among others. Sri Lanka's M&E study found that even in small quantities, electricity consumption brings significant lifestyle changes in families, mainly by making home life more convenient and housework easier. Small and micro business activities, such as grocery shops, bakeries, battery-charging stations, communication centers, computer training centers, grinding/rice milling and cinnamon processing, benefitted from mini-hydro schemes. Villagers reported increased safety from lighting after dark, and an increase in sociocultural activities because of the presence of electricity at religious places in the villages.

In the remote areas and poorer regions of Peru, a high-access country, the link between electricity access and productive activities was established by the World Bank's Peru Rural Electrification Project.¹⁶ The project's productive uses component helped more than 21,000 rural producers – one-third of which were women – to adopt electricity-using equipment for processing cereals, coffee, cocoa, baked goods, meat products, milk, wood and metal products, and handicrafts; and to pump water for expanded agricultural production and processing. More examples are discussed in the context of off-grid electrification in chapter 4.

Reliability and Quality

The World Bank recognized the reliability and quality of service issues and provided country clients with support to address them. In 29 of the 35 case study countries, CASs/CPSs covering the period 2000-2014 analyzed quality and reliability issues, and proposed strategies to address them. Typical strategies and measures adopted in the projects were "improving availability, reliability and

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affordability of electricity supply for households and businesses” (World Bank 2010b); “improving reliability and financial sustainability of electricity distribution companies” (World Bank 2009a); “reliability in rural distribution” (World Bank 2012a); “urgent upgrading of antiquated electricity distribution infrastructure” (World Bank 2012a); and “increase the reliability of electricity supply to improve the financial viability of the state-owned energy utility” (World Bank 2014b).

The project-level outputs and outcomes for reliability and quality as measured through key performance indicators satisfactory or better results in 35 of 37 evaluable projects. IEG reviews of project implementation completion and results reports show that strong government commitment and a realistic project design were the main contributing factors to satisfactory performance. These conditions were in place, for instance, in Uganda, where the Bank project reduced service interruptions by 48 percent (the original target was 30 percent).¹⁷ In Nigeria, the cluster-level losses were reduced from 37 percent to less than 12 percent (with a target of 12 percent); tail-end voltage improved from an average of 29 kilovolts to 33 kilovolts in the 32 clusters; and end-user voltage was increased from 200 volts to 220 volts (achieving the targets). Furthermore, the number of clusters developed with demonstrable improvements in service levels was increased from zero to six (overachieving the initial target of five clusters).¹⁸ In Kenya, the number of combined monthly distribution line interruptions per 100 kilometers for 66 kilovolt and 33 kilovolt lines was reduced from 4.7 to 2.0, and annual T&D losses were reduced from 18.7 percent to 16.2 percent.¹⁹

By contrast, reliability and quality outcomes were less than satisfactory in the reviewed Bank projects in Senegal and Pakistan. These results are attributed to the project design being too complex (both in areas addressed and number of implementing agencies involved), or not taking sufficient account of the local institutional capacity and context; and weak borrower commitment. In the Senegal project, the technical and nontechnical T&D losses (as a share of net generation) increased to 21.4 percent by project close instead of decreasing from 17.5 percent to 15.5 percent, as planned. Moreover, a targeted reduction in power interruptions from 14 gigawatt hours to 8 gigawatt hours was not achieved.²⁰ In Pakistan, there were shortcomings in achieving planned outcomes all around. The substation automation and protective relaying was achieved for only 20 of the 67 targeted stations; the Hyderabad Electric Supply Company annual T&D loss reduction was short of target; but Lahore Electric Supply Company annual T&D losses and system load at two grid stations increased.²¹

The analysis of IFC and MIGA projects’ key performance indicators in country reviews mirrors the World Bank’s focus and performance. Although projects with

quality and reliability objectives and indicators covered a diverse range of interventions for the World Bank, in the case of IFC and MIGA most projects with quality and reliability objectives (60 percent) were linked with increasing (greenfield projects) or enhancing (modernization and/or privatization projects) the countries' generation capacity (adequacy) and thereby contributed to better quality of service and reliability. IFC and MIGA projects' that had reliability and service quality objectives had mostly satisfactory results, with only two out of seven evaluated projects underperforming on the relevant indicators.

Institutional Framework and Capacity Building

The World Bank has long provided clients with support for developing and reforming their policy and institutional frameworks to respond to the emerging and long-term developmental needs of the sector. The assistance typically supported government and sector ministries to improve policy development and implementation. Among other things, the Bank supported sector planning and management; enactment and reform of sector laws; regulatory institution set up and capacity building; enabling private sector investment; sector restructuring, unbundling, and corporatization; and improving the financial viability of the sector and access to services by the poor. In a limited way, the Bank also supported utilities to improve operations. Following the World Bank's lead, many bilateral and multilateral donors and multilateral development banks began to support institutional development and capacity building in a significant way (ADB 2014).

The CASs/CPSs of 34 of the 35 countries reviewed discussed sector policy, institutional and capacity issues, and proposed measures to address them. Of the 186 projects reviewed, 177 included key performance indicators focused on institutional framework and capacity, 174 focused on sector planning and management, 56 focused on sector regulation and agency, and 10 focused on utility operations. Overall, 164 projects (88 percent) reported performance on key performance indicators as moderately satisfactory or better, and there was no significant difference in rating covering one or more of the issues between country access levels. Among the other 22 projects with poor performance, 13 were in low- and medium-access countries, and the remaining were in high- and universal-access countries. IEG's review of Implementation Completion and Results Reports showed that government commitment was a strong factor behind the performance.

Several successes are particularly notable. In Brazil, three projects achieved the intended sector and market reforms.²² Tariffs regulations were issued and enforced, a new wholesale market structure was established, transmission and distribution (T&D) were unbundled, and energy efficiency laboratories were established around

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the country. In India, six projects helped four states and the national power grid to establish new legal, regulatory, tariff, and institutional frameworks, including unbundling of generation, transmission, and distribution.²³ The Bank built on the Renewable Resources Development Project for mobilizing \$113 million in private capital for renewables.²⁴ In Ethiopia, several projects helped establish a regulatory agency, transform the main utility into a for-profit corporation, put rules in place facilitating private participation, and trained staff.²⁵ Also, a regulatory and institutional structure for rural electrification was established, including training for designing and constructing rural networks. In Cambodia, two projects helped phase out wholesalers, establish the main utility as a separate entity, and establish a Rural Electrification Fund.²⁶ Furthermore, the World Bank provided advisory services for establishing a regulatory agency and developing a sector master plan. In Bangladesh, although sector studies and private sector investments in two generation projects were achieved, corporatization of a distribution company and capacity building for the Energy Regulatory Commission (ERC) were not fully achieved (IEG 2014a).

At the utility level, the World Bank supported operational improvement through a supervisory control and data acquisition system (SCADA) in Nigeria,²⁷ and technical studies in Tanzania.²⁸ It also supported establishing environmental units in Cambodia,²⁹ Nigeria, and Indonesia,³⁰ and unbundling and corporatization in Bangladesh,³¹ Indonesia, and Tajikistan.³²

By contrast, in Pakistan, the operation did not succeed in sector restructuring, including private sector development, market unbundling (including the underpinning legislation), and improving sector finances by phasing out government subsidies.³³ In Senegal, there were no satisfactory results for ensuring cost-recovery tariffs for the main utility (Senelec), market reform and restructuring through privatization and unbundling, establishing a regulatory authority for the hydrocarbon subsector, and strengthening Senelec's internal audit department.³⁴ In Vietnam, the integration of small power producers into the market was not fully achieved.³⁵ In Cameroon, the World Bank's efforts to support enactment of the Electricity Act³⁶ was not successful. In Ethiopia, training of Ethiopian Electric Power Corporation staff was not completed because of implementation delays due to an over-optimistic project design.³⁷ In Senegal, the projects did not succeed in reinforcing the Senelec internal Audit Departments, or the unbundling of Senelec and the achievement of adequate private participation during the lifetime of the project.³⁸ In Vietnam, the planned installations for operational management systems was not completed.³⁹

IFC's InfraVentures facility aims to support early-stage infrastructure project development, thus facilitating private sector investments for infrastructures projects, including in the electricity sector. InfraVentures was created in 2007 to address private sponsors' funding and capacity constraints as well as risk averseness during the early phases of project development. It has \$150 million funding, and commitments since 2007 reached \$70.7 million for 30 projects, including \$62 million for 25 power sector projects (of which 19 active and six closed) as of the end of FY2014. Ten power projects are located in the Sub-Saharan Africa Region, representing fifty percent of the power sector commitment amounts. Except for three projects in Indonesia and Serbia, the projects are located in IDA countries. So far, two InfraVentures-supported projects reached the financing stage with IFC investment support (a 181 megawatt hydro project in Georgia and the 96 megawatt thermal project in Senegal, Tobene IPP). IEG's review of InfraVentures supervision reports found challenges to scaling up InfraVentures activities from heightened political and macroeconomic risks in several countries; technical feasibility problems, especially in wind farm projects; project bankability issues; and delays in signing power purchase agreements.

Implementation Efficiency of World Bank Electricity Sector Investment Projects

SE4All set a short period for reaching universal electricity access globally. Therefore, one dimension of efficiency – implementation efficiency of World Bank electricity sector projects – including the time required to implement them, is particularly important. This section examines the record of planned implementation times and time overruns for investment projects executed by the public sectors of country clients, and identifies and analyzes the principal factors that drive their efficiency.

Implementation times were evaluated for all 215 World Bank electricity sector investment projects that closed during FY2000–2014. Of these projects, 81 were in low- or medium-access countries, and 134 were in high- or universal-access countries. About 78 percent of all projects were delayed relative to the original planned implementation period. Delays ranged from five months to eight years, with an average delay of 2.5 years and a median delay of two years. The share of delayed projects in low- and medium-access countries (84 percent) was somewhat higher than that for high- and universal-access countries (72 percent). Among the sample of closed investment projects reviewed for the efficiency analysis, 20% of projects had additional financing (AF) to scale up project activities and extend the project closing date. An analysis of the median delay for the projects with and without AF showed an insignificant difference of about one month and a half.

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Analysis of preparation times (the time elapsed between the review of the project concept note and project approval by the Board) yields a median preparation time of two years. The median length of a World Bank investment project, including time overruns, is nine years (figure 2.10).

Figure 2.10. Median Duration of Electricity Sector Investment Projects



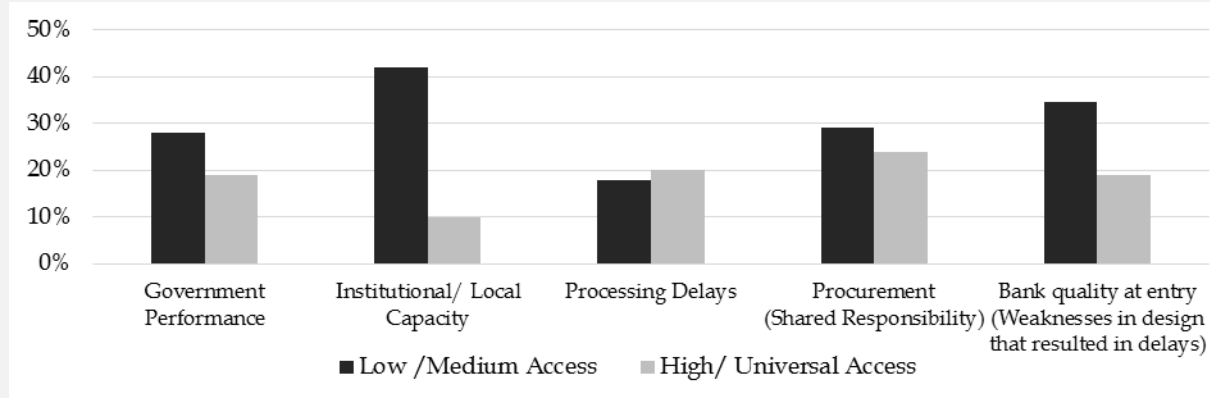
Source: World Bank Business Intelligence.

Note: Based on data for closed World Bank electricity sector investment projects, FY2000–2014.

The major reasons for implementation delays in these projects are the responsibility of both the Bank and the borrower. Borrower institutional capacity and the Bank’s quality at entry are the most important factors, followed by the government’s commitment to the project, and areas of shared responsibility, principally procurement matters. Low- and medium-access countries were more affected by shortcomings in institutional capacity than high- and universal-access countries (42 percent versus 10 percent). Similarly, as seen in figure 2.11, quality at entry contributed more often to implementation delays in low- and medium-access countries than in high- and universal-access countries (35 percent versus 19 percent). By contrast, for projects that closed on time, no significant shortcomings were observed in institutional capacity, and the Bank’s quality at entry was inadequate in only one of thirty projects.

Figure 2.11.

Major Factors Associated with Delays in Electricity Sector Projects (Closed during FY2000–2014)



Source: World Bank Business Intelligence.

The two key factors – inadequate institutional capacity and poor quality at entry – appeared to reinforce each other in many projects that experienced time overruns. Inadequate institutional capacity was a factor in Uganda’s Energy for Rural Transformation project,⁴⁰ Zambia’s Power Rehabilitation Project,⁴¹ and Cabo Verde’s Energy and Water Project.⁴²

In Uganda, an overrun of 50 percent on a planned implementation period of 4.7 years was due to an overestimation of government and sector institution capacity to implement an ambitious program of rural transformation. Although training and technical assistance were included in the project, they took time to favorably affect the severe absorptive capacity constraints. Capacity limitations were aggravated by weak implementation arrangements. In Zambia, a 75 percent time overrun on a planned four-year implementation period resulted. The project design was complex and tried to combine investment requirements with a range of policy issues accumulated during more than 20 years of Bank absence from the sector. In the Cabo Verde project, a 95 percent overrun on a five-year implementation period followed when little account was taken of the difficulties of implementing a complex and sensitive program involving the power and other infrastructure sectors in a geographically dispersed country with limited institutional, technical, and managerial capacity. Two key privatization-related risks – faltering political commitment and an unsatisfactory concession agreement – were initially rated as negligible to modest, but they materialized in a big way. The major part of the renewable energy and development component, consisting of the extension of 7.8 megawatts of wind farms, was rolled back because of mismanagement of the procurement process, mainly on the Bank’s part.

Capacity constraints also affected projects in countries with more mature electricity sectors and high or universal levels of access. Albania’s Power Sector Generation and Restructuring Project had a nearly 100 percent time overrun on a planned four-year implementation period, and ended with an unsatisfactory development outcome. The project’s progress was mainly affected by shortcomings in quality at entry, capacity, and procurement. The Bank’s analysis of the capacity of the Albanian Power Corporation did not adequately consider its limited experience with thermal power plants and their construction problems. Vietnam’s System Efficiency Improvement, Equitization, and Renewables Project took 10.5 years to complete compared with the planned 5.5 years.⁴³ This project illustrates how an otherwise successful national electrification program had to contend with gaps in technical and management capacity of some of the implementing agencies, which caused delays or cancellation of several subprojects, especially during the early

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years of implementation. The T&D improvement subprojects were affected by inexperience in substation control systems, poor coordination between equipment suppliers and civil contractors, delays in compensation of affected persons, and prolonged contracting processes.

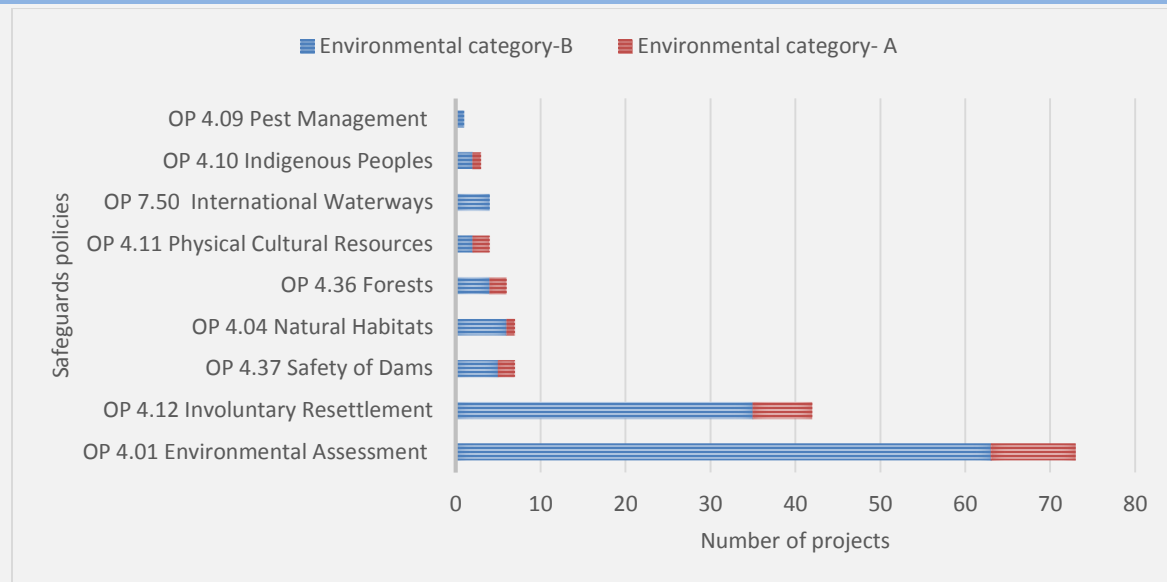
Rwanda's project was a fast-track operation to alleviate the country's power supply shortfall⁴⁴. The project gave primacy to power system reinforcement while beginning to build capacity that would support present and future activities in the sector. However, the project was affected by high staff turnover due to increased competition for key project staff in donor and government-funded projects.

The importance of implementation time efficiency also came up during interviews with the staff and management of the Bank Group's Global Practice on Energy and Extractive Industries. Task team leaders with experience in low-access countries, particularly in Sub-Saharan Africa, pointed to weaknesses in the institutional capacity of both the government and the implementing agency as constraints on speedy and effective implementation of projects. At the government or ministry level, the weaknesses generally relate to sector planning and financial and regulatory issues; designing and managing public-private partnerships; and strengthening institutions for these functions. Gaps in technical and planning capacity exist at the implementing agency level. Staff turnover due to lack of career incentives or substantially better prospects in other work situations is a continual problem, though this may be a positive feature if that talent is being mainstreamed in the country's electricity sector. Although these observations relate to low-access countries, even countries with higher access levels and a longer history of electrification are subject to capacity constraints, but in narrower areas.

Safeguards Performance

The World Bank started to more systematically track environmental and social safeguard issues in its project Implementation Completion and Results Reports after 2007; and this review covers the 83 electricity sector projects that closed from that year onwards. Most of the projects are assigned category B under the World Bank's environmental and social safeguards policies⁴⁵, when potential environmental impacts are expected to be moderate (76 percent of the sample of 83 projects). Only about 10 percent are assigned category A. The most frequent safeguard policies triggered are Environmental Assessment OP 4.01 and Involuntary Resettlement OP 4.12, followed by Safety of Dams OP 4.37 and Natural Habitats OP 4.04 (figure 2.12).

Figure 2.12. Frequency of Safeguard Policy Actions in World Bank Electricity Projects, (FY2007–2014)



Source: IEG Project Implementation Completion Report Reviews.
 Note: OP = Operational Policy.

All the project Implementation Completion and Results Reports reported that their projects were generally in compliance with the World Bank’s environmental and social safeguards policies. There were some outstanding issues at closure in 6 percent of the projects – mainly generation and T&D projects. For the Afghanistan Emergency Power Rehabilitation Project (P083908), assigned category B, deficiencies in dam safety arrangements were identified. These were not addressed during implementation, and the Bank had to prepare a separate project to address these deficiencies at the Naghlu plant. Nine projects were reviewed by the Inspection Panel, three of which were subsequently investigated (Albania Power Sector Generation and Restructuring Project, India Vishnugad Project, and Nepal Power Development Project).⁴⁶

In four World Bank projects, safeguards issues were reported to have caused implementation delays, in most cases related to land acquisition. In Indonesia (P004021, 1996–2003), right-of-way negotiations and land acquisition problems were time-consuming. In Argentina (P006036, 1993–2000), the agency was slow in performing land acquisitions and housing construction, adding to pressures that slowed down project implementation. In Pakistan (P039281, 1996–2003), there was a significant increase in the cost of compensation for land, which caused long delays in land acquisition (\$36.95 million appraisal estimate versus \$116.5 million actual); this situation warranted an investigation by the National Accountability Bureau of

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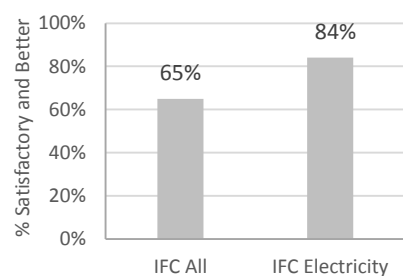
Pakistan and led to the arrest and prosecution of a number of officials and other people. In Sri Lanka (P076702, 2002–2011), delays were related land acquisition and to obtaining required approvals from the Central Environmental Authority and other agencies.

IEG reviewed 51 IFC investment projects evaluated during FY2000–FY2014 for their E&S effects on two environmental dimensions.⁴⁷ The first dimension relates to the environmental and social performance of the client, such as the preparation and implementation of environmental and social action plans; compliance with contractual environmental and social requirements; performance against national and IFC performance standards, and IFC’s Environment, Health, and Safety Guidelines. The second dimension assessed and rated the extent of environmental change or impact brought about by the project as positive or negative.

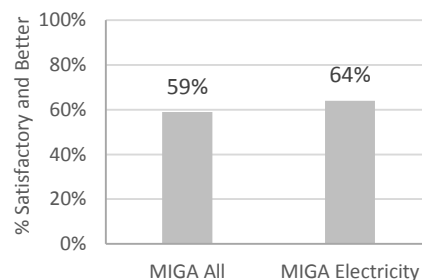
Of 51 projects, 84 percent achieved satisfactory rating for addressing projects’ environmental and social effects (E&S); these outperformed evaluated projects in other sectors (52 percent). When weighted by type of power projects, the E&S effects ratings remains about the same at 88 percent for renewable energy projects, 85 percent for T&D projects, and 81 percent for conventional generation projects.(figure 2.13, panel a).

Figure 2.13. Environmental and Social Effects Ratings, FY2000–2014

a. IFC Investment Projects



b. MIGA Guarantee Projects



Source: IEG Evaluation Notes and Project Evaluation Reports (PER) Ratings Databases.
Note: IFC = International Finance Corporation; MIGA = Multilateral Investment Guarantee Agency. IFC All and MIGA All refers to evaluated projects in other sectors.

Among the fourteen evaluated MIGA projects rated for their E&S effects, nine projects (64 percent) had positive ratings. (figure 2.13, panel b) This share was relatively higher than the evaluated projects in other sectors with satisfactory and better ratings (59 percent) for this same indicator. By sub-sectors, all three evaluated T&D projects were rated positively and two of three renewable energy generation projects (67 percent) were also rated satisfactory and better for their E&S outcomes.⁴⁸

The main drivers of positive E&S effects were the commitment of the sponsor and the competence of the project management. Projects rated excellent had also gone beyond typical corporate social responsibility. Several satisfactory-rated projects established systems to receive the ISO 14001 certification on environmental compliance.

Only in a few evaluated IFC and MIGA projects has compliance to its respective E&S standards caused project completion delays. Such delays were experienced in large generation Category A projects in India, Chile, and the Bujagali project in Uganda. Of the 495 IFC and MIGA power sector projects that were covered in this evaluation, four received complaints from local communities and were investigated by the Compliance Advisor/Ombudsman relating to⁴⁹: the Albania Advisory project (IFC Advisory Services); Allain Duhangan, India (IFC Investment Services); Himal Power, Nepal (IFC Investment Services and MIGA); and Magat Power, Philippines. All cases are closed.

Monitoring and Evaluation

The World Bank began rating M&E design, implementation, and utilization in project ICRs in 2007, and IEG validated these ratings through its ICR reviews. Analysis of these ratings for 79 closed projects for which M&E ratings are available found that about half have M&E ratings that are substantial or better (on a four-point scale of high, substantial, modest, and negligible). M&E performance in low- and medium-access countries is poorer than in high- and universal-access countries (table 2.6).

The main reason for inadequate M&E performance in low- and medium-access countries was lack of appropriate or measureable key performance indicators, including for economic and welfare outcomes – the last link in the results framework. The M&E rating for one-third of the projects in low- and medium-access countries was affected by absence of baseline data or targets and weak implementation capacity.

Table 2.6. World Bank Electricity Access Projects: Quality of M&E Ratings (Projects Closed during FY2007–2014)

Countries by access to electricity	Number of projects	M&E rating (number of projects)				Modest or negligible (%)
		High	Substantial	Modest	Negligible	
Low and medium access	30	1	7	14	8	73
High and universal access	49	5	25	15	4	39

Source: IEG ICR Reviews.

Note: ICR = Implementation Completion and Results Report; M&E = monitoring and evaluation.

Among projects with inadequate M&E systems, Mali’s Household Energy project provided limited evidence that the project’s inputs and outputs led to increased productivity of small and medium enterprises, enhanced quality and efficiency of health and education centers, and improved living standards.⁵⁰ In the Ethiopia/Nile Basin Initiative: Ethiopia-Sudan Interconnector project, the outcome indicators were narrowly defined as export volumes and revenues, and the development objective broadly aimed to create the conditions and capacity for Ethiopia to generate export revenues.⁵¹ Although the indicators for infrastructure allowed easy tracking of the project results, indicators on institutional issues were broader and could have been better articulated to include both qualitative and quantitative indicators. In another example, the performance indicators for India’s Rajasthan Power I project were poorly designed and confusing. Goals such as “loss reduction” or “improved revenue generation” were included in the design without quantitative or measurable indicators. The design had few measurable, time-bound targets. In Rwanda’s Urgent Electricity Rehabilitation project, the data identified in the M&E plan were being collected regularly, but use of those data was limited.⁵² The Bank’s recommendation to revise the intermediate outcome indicators for technical performance—reliability and quality of electricity supply—to reflect international standards could not be followed through because of The Rwanda Electricity Corporation’s inadequate capacity to implement them.

Among projects with favorable M&E ratings, performance indicators for Uganda’s Power Specific Investment Loan 4 covered institutional measures relating to sector reform and management, and projected outputs and outcomes such as load shedding, loss reductions, and the number of new connections.⁵³ The indicators were mainstreamed and continued to be tracked beyond the end of the project. In Bangladesh’s Rural Electrification and Renewable Energy Development Project, an ongoing monitoring system was established by the implementing agency, the Infrastructure Development Company (IDCOL), and partnership organizations’ representatives.⁵⁴ The data collected through project M&E had a strong impact on

improving project implementation. In particular, feedback from the field helped the project team and IDCOL incorporate new technical specifications and technologies (such as LEDs) in SHSs to better serve lower-income households.

It is challenging to get evaluative evidence of the impacts of IFC investment and advisory and MIGA guarantee projects on financial sustainability and on end-users, especially the poor. Project effects on affordability and fiscal sustainability are often not considered in the project documents – an issue that was identified in earlier IEG evaluations. In most project documents, there continues to be little discussion, if any, on affordability relative to inclusion and the impact of the take-or-pay contracts on government finances. In nearly all of the evaluated projects, assessment of fiscal effects did not go beyond taxes paid to the government. With MIGA, regular tracking of project performance and project data collection has been challenging because of its business model, in which the contractual obligation to provide project-level information rests on the guarantee holder (typically a foreign investor) and not on the project company.

As the preceding examples show, indicators for economic and welfare outcomes, including gender-related outcomes, were more likely to be missing or poorly defined and inadequately followed up during project implementation. This is of particular significance because of the Bank Group's goals for reducing extreme poverty and promoting shared prosperity. In recent years, there was some progress in including welfare-related indicators in electricity sector projects.

Conclusions

Insufficient focus on low-access countries. When set against priorities for electricity access, Bank Group lending volumes for the electricity sector were skewed toward high- and universal-access countries, which absorbed 46 percent of the resources, and low-access countries accounted for 22 percent. IFC, in particular, channeled only 6 percent of its lending to low-access countries. Overall, electricity sector lending to the private sector (IFC, MIGA, and World Bank guarantees) heavily favored high- and universal-access countries and was not sensitive to investor's perception of country risks.

The depth and continuity of Bank Group engagement in investment projects in low-access countries was low. During the past 15 years, there were two or fewer World Bank investment projects approved in 31 out of 51 low-access country clients. IFC's engagement was sparser in low-access countries, with no engagement at all in 29 out of the 51 countries. For the World Bank, the median length of an investment

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project is nine years. When taken together with its thinly spread engagement, the weak momentum generated by the World Bank in many low-access countries contrasts sharply with the scale and urgency of the SE4All universal access goal.

The focus on access for the poor is weak. The Bank Group sharpened its approach to electricity access during the past 15 years. However, its strategic coverage of affordability issues for electricity access for the poor, especially in low- and medium-access countries is inadequate.

Bank Group performance in supporting electricity infrastructure is strong overall. Development outcomes for electricity sector projects that closed or matured during FY2000–2014 show a favorable record for the World Bank and IFC, and somewhat lower performance for MIGA. When analyzed further, the Bank Group’s performance is strong in providing electricity infrastructure (generation and T&D). In particular, IFC, whose investments is predominantly in generation, shows strong outcomes in this area, reflecting its depth of involvement and expertise.

The Bank Group’s involvement in non-conventional renewable energy projects has been growing in recent years. But the performance of such projects trails that of conventional generation, mainly due to still-evolving regulatory regimes. Bank Group support for renewable off-grid electrification in the past 15 years was an uneven and minor portion of electricity sector lending, though there are a few outstanding projects in this area.

Knowledge products increased the information and analytical base for policymaking, and some provided valuable linkages to project preparation. The Bank Group made a major contribution to expanding knowledge about all aspects of electricity access through its economic and sector work and with balanced coverage of all Regions. It emphasized learning lessons, informing policymakers, and applying knowledge to innovate and improve lending operations. Chapter 4 provides more detailed analysis of how specific knowledge products supported project preparation and lending under sectorwide frameworks and processes.

World Bank performance in supporting sector institutional frameworks and capacity building is notable, but policy reforms aimed at financial viability is weak. The analysis of key performance indicators of policy reforms involving sector planning and restructuring, regulations, and utility operations show notable successes across the low- to universal-access countries. However, outcomes show lower performance for financial viability compared with electricity infrastructure. Low- and medium-access countries show distinctly poorer performance for financial viability compared with high- and universal-access countries. Given the crucial role

of financial viability in scaling up electricity access, the Bank's performance in these areas is discussed in more detail in chapter 3.

Monitoring and evaluation show weaknesses in all elements of design and implementation. This weakness is more marked in low- and medium-access countries, largely because of a 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. IFC has made a beginning in addressing these issues.

Notes

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¹ IEG used country risk rating scores from Institutional Investor Country Risk Rating database. Ratings were also checked against country risk assessments and scores from the Economic Intelligence Unit

² Includes funding from the Global Environment Facility.

³ Bangladesh, Rural Electrification and Renewable Energy Development I (2002–2013), P 071794 and II (2013), P131263.

⁴ Nicaragua, Off-Grid Rural Electrification Project (2003–2011), P075194 and the Mongolia Renewable Energy and Rural Electricity Project (2006–2012), P099321.

⁵ IBRD and IDA validate the performance ratings of all project implementation completion reports; IFC's Expanded Project Supervision Report system is based on a sampling rate of about 45 percent of IFC investment operations' net approval population (NAP) that reached early operating maturity in a given period; IEG evaluates a number of closed projects included in the NAP. MIGA evaluates all active guarantee projects that reached early operating maturity in a given period; IEG evaluates cancelled projects in the cohort.

⁶ One example is an IFC investment in the privatization of an electricity distribution in MENA region. The project helped the company transition towards commercially-oriented principles and eased the government's budget constraints. Pre-privatization operational risks relating to high technical losses, low capital expenditures and growing budget support have been stemmed after privatization. The project also exceeded targets in terms of delivery of electricity output, downstream access, employment, gender, technical loss reduction and capital investments.

⁷ A renewable energy project with MIGA coverage contributed to the diversification of the country's power generation mix, making the country less vulnerable to droughts. The project helped ease power shortages and rationing during a period of severe drought. MIGA value-added was high particularly when it came to resolving disputes between the government and the sponsor. With MIGA coverage and dispute resolution, the project demonstrated that a geothermal independent power producer (IPP) can successfully operate in a high risk political environment.

⁸ Quality at entry refers to the extent to which the Bank identified, facilitated preparation of, and appraised the operation such that it was more likely to achieve planned development outcomes, and was consistent with the Bank's fiduciary role.

⁹ The result is significant at the 95 percent level.

¹⁰ Recommendations from IEG. 2011. Assessing IFC's Poverty Focus and Results. Washington: DCIFC is expected to define, monitor, and report poverty outcomes for projects with poverty reduction objectives; periodically test assumptions on how IFC interventions contribute to growth and poverty reduction through select in-depth evaluations; and support willing clients to assess and report the impacts of their interventions on identified beneficiary groups.

¹¹ IEG 2013 Review of Management Action Record on IEG's recommendations in the Evaluation of IFC's Poverty Focus.

¹² IFC's Development Outcome System (DOTs) tracks the number of female staff employed by the Project Company and most IFC Expanded Supervision Reports (XPSRs) and Project Completion Reports (PCRs) report on the number of female employees at the project company.

¹³ Bangladesh, Rural Electrification and Renewable Energy Development (2002-2012), P071794.

¹⁴ Senegal, Second Sustainable and Participatory Energy Management, PROGEDE II (2010-2016), P120629.

¹⁵ Turkey, SME Energy Efficiency (2013-2018), P122178.

¹⁶ Peru, Rural Electrification Project (2006-2013), P090116.

¹⁷ Uganda, Power Project (04) (2001-2008), P002984; Implementation Completion Report (ICR) 760; Implementation Completion Report Review (ICRR) 13115.

¹⁸ Nigeria, Nigeria National Energy Development Project (2005-2013), P090104; ICR2462; ICRR14149.

¹⁹ Kenya, Energy Sector Recovery Project (2004-2013), P083131; ICR2915.

²⁰ Senegal, Electricity Sector Efficiency Enhancement – Phase 1 (2005-2010), P073477; ICR1832; ICRR13780.

²¹ Pakistan, Electricity Distribution and Transmission Improvement Project (2008-2014), P095982; ICR3137.

²² Brazil, Energy Efficiency Project (1999-2006), P047309; Energy Sector Reform Loan (2002), P076905; Energy Sector Technical Assistance Project (2001-2002), P076977.

²³ India, Haryana Power Sector Restructuring Project (FY1998-2000), P035160; Second Powergrid System Development Project (2001-2006), P035173; Rajasthan Power Sector Restructuring Project (2001-2006), P038334; Uttar Pradesh Power Sector Restructuring Project (FY2000-2004), P036172; Second Renewable Energy (FY2000-2008), P049770; Andhra Pradesh Power Sector Restructuring Project (1999-2003), P049537.

²⁴ India, Renewable Resources Development Project (1992-2001), P010410.

²⁵ Ethiopia, Energy Project (02) (1997-2005), P000736; Energy Access Project (2002-2013), P049395; Ethiopia/Nile Basin Initiative: Ethiopia-Sudan Interconnector (2007-2013), P074011; Accelerated Electricity Access (Rural) Expansion (2006-2012), P097271; Ethiopia Electricity Access Rural Expansion Project, Phase II – GPOBA (2008-2013), P105651.

²⁶ Cambodia, Phnom Penh Power Rehabilitation Project (1995-2000), P004032; Rural Electrification and Transmission Project (2003-2012), P064844.

²⁷ Nigeria, Transmission Development Project (2001-2008), P072018.

²⁸ Tanzania, Songo Songo Gas Development and Power Generation Project (2001-2010), P002797.

²⁹ Cambodia, Phnom Penh Power Rehabilitation Project (1005-2000), P004032.

³⁰ Indonesia, Sumatera, and Kalimantan Power Project (1994-2001), P003910.

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- ³¹ Bangladesh, Power Sector Development Technical Assistance Project (2004–2012), P078707.
- ³² Tajikistan, Programmatic Development Policy Grant (2006–2007), P074889; Pamir Private Power Project (2002–2010), P075256.
- ³³ Pakistan, Structural Adjustment Credit Project (2001), P071463; Structural Adjustment Loan (1999), P059323; Pakistan Poverty Reduction and Economic Support Operation (2009–2010), P113372.
- ³⁴ Senegal, Energy Sector Recovery Development Policy Financing (2008–2010), P105279.
- ³⁵ Vietnam, System Efficiency Improvement, Equitization and Renewables Project (2002–2012), P066396.
- ³⁶ Cambodia, Phnom Penh Power Rehabilitation Project (1995–2000), P004032.
- ³⁷ Ethiopia, Ethiopia/Nile Basin Initiative: Ethiopia-Sudan Interconnector (2007–2013), P074011.
- ³⁸ Senegal, Senegal Energy Sector Recovery Development Policy Financing (2008–2010), P105279.
- ³⁹ Vietnam, System Efficiency Improvement, Equitization and Renewables Project (2002–2012), P066396.
- ⁴⁰ Uganda, Energy for Rural Transformation Project (2001–2009), P069996.
- ⁴¹ Zambia, Power Rehabilitation Project (1998–2005), P035076.
- ⁴² Cape Verde, Energy and Water Project (1999–2007), P040990.
- ⁴³ Vietnam, System Efficiency Improvement, Equitization & Renewables Project (2002–2012), P066396.
- ⁴⁴ Rwanda, Urgent Electricity Rehabilitation Project (2005–2010), P090194.
- ⁴⁵ For more information about the Environmental and Social Safeguard Policies, see the World Bank external internet website at <http://go.worldbank.org/WTA1ODE7T0>.
- ⁴⁶ For more information, see the World Bank external website/Inspection Panel home page at <http://ewebapps.worldbank.org/apps/ip/Pages/Home.aspx>.
- ⁴⁷ IFC's methodology for rating environmental and social effects of projects is briefly described in appendix E.
- ⁴⁸ Four of eight (50%) evaluated conventional generation projects were rated satisfactory and better for their environmental and social effects. Conversely, the other four evaluated projects were rated partly unsatisfactory and below for its E&S effects.
- ⁴⁹ For more information about the case, see the CAO/Ombudsman web-site at <http://www.cao-ombudsman.org/cases/>.
- ⁵⁰ Mali, Household Energy and Universal Access (GEF) Project (2003–2009), P076440.
- ⁵¹ Ethiopia, Ethiopia/Nile Basin Initiative: Ethiopia-Sudan Interconnector (2007–2013), P074011.
- ⁵² Rwanda, Rwanda - Urgent Electricity Rehabilitation Project (2005–2010), P090194.

⁵³ Uganda, Fourth Power Project (2001-2008), P002984

⁵⁴ Bangladesh, Rural Electrification and Renewable Energy Development (2002-2012).