



## Can a Modernized U.S. Development Finance Institution Help Close the Energy Financing Gap?

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### Key Takeaways

- **The United States is not fully harnessing the power of private sector-led development, leaving U.S. foreign policy gains—and U.S. Treasury profits—on the table and businesses without the capital to build modern energy systems and other underpinnings of development.** Better Utilization of Investments Leading to Development (BUILD) Act legislation would expand and consolidate authorities held by the Overseas Private Investment Corporation (OPIC) and the U.S. Agency for International Development under a new wholly owned government corporation: the U.S. International Development Finance Corporation (DFC).
- **In 2017 alone, Chinese policy banks financed more than \$25 billion in foreign energy projects, more than OPIC's entire investment portfolio across all sectors.** A modernized U.S. development finance institution would increase U.S. global influence, open investment opportunities for U.S. companies in high-growth emerging markets, and provide a more transparent and market-oriented alternative to Chinese government infrastructure financing.
- **BUILD Act authorities would help leverage U.S. funds by mobilizing at least \$50 in investment for each \$1 of grant funding, using equity investments to accelerate capital flows into early-stage companies and the least electrified markets, and helping local entrepreneurs through guarantees that facilitate local lending and build capital markets.** Along with a \$31 billion portfolio exposure increase, as compared with OPIC, and a long-term congressional authorization, these reforms would make U.S. development finance competitive with that of international peers and could help significantly narrow the global energy financing gap.

### Summary

Government-sponsored development finance institutions (DFIs) have become key delivery mechanisms for poverty alleviation and the exercise of soft power. Energy, and the power sector in particular, represents both a leading sector of bilateral DFI investment—more than manufacturing, transportation, health care, and agriculture combined—and a critical enabling sector for broader development that requires significant additional investment in the coming decades.

A reformed and fully equipped U.S. DFI would directly provide billions of dollars in additional energy sector investment and would catalyze many billions more in private investment. Such an institution could also expand employment opportunities, in emerging markets and the United States, and enable broader growth. In the process, it would strengthen economic and political ties with U.S. allies and provide an alternative to Chinese infrastructure finance—an alternative that is more transparent, more deeply rooted in democratic institutions, and more market oriented.

With earnest and bipartisan consensus building around U.S. development finance reform, this policy brief seeks to summarize the importance of energy sector finance in the context of development and foreign policy, to outline the energy financing gaps in emerging markets, and to analyze how the new tools and authorities proposed under the Better Utilization of Investments Leading to Development Act (BUILD Act) legislation would equip the U.S. DFI to respond to those financing needs.

## INTRODUCTION

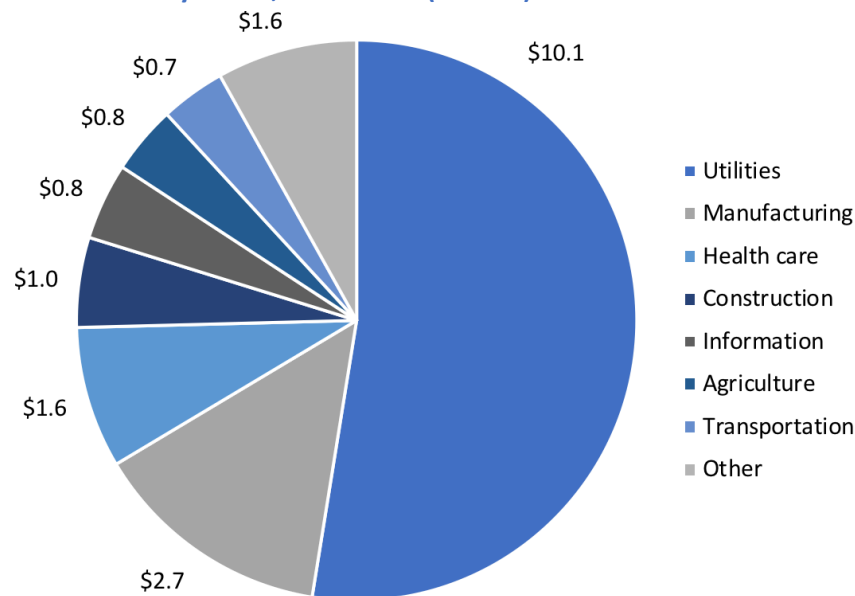
As traditional development assistance budgets flatten and the power of business models to help address economic development needs is broadly recognized, the importance of development finance institutions (DFIs) is growing. The electric power sector, once the realm of aid assistance and concessional finance, has become a leading sector of DFI investment, as seen in Figure 1. In the United States, bipartisan support for development finance reform is growing, animated by interest in increasing development impact and building out a potentially potent lever of economic foreign policy.

The U.S. government's primary vehicle for delivering development finance, the Overseas Private Investment Corporation (OPIC), has seen few changes to its tools and its capabilities since it was authorized in 1971, even as approaches to development and investing have shifted seismically during that time. Modernizing the U.S. DFI by equipping it with tools and authorities common among other DFIs, some of which it has used before on a pilot basis, would allow it to develop targeted financial solutions to meet the unique problems facing energy sector development in emerging markets. For example, authorizing the DFI to make equity investments would get needed capital into projects at an early stage,

## What Is a Development Finance Institution?

Development finance institutions (DFIs) are development banks that invest in private sector projects in low- and middle-income countries to promote job creation and sustainable economic growth. DFIs are usually majority owned by national governments and can be bilateral, serving to implement their government's foreign development and cooperation policy, or multilateral, acting as private sector-serving arms of international finance institutions established by more than one country. DFIs often act as the lender of last resort for developmentally impactful projects in emerging markets and help to mobilize private capital, bringing in commercial banks, private equity funds, and private businesses and corporations. The U.S. government's existing DFI, the Overseas Private Investment Corporation, was created in 1971 and has a \$23 billion portfolio of investments in energy, health, education, finance, and other sectors and generates a positive return to the U.S. Treasury through the repayment of loans and insurance policies. DFI investment often acts as a bridge between state development aid or philanthropy—typically in the form of grants—and commercial debt and equity investment seeking market-competitive returns. Bilateral DFIs include CDC Group (United Kingdom), Proparco (France), and FMO (the Netherlands). Multilateral DFIs include the African Development Bank, the European Bank for Reconstruction and Development, and the International Finance Corporation.

Figure 1. Bilateral DFI commitments by sector, 2012–2016 (billions)



Source: Center for Global Development, *Comparing Five Bilateral Development Finance Institutions and the IFC*, Washington DC, by C. Kenney, J. Kalow, B. Leo, and V. Ramachandran, (2018), <https://www.cgdev.org/sites/default/files/comparing-five-bilateral-development-finance-institutions-and-ifc.pdf>.

Note: Figure excludes \$19.6 billion in financial sector commitments, which is the largest sectoral target for DFI investment but which is generally on-lent by financial institutions to SMEs and other economic sectors. These values represent commitments by the CDC Group, DEG (2015–2016 only), FMO, OPIC, and Proparco. The other category includes commitments to real estate, educational services, accommodation and food services, mining, oil, gas, and other.

mobilize investment into some of the poorest and least electrified markets, and likely generate a disproportionate share of the DFI's financial returns. Grant-making authority would allow the DFI to provide strategic capital infusions to give promising businesses the time and space to develop their models to an international standard, increasing the odds of catalyzing private investment and achieving long-term success. OPIC has achieved these objectives on a pilot basis by applying a grant-like instrument to help scale 27 clean energy projects in Africa, mobilizing \$54 in investment for every \$1 in program funds (see "Success Story: U.S. Africa Clean Energy Finance Initiative," page 8).

## ENERGY IS FOUNDATIONAL TO DEVELOPMENT

Globally, 1.1 billion people lack basic electricity, and billions more lack access to the reliable, affordable, and sustainable energy systems that form the backbone of job creation and broader economic growth. How this shortfall is addressed will have resounding impacts on broader development outcomes as well as on U.S. and global security. Growing population, a changing climate, and economic inequality are potentially destabilizing forces that are likely to drive increased resource scarcity, migration, and conflict in affected regions. Access to modern and reliable energy may mitigate some of these forces and improve development outcomes.

In sub-Saharan Africa—where global energy poverty remains most acute and where more than 600 million people lack access to basic electricity—more than 40% of the population is under 15 years old.<sup>1</sup> Protecting this population and building a healthy, educated, and skilled generation holds the promise for reaping a "demographic dividend" in the region that could lift hundreds of millions out of extreme poverty.<sup>2</sup> On the other hand, in a future world where energy poverty persists, this level of inequality and acute poverty is a potentially dangerous driver of conflict, instability, and extremism. That latter scenario may indeed be the track we are currently on, given that the International Energy Agency's baseline scenario projects more than 600 million people in sub-Saharan Africa still lack electricity access in 2030.<sup>3</sup>

Such challenges have been recognized through President Obama's signature development initiative, Power Africa, which won broad bipartisan support and which has been extended into the Trump Administration. Power Africa entails unprecedented coordination among many U.S. government agencies and partnership with private companies committing tens of billions of dollars in investments to increase power generation and access in sub-Saharan Africa. As discussed below, the close intergovernmental coordination seen under Power Africa provides clues as to how some of the BUILD Act reforms would likely be implemented.

## Benefits of Electrification

Electrification can help pave the way for progress on poverty reduction, gender equity, and public health. The scientific literature has mostly focused on grid-level electricity, rather than off-grid technologies like solar home systems and microgrids. In Vietnam, for example, access to grid power was found to increase households' income by, on average, \$22 per month.<sup>a</sup> In South Africa, electrification increased female employment by almost 10 percent.<sup>b</sup> In El Salvador, where many homes use kerosene for light, extending the electric grid helped reduce exposure to kerosene's harmful fumes and improved children's respiratory health.<sup>c</sup> Although many studies show that electricity access improves well-being, more research is needed to fully understand the linkage, especially in local contexts.<sup>d</sup>

<sup>a</sup> S. Khandker, D. Barnes, H. Samad, and N.H. Minh, "Welfare Impacts of Rural Electrification: Evidence from Vietnam," (working paper, Impact Evaluation Series No.38, Development Research Group, The World Bank, 2009), <http://documents.worldbank.org/curated/en/310371468176671648/Welfare-impacts-of-rural-electrification-evidence-from-Vietnam>.

<sup>b</sup> T. Dinkelman, "The Effects of Rural Electrification on Employment: New Evidence from South Africa," *American Economic Review* 101(7)(2011): 3078-3108, doi:10.1016/j.aer.2011.07.007.

<sup>c</sup> M. Barron and M. Torero, "Household Electrification and Indoor Air Pollution," *Journal of Environmental Economics and Management* 86 (2017): 81–92, <https://doi.org/10.1016/j.jeem.2017.07.007>.

<sup>d</sup> K. Lee, E. Miguel, and C. Wolfram, "Experimental Evidence on the Demand for and Costs of Rural Electrification," (NBER Working Paper Series No. w22292, National Bureau of Economic Research, 2016), <http://www.nber.org/papers/w22292.pdf>; Sustainable Energy Transitions Initiative, "Energy as the Golden Thread: What Do We Know?," (2018), <https://nicholasinstitute.duke.edu/sites/default/files/energyaccesssystematicreview.pdf>.

<sup>1</sup> Population Pyramid, "Sub-Saharan Africa 2016," accessed April 20, 2018, <https://www.populationpyramid.net/sub-saharan-africa/2016/>.

<sup>2</sup> The term *demographic dividend* refers to the economic growth that can be achieved by having proportionally more working-age people as a share of the population. Rand Corporation, *The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change*, by D.E. Bloom, D. Canning, and J. Sevilla, (2003), [https://www.rand.org/content/dam/rand/pubs/monograph\\_reports/2007/MR1274.pdf](https://www.rand.org/content/dam/rand/pubs/monograph_reports/2007/MR1274.pdf); UNICEF, *Prioritizing Investments in Children to Reap the Demographic Dividend*, by D. You, L. Hug, D. Anthony, J. Beise, Y. Choi, S. Lee, and A. Mshvidobadze. Generation 2030/Africa 2.0(2017):6, [https://data.unicef.org/wp-content/uploads/2017/11/Generation\\_2030\\_Africa\\_2.0.pdf](https://data.unicef.org/wp-content/uploads/2017/11/Generation_2030_Africa_2.0.pdf).

<sup>3</sup> International Energy Agency(IEA), *Energy Access Outlook 2017: From Poverty to Prosperity*, by H. Daly and M.A. Walton, World Energy Outlook Special Report (2017):26, [https://www.iea.org/publications/freepublications/publication/WEO2017SpecialReport\\_EnergyAccessOutlook.pdf](https://www.iea.org/publications/freepublications/publication/WEO2017SpecialReport_EnergyAccessOutlook.pdf).

Access to energy is essential for meeting the Sustainable Development Goals, because it can pave the way for progress on poverty eradication, gender equity, education, and public health.<sup>4</sup> Moreover, increasing electricity supply and reliability could drive creation of new businesses and employment opportunities and improve firms' productivity and revenue.<sup>5</sup>

## ENERGY-FOCUSED DEVELOPMENT FINANCE AS A TOOL OF FOREIGN POLICY AND GEOPOLITICAL INFLUENCE

Supporting emerging market energy investment advances U.S. interests. Investing in long-term economic growth, fueled by reliable and sustainable energy sources, builds market-level relationships in emerging markets, increases the influence of home-country institutions, advances political stability, and opens export markets for home country goods and services. Former OPIC CEO Elizabeth Littlefield stated that "American-supported investments that build reliable power, clean water, affordable housing, and that create markets are a tangible, visible and cost-effective tool of U.S. foreign policy."<sup>6</sup>

China has made emerging market power and infrastructure investment a centerpiece of its foreign policy.<sup>7</sup> Over the past decade, Chinese institutions have invested more than \$100 billion in power projects abroad.<sup>8</sup> As a point of reference, OPIC's entire investment portfolio across all sectors is \$23 billion.<sup>9</sup> With its Belt and Road Initiative (BRI), China is leveraging its Export Import Bank, Chinese Development Bank, and new Asian Infrastructure Investment Bank (AIIB) to stimulate infrastructure development across emerging markets. The three-year-old AIIB is already half the size of the World Bank and two-thirds the size of the Asian Development Bank.<sup>10</sup> OPIC president and CEO Ray Washburne noted that the BRI will connect two-thirds of the world's population, one-third of its GDP, and one-quarter of all goods and services.<sup>11</sup> The rivalry for influence is not with China alone. The 15

## Costs of Poor Electricity Access

Irregular or poor quality power can undermine productivity in manufacturing and other job-generating small and medium enterprises, although its precise impacts are difficult to gauge because of the variety of ways in which firms adapt.<sup>a</sup> The World Bank's firm-level Enterprise Survey found nearly 50% of interviewed firms in 81 developing countries report electricity outages reduce annual sales by an estimated 6–11%.<sup>b</sup> To compensate for unreliable electricity, nearly half of this sample relies on a redundant back-up power generator for roughly a third of their electricity needs.<sup>c</sup> In Nigeria, an estimated 80% of people with grid connections also utilize back-up power sources—typically diesel generators—to ensure reliable power, resulting in \$22 billion in annual costs for generator fuel alone.<sup>d</sup> This annual expenditure undermines economic competitiveness and is a significant contributor to particulate air pollution in densely populated cities.<sup>e</sup>

<sup>a</sup> Overseas Development Institute(ODI), How Does Electricity Insecurity Affect Businesses in Low and Middle Income Countries?, London, by A. Scott, E. Darko, A. Lemma, and J.P. Rud, ODI Briefings (2014), <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9425.pdf>; M. M. Alam, "Coping with Blackouts: Power Outages and Firm Choices," Department of Economics, Yale University, (2013), [https://economics.ucr.edu/seminars\\_colloquia/2013-14/econometrics/Alam paper for 2 3 14 seminar.pdf](https://economics.ucr.edu/seminars_colloquia/2013-14/econometrics/Alam%20paper%20for%202%203%2014%20seminar.pdf).

<sup>b</sup> World Bank, "Enterprise Surveys-Infrastructure," accessed April 6, 2018, <http://www.enterprisesurveys.org/data/exploretopics/infrastructure>.

<sup>c</sup> Ibid.

<sup>d</sup> IEA, *Energy Access Outlook 2017*, 83.

<sup>e</sup> World Bank, Diesel Power Generation: Inventories and Black Carbon Emissions in Nigeria, (2014), accessed April 6, 2018, <https://openknowledge.worldbank.org/bitstream/handle/10986/28419/117772-WP-PUBLIC-52p-Report-DG-Set-Study-Nigeria.pdf?sequence=1&isAllowed=y>.

<sup>4</sup> IEA, *Energy Access Outlook 2017*, 26; B.K. Sovacool, "The Political Economy of Energy Poverty: A Review of Key Challenges," *Energy for Sustainable Development* 16.3 (2012): 272-282, <https://doi.org/10.1016/j.esd.2012.05.006>.

<sup>5</sup> J.P. Rud, "Electricity Provision and Industrial Development: Evidence from India," *Journal of Development Economics* 97.2 (2012): 352–367, <https://doi.org/10.1016/j.jdeveco.2011.06.010>; H. Allcott, A. Collard-Wexler, and S. D. O'Connell, "How Do Electricity Shortages Affect Industry? Evidence from India," *American Economic Review* 106.3 (2016): 587-624, DOI: 10.1257/aer.20140389.

<sup>6</sup> "Modernizing Development Finance: Statement for the Record Before the Committee on Foreign Affairs, U.S. House of Representatives, 115th Cong. (2018) (statement of Elizabeth Littlefield, former OPIC President and CEO).

<sup>7</sup> I. Gill, "Future Development Reads: China's Belt and Road Initiative," Brookings, September 22, 2017, <https://www.brookings.edu/blog/future-development/2017/09/22/future-development-reads-chinas-belt-and-road-initiative>.

<sup>8</sup> "China's Global Energy Finance," Boston University Global Development Policy Center, accessed April 2, 2018, <https://www.bu.edu/cgef/-/2017/EnergySubSector/Power-Generation>.

<sup>9</sup> Overseas Private Investment Corporation (OPIC), *OPIC Annual Report 2017: Investment as a Stabilizing Force*, New York, OPIC Annual Report (2017), [https://www.opic.gov/sites/default/files/files/OPIC-Annual\\_Report-2017\\_1.pdf](https://www.opic.gov/sites/default/files/files/OPIC-Annual_Report-2017_1.pdf).

<sup>10</sup> D.F. Runde and C. Metzger, "DFIs Drive the Development Agenda to Center Stage," Center for Strategic and International Studies, December 6, 2017, <https://www.csis.org/analysis/dfis-drive-development-agenda-center-stage>.

<sup>11</sup> Modernizing Development Finance: Testimony Before the Committee on Foreign Affairs, U.S. House of Representatives, 115th Cong. (2018) (statement of Ray Washburne, OPIC President and CEO).

European DFIs are generally bigger than their U.S. counterpart, as a share of host-country GDP, and are equipped with a fuller range of investment tools that allow them to outcompete the United States for some projects.

DFIs can be especially useful for mobilizing capital in fragile and conflict affected areas, which are home to just 7% of the world's population but nearly a third of the world's poor.<sup>12</sup> As of 2015, more than one-third of OPIC's active portfolio was invested in these areas, providing critical access to capital, jobs, skills, technology, international business networks, tax revenue, and foreign exchange.<sup>13</sup> In these areas, the World Bank identified energy as a top sector for attracting foreign investment, including investment in 35 renewable and alternative energy projects between 2005 and 2012.

## ROLE OF DFIS IN CLOSING THE ENERGY FINANCING GAP

To achieve universal electrification by 2030—one key measure of emerging market energy needs—current investment must more than double. The International Energy Agency (IEA) estimates \$52 billion of investment in transmission and distribution, off- and on-grid power generation capacity, and household-level grid connections are needed every year to close the access gap by 2030.<sup>14</sup> As a point of reference, total investment in electricity networks and generation globally was \$718 billion in 2016.<sup>15</sup> So if just 7% of global power investments were focused on where 14% of the population lives, universal electrification could be achieved by 2030.

### The Off-Grid Financing Gap

The vast majority of trackable finance in access-challenged markets is concentrated in power generation (72%) and transmission and distribution (19%) infrastructure to serve the traditional utility model.<sup>a</sup> However, alternative models have gained traction as potentially scalable options for meeting significant shares of demand from large rural populations living far from the reach of the grid. For example, households can buy solar home systems as kits that include a small solar panel and devices to provide basic services, like phone charging and LED lighting, and to power one or more efficient appliances like a fan, radio, or television. Microgrids or minigrids are small, free-standing grids that connect distributed power sources like solar arrays or diesel generators with homes and businesses in the immediate area. Both approaches are gaining momentum in the wake of technology adoption and developments related

to mobile money, batteries, and customer-oriented business models. Financial flows into this space are rising, albeit from a low base. In 2013 and 2014, roughly 1% of investment in access-challenged countries, or roughly \$200 million, went to off-grid solutions.<sup>b</sup>

The financing gap is particularly relevant for sub-Saharan Africa, where 95% of IEA's estimated \$52 billion in annual access-related investments is needed. Despite improvements in connection rates across much of the continent, rising population means that 600 million people in sub-Saharan Africa, 90% in rural areas, could still lack access to electricity in 2030.<sup>c</sup> The Shell Foundation estimates that achieving universal access in sub-Saharan Africa by 2030 will require 210 million new off-grid connections, a roughly \$30 billion financing need.<sup>d</sup>

<sup>a</sup> Comments regarding “access-challenged” countries track to the 20 “high-impact” countries examined in the report, which account for approximately 80% of populations lacking electricity. Sustainable Energy for All, Climate Policy Initiative, and the World Bank, *Understanding the Landscape: Tracking Finance for Electricity and Clean Cooking Access in High-impact Countries*, (Washington, D.C.: SEforALL, 2017), <https://climatepolicyinitiative.org/publication/understanding-landscape-tracking-finance-electricity-clean-cooking-access-high-impact-countries/>. License: Noncommercial-No-Derivatives 4.0 International (CC BY-NC-ND 4.0).

<sup>b</sup>Ibid.

<sup>c</sup> IEA, *Energy Access Outlook 2017*, 75, 86.

<sup>d</sup> Shell Foundation, *Achieving SDG7: The Need to Disrupt Off-Grid Electricity Financing in Africa*, Catalyst Off-Grid Advisors, accessed April 1, 2018: 5, 35, [https://www.shellfoundation.org/ShellFoundation.org\\_new/media/Shell-Foundation-Reports/Catalyst-Report.pdf](https://www.shellfoundation.org/ShellFoundation.org_new/media/Shell-Foundation-Reports/Catalyst-Report.pdf).

<sup>12</sup> World Bank Group, *Promoting Foreign Investment in Fragile and Conflict-Affected Situations*, Washington DC, by R. Whyte and C. Griffin, Investment Climate in Practice Note Series, (2014):22, <https://openknowledge.worldbank.org/handle/10986/20432>.

<sup>13</sup> E. Littlefield, “Littlefield’s Testimony to Congress Emphasizes OPIC’s Commitment to Vulnerable Countries,” The OPIC Blog, May 27, 2015, <https://www.opic.gov/blog/opic-in-action/littlefield-tells-congress-of-opics-commitment-to-vulnerable-countries>.

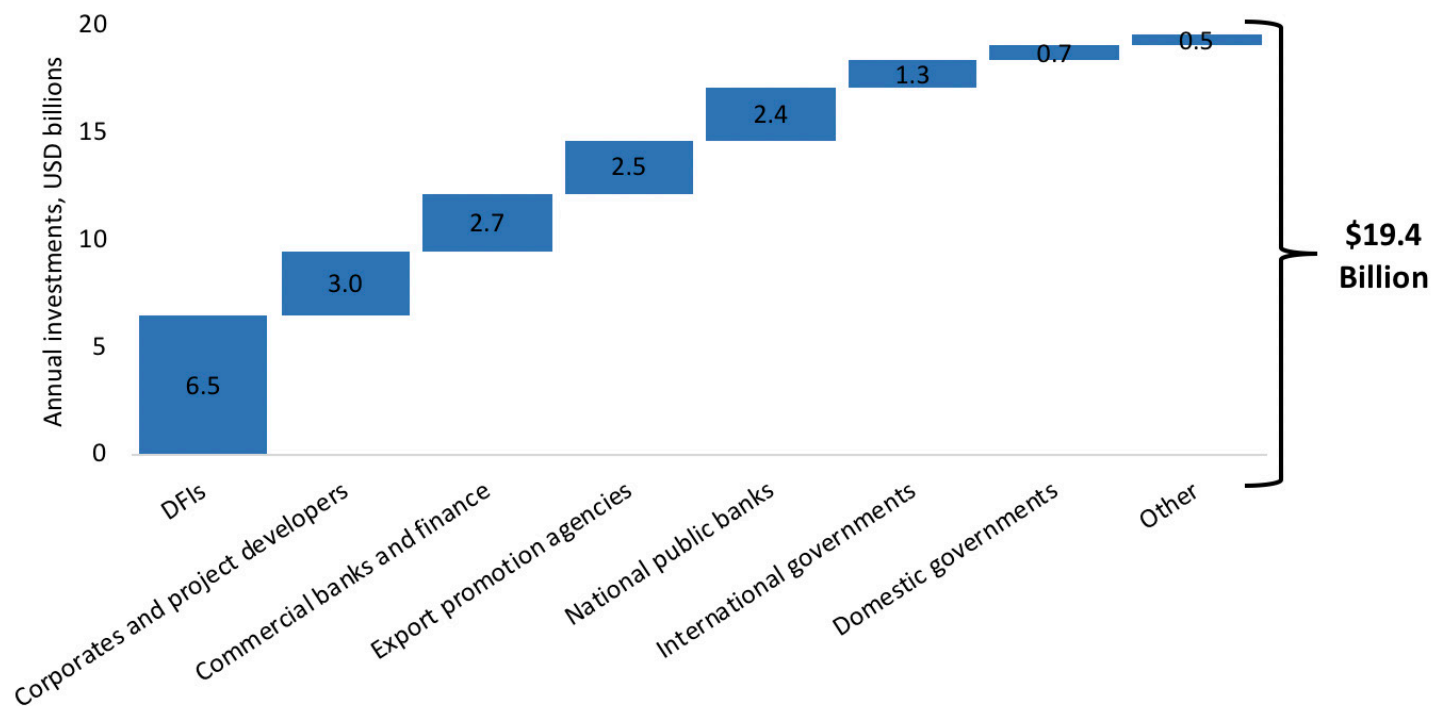
<sup>14</sup> IEA, *Energy Access Outlook 2017*, 13.

<sup>15</sup> IEA, *World Energy Investment 2017: From Poverty to Prosperity* (Washington, DC: IEA, 2017), <https://www.iea.org/publications/wei2017/#section-1-2>.

Power sector investments in emerging markets, whether in traditional grid infrastructure or in use of new off-grid or microgrid models, frequently face long and uncertain project development timelines; (2) fluctuations in local currency value; (3) lack of local commercial capital sources; (4) political and regulatory risks; (5) uncertainty about land title and other local legal matters; and (6) lack of creditworthy entities to guarantee the long-term purchase of power. Companies in

the off-grid space frequently employ new technologies or business models that may come with shorter track records and higher levels of uncertainty. These challenges raise the risk profile of investments, often preventing commercial banks and private investors from lending or causing them to raise return requirements to levels that undermine project viability. But these challenges can be mitigated with several financial tools that DFIs, with their deep financial and sectoral expertise, along with mandates for catalyzing development and mobilizing capital, are well positioned to wield. Indeed, this alignment is reflected in the level to which countries seeking energy finance have historically relied on DFIs, as shown in Figure 2.

**Figure 2. Sources of capital for emerging market energy projects across 20 countries**



Source: Sustainable Energy for All (SEforALL), Climate Policy Initiative, and the World Bank, *Understanding the Landscape: Tracking Finance for Electricity and Clean Cooking Access in High-Impact Countries* (Washington, DC: SEforALL, 2017), <https://climatepolicyinitiative.org/publication/understanding-landscape-tracking-finance-electricity-clean-cooking-access-high-impact-countries/>. License: Noncommercial-No-Derivatives 4.0 International (CC BY-NC-ND 4.0).

Note: The chart reflects average annual investments into electricity projects in 20 of the most access-challenged countries in the world in 2013 and 2014. DFIs include bilateral and multilateral DFIs. Commercial banks and finance includes private equity, venture, and infrastructure funds. The other category includes utilities, philanthropic foundations, and unknown private investments.

DFI participation in power sector transactions lends institutional credibility, signals creditworthiness, and can act to crowd in private capital. DFI involvement indicates that a project meets established environmental and social standards and has some measure of local political support. In short, it signals the presence of critical due diligence criteria for long-lived assets like power projects.

## A MODERNIZED U.S. DEVELOPMENT FINANCE INSTITUTION

U.S. development finance architecture has not evolved with the broader development landscape. The U.S. government's primary development finance vehicle, OPIC, provides private sector entities with debt financing, loan guarantees, and political risk insurance. Its authorities have remained largely unchanged since its establishment in 1971. As developing country governments and citizens become increasingly focused on expanding employment opportunities and enabling broader growth through improved water, power, and agricultural systems, the tools of development finance can be modernized to better meet these needs while maintaining the fiscal discipline on which OPIC was founded.<sup>16</sup> Updating development finance tools could allow the U.S. government to more efficiently deploy capital, support more projects, advance its foreign policy interests, and achieve greater development impact.

The Better Utilization of Investments Leading to Development Act (BUILD Act), H.R.5105 and S. 2463, would establish a full-service U.S. development finance institution with expanded capabilities that would help close the global energy financing gap. The legislation would expand and consolidate authorities currently held by OPIC and the United States Agency for International Development (USAID) under a new wholly owned government corporation called the U.S. International Development Finance Corporation (DFC). The DFC would provide investment to private enterprises in low- and middle-income countries, with the mandate to “mobilize and facilitate the participation of private sector capital and skills in the economic development of less developed countries...in order to complement the development assistance objectives, and advance the foreign policy interests, of the United States.”<sup>17</sup> The new and expanded capabilities of the DFC outlined below would mobilize billions of dollars in additional resources into emerging market energy companies and projects.

### *Invest Equity and Expand into Poorest Markets*

Power generation and transmission projects typically have long development time frames and high upfront construction costs with revenue streams potentially flowing back to the project for 20 or more years. Companies in the off-grid space frequently employ new technologies or business models that may come with shorter track records and higher levels of uncertainty. In these cases, addressing the cost and availability of financing for the initial phase of these projects and companies can be critical to enabling scale-up, achieving market penetration, and attracting private sector investment.<sup>18</sup>

For the investor with a long-term outlook, a mandate for impact and demonstration, and a balanced portfolio that can ride out variance in individual company performance and profitability, these can be attractive equity investment opportunities. This is the realm of DFIs and other patient capital impact investors. Small equity stakes can give the DFI a seat on the board of a company, a perch that serves to impart critical guidance on a new enterprise as well as provide a de-risking function for the DFI. Although OPIC is currently able to support private equity funds using a debt product, enabling the US DFI to take equity stakes would expand its ability to co-invest in funds alongside other DFIs and commercial investors, thus helping to capitalize a deeper pool of impact-minded investors.

Most other major DFIs have equity authority, including those of Germany, France, the Netherlands, the United Kingdom, and the multi-lateral International Finance Corporation (IFC). Although equity investments typically make up a minority of these DFI investment portfolios, they generate a disproportionate share of DFI profits.<sup>19</sup> The fact that OPIC has generated positive returns for more than four decades without equity authority is a remarkable achievement and a testament to the skill and expertise of its staff and leadership.

Equity authority would help address a frequent criticism of DFIs: not enough of their investments are focused in low-income countries. Viable market-based investment opportunities for private enterprises in areas of extreme poverty are highly limited and the energy sector is no exception. For example, more than 80% of OPIC's country-specific investments

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<sup>16</sup> B. Leo and T. Moss, *Bringing US Development Finance into the 21st Century*, Rethinking US Development Policy (2015), Washington DC, <https://www.cgdev.org/sites/default/files/CGD-Rethinking-US-Development-Policy-Leo-Moss-Development-Finance-Corporation.pdf>.

<sup>17</sup> Better Utilization of Investments Leading to Development Act of 2018, S. S. 2463, 115th Cong. (2018).

<sup>18</sup> J.E. Morton and A. Kimball, *The Case for Capital Alignment to Drive Development Outcomes*, Brookings Blum Roundtable Policy Briefs (2013), <https://www.brookings.edu/research/the-case-for-capital-alignment-to-drive-development-outcomes/>.

<sup>19</sup> C. Kenny, J. Kalow, B. Leo, and V. Ramachandran, Comparing Five Bilateral Development Finance Institutions and the IFC, Center for Global Development Policy Paper 116 (2018): 6, <https://www.cgdev.org/sites/default/files/comparing-five-bilateral-development-finance-institutions-and-ifc.pdf>.

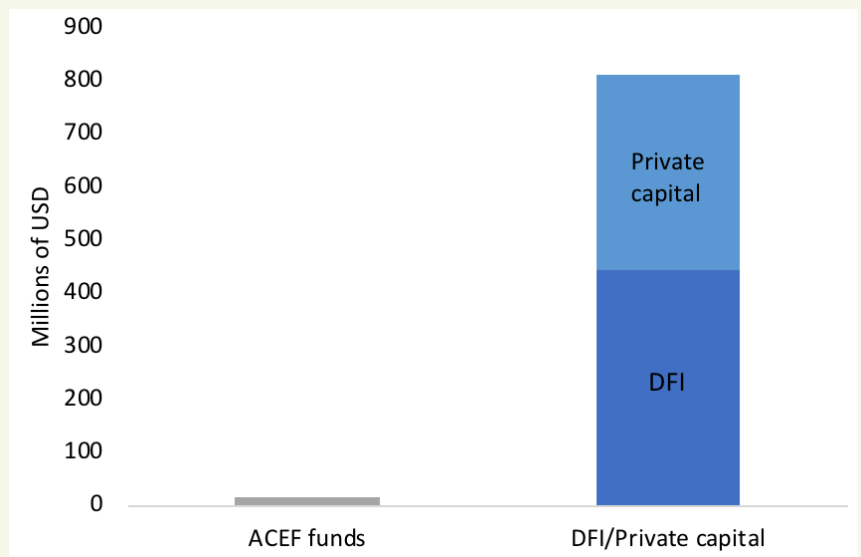
under Power Africa were concentrated in just four countries: Kenya, South Africa, Nigeria, and Senegal.<sup>20</sup> Tools like equity investment authority that enable DFIs to get involved in projects in low-income markets at an earlier stage and a smaller scale are critical to unlocking local entrepreneurialism and opening traditionally challenging markets for investment.

### **Provide Grants and Technical Assistance to Unlock Investments**

The BUILD Act would permit the DFC to provide limited support for project preparation and technical assistance to projects through the issuance of grants and repayable grants. Like equity investments, this form of project funding helps companies cope with long time frames and heavy costs associated with developing energy projects. Early-stage support could be used to fund engineering costs associated with project design and technology assessment, legal costs for preparation of documentation related to permitting and power purchase agreements, and consulting costs for the preparation of environmental and social impact studies. These types of grants should be viewed as both an effective tool for helping bridge a company to debt financing as well as for de-risking early equity investments by giving a company critical breathing room to expand their model or test it in new ways. The positive impact of such early-stage support is illustrated by OPIC's administration of the U.S.-Africa Clean Energy Finance (ACEF) Initiative from 2012 to 2017.

### **Success Story: U.S.-Africa Clean Energy Finance Initiative**

Through a five-year pilot collaboration with the U.S. State Department and the U.S. Trade and Development Agency, OPIC utilized \$15 million in State Department money to fund early-stage development costs for 27 renewable energy projects across Africa with the objective of facilitating broader investment in clean energy projects in a region of acute energy poverty.<sup>a</sup> The results demonstrate the powerful catalytic potential of grant-like capital infusions to certain early-stage energy projects. The 27 U.S.-Africa Clean Energy Finance Initiative-funded projects subsequently raised \$812 million in additional debt and equity investment, ultimately resulting in \$54 mobilized for every \$1 from ACEF.<sup>b</sup> The majority of these projects remain active and continue to raise funds, meaning this leverage figure will only rise. More recently, OPIC has partnered with philanthropic organizations under a new U.S.-India Clean Energy Finance initiative, which promises to demonstrate these results across India.



<sup>a</sup>J. Morton, "U.S.-Africa Clean Energy Finance Initiative-supporting Renewable Energy to Power Africa," The OPIC Blog, January 13, 2015, <https://www.opic.gov/blog/renewables/u-s-africa-clean-energy-finance-initiative-supporting-renewable-energy-to-power-africa>.

<sup>b</sup>OPIC, "OPIC's Africa Clean Energy Financing Facility Supported 27 Early Stage Projects Since 2012," Press Release (December 11, 2017).

Early-stage grant investments to innovative energy companies in emerging markets do not always work out and should not be expected to. Indeed, some of the projects OPIC funded under ACEF ultimately failed. However, others, including CrossBoundary, Off-Grid Electric, Lumos, SunFunder, d.light, and M-KOPA, went on to become private sector leaders in

<sup>20</sup> The analysis reflects the OPIC Power Africa portfolio as of January 2017. It excludes commitments to projects that flow to multiple countries.



the African energy space and demonstrate the viability of entirely new models for reaching off-grid customers. Given the lack of capital for high-risk, high-impact energy projects, systematized early-stage U.S. DFI investment could contribute significantly to building the ranks of new and innovative companies in the space.

### ***Lend in Local Currencies***

Companies operating in the energy sectors of emerging markets primarily generate revenues in those domestic currencies, not U.S. dollars. Consumers pay their electricity bills, or buy their distributed renewable solutions, in local currency. That currency represents a significant challenge for the company that must repay loans denominated in U.S. dollars—the only currency under which OPIC is currently lending and guaranteeing. The past decade of financial crises in emerging markets and extreme volatility of many currencies against the U.S. dollar have put otherwise viable projects underwater and made these currency mismatches a critical consideration for companies investing in emerging market energy projects.<sup>21</sup>

DFIs, with their excellent credit ratings and deep expertise in core Treasury functions and local swap markets, are in a unique position to help energy firms and investors concentrate on their core businesses and avoid currency bets. Many other DFIs have this authority and have used it effectively, structuring a variety of local currency solutions to best fit local resources and circumstances. The IFC, for example, is a leader in the space and has transacted in 38 currencies.<sup>22</sup>

The BUILD Act would empower the DFC to lend in local currencies, a capability that it should ramp up incrementally in a manner that allows for thoughtful policy development and the capture of key lessons. Ultimately, DFC clients can be provided with a cost-effective currency risk mitigation option while allowing the agency to efficiently pool and manage limited foreign exchange risk across a broad and balanced portfolio.

### ***Use Guarantees to Facilitate Local Lending and Build Local Capital Markets***

Access to capital is more constrained in developing markets, where local banks may be hesitant to lend to small and medium enterprises (SMEs) or may not offer the term length borrowers need.<sup>23</sup> SMEs are primary drivers of job creation and economic growth globally so the inability of 7 in 10 small businesses in emerging markets to access loans is a critical bottleneck to growth.<sup>24</sup> In the energy sector, this inability can lead local entrepreneurs to take on expensive short-term debt that undermines enterprise competitiveness and sustainability. It may also lead to energy solutions that bypass the bottom-of-pyramid consumers for affordability reasons and prevent privately owned utilities or microgrids from maintaining, expanding, and modernizing systems.

The Development Credit Authority (DCA), currently housed within USAID, helps to fill this financing gap, and, in doing so, promotes the development of local capital markets so that developing economies can better finance their own investments in the future. DCA allows the U.S. government to use up to 50 percent risk-sharing guarantees to target local capital markets and mobilize local wealth for national development.<sup>25</sup> In 2016, DCA issued a \$10 million guarantee to two local banks in Uganda to mobilize local commercial financing for greater access to electricity and other clean energy solutions.<sup>26</sup> A separate guarantee leveraged a total of \$75 million in debt capital for smaller loans to local manufacturers, distributors, retailers, installers, and financial intermediaries operating in the off-grid or small-scale renewable energy value chains in 33 countries across sub-Saharan Africa.<sup>27</sup>

Maintaining DCA's effectiveness while moving it into the new DFC, as proposed in the BUILD ACT, will be challenging for two major reasons. First, DCA exists today as a close collaboration between USAID field staff with deep local

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<sup>21</sup> International Finance Corporation (IFC), IFC and Local Currency Financing, Washington DC, accessed April 2, 2018, <https://www.ifc.org/wps/wcm/connect/51eed100487c9a249cd4bd84d70e82a9/VPU+localcurrencybrochure+5-08.pdf?MOD=AJPERES>.

<sup>22</sup> Ibid.

<sup>23</sup> USAID, Development Credit Authority, Washington DC, 2015 Impact Brief (2015), [https://www.usaid.gov/sites/default/files/documents/1865/dca\\_impactbrief15\\_v15\\_link\\_spreads\\_160824b.pdf](https://www.usaid.gov/sites/default/files/documents/1865/dca_impactbrief15_v15_link_spreads_160824b.pdf).

<sup>24</sup> The World Bank, "Entrepreneurs and Small Businesses Spur Economic Growth and Create Jobs," News release (June 20, 2016); "Development Credit Authority," USAID, accessed April 7, 2018, [https://www.usaid.gov/sites/default/files/documents/1865/DCA\\_One-Page\\_48.pdf](https://www.usaid.gov/sites/default/files/documents/1865/DCA_One-Page_48.pdf).

<sup>25</sup> J. Wasielewski, "20 Years of the Development Credit Authority," Center for Strategic and International Studies, July 26, 2017, <https://www.csis.org/analysis/20-years-development-credit-authority>.

<sup>26</sup> "Uganda Energy Access," USAID, accessed May 5, 2018, <https://usaid-credit.exposure.co/uganda-energy-access>.

<sup>27</sup> Fact Sheet: Beyond the Grid Renewable Energy Guarantee. Jointly branded Power Africa, DCA, and USAID. No date.

understanding of country needs and a small team of finance experts in Washington, D.C. This seamless integration of staff and programming is central to DCA's success. Second, DCA guarantees are most effective—and are most likely to be replicated without DCA's involvement—when they are coupled with targeted technical assistance programs that both increase the borrower's ability to repay the loan and deepen market understanding within local banks. As a general matter, close staff collaboration and strong institutional linkages between USAID field offices and the new DFC will be critical for increasing energy development impact. Power Africa is an excellent model for how this inter-governmental coordination can be effectively institutionalized.

### ***Remove Institutional Handcuffs***

OPIC has approximately \$23 billion in total investment exposure, which, as a share of GDP, is smaller than most bilateral DFIs.<sup>28</sup> At its current growth rates, OPIC will hit its statutorily imposed lending limit of \$29 billion within the next three to five years. At the same time, OPIC has been forced, since 2007, to rely on annual authorizations from Congress, which introduces another unnecessary layer of uncertainty for both the agency and its energy project developer clients facing multi-year project development time frames.

By increasing the DFI exposure limit to \$60 billion and providing a long-term authorization for the DFC to operate, the BUILD Act would eliminate near-term lending constraints, expand U.S. trade and investment with the fastest-growing areas of the world, and send an ambitious message of support to energy entrepreneurs around the world.

## **LIMITS TO DEVELOPMENT FINANCE**

Harnessing business models and mobilizing private sector investment through development finance is a powerful complement to traditional donor aid, not a replacement. There is a value chain of institutions and tools that must be systematically mobilized to help developing nations achieve their energy goals. Several energy sector-specific issues described below are intended to illustrate how a DFI can operate best within a continuum of support that leverages other institutions and tools.

### ***Affordability***

Energy affordability will remain a hurdle. Market-driven approaches backed by DFIs do not work when customers cannot pay for goods and services. Even with technology developments and cost reductions, an estimated 37% of households in sub-Saharan Africa will not be able to pay for off-grid solar products even if they are made available, representing a \$4 billion shortfall.<sup>29</sup> This shortfall should not be particularly surprising, because every scaled power system around the world has historically used some sort of subsidization to reach its poor and rural populations.<sup>30</sup> Well-designed subsidies or interventions designed to avoid market distortion will be required to serve these populations. Traditional donor institutions are well-equipped to design and administer these necessary functions.

### ***Enabling Environment***

Every year, 100 million people gain access to electricity for the first time, and the vast majority are getting it through grid connections.<sup>31</sup> In emerging markets, equipping incumbent utilities to be the backbones of expanded power access is a monumental challenge in capacity building, technical assistance, and policy and regulatory reform. Similarly, building a fertile environment to scale microgrids—which are not currently economic in any emerging market—requires policy solutions that deal with both technical and financial hurdles. Donor partners that engage on a sustained, multi-sector basis are ideally positioned to understand host country priorities and to respond with integrated solutions that build enabling environments attractive for investment.

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<sup>28</sup> Center for Global Development, *Bringing US Development Finance into the 21st Century*, Washington DC, by B. Leo and T. Moss, Rethinking US Development Policy (2015), <https://www.cgdev.org/sites/default/files/CGD-Rethinking-US-Development-Policy-Leo-Moss-Development-Finance-Corporation.pdf>.

<sup>29</sup> Shell Foundation, *Achieving SDG7: The Need to Disrupt Off-grid Electricity Financing in Africa*, by Catalyst Off-Grid Advisors, accessed April 1, 2018, [https://www.shellfoundation.org/ShellFoundation.org\\_new/media/Shell-Foundation-Reports/Catalyst-Report.pdf](https://www.shellfoundation.org/ShellFoundation.org_new/media/Shell-Foundation-Reports/Catalyst-Report.pdf).

<sup>30</sup> J. Guay, "4 Reasons Subsidies Are Not a Dirty Word in Energy Access Efforts," *Medium*, March 1, 2018, [https://medium.com/@Guay\\_JG/4-reasons-subsidies-are-not-a-dirty-word-in-energy-access-efforts-9d65a07a3227](https://medium.com/@Guay_JG/4-reasons-subsidies-are-not-a-dirty-word-in-energy-access-efforts-9d65a07a3227).

<sup>31</sup> IEA, *Energy Access Outlook 2017*, 39.

For energy sector investment to flow where it's needed and wanted, communities and countries need strong institutions and clear legal and contractual structures that reflect their environmental and social values and that give investors clear guideposts. As the Power Africa model has demonstrated, the government incentive and support capabilities administered by agencies like USAID, the State Department, and the Millennium Challenge Corporation are critical enablers of development finance. These entities provide regulatory and policy guidance, build grid operators' capacity to manage an increasingly complicated grid and reduce technical and commercial system losses, address uncertainty around land title and other local legal matters, and convene stakeholders to build consensus around policies and planning processes, all vital functions that pave the way for DFI and private capital to scale energy investments.

### ***Extreme Environments***

In some circumstances there is no applicable business model to serve the needs of those affected by extreme circumstances. For example, when it comes to supplying power in situations of emergency relief, disaster recovery, and refugee displacement, services may be needed at a scale and time frame that profit-seeking models cannot support. Partner governments and traditional donors can best support in these situations through the provision of aid.

### **CONCLUSION**

Achieving the Sustainable Development Goals will require a financing increase from “billions to trillions,” and energy must be central to that scaling.<sup>32</sup> Better equipping the U.S. DFI to provide catalytic early-stage capital is critical to enabling that shift. The BUILD Act represents a historic opportunity to expand the capabilities of U.S. development finance and to give it proven tools to mobilize private sector capital and skills in critical ways. This proposed modernization represents an important effort that would support expanded economic development in less developed countries, increase U.S. influence and advance foreign policy objectives, and enhance investment opportunities for U.S. companies in high-growth emerging markets. The proposed DFC would build on the success of OPIC and other agencies to catalyze private investment—in the process, strengthening economic and political ties with U.S. allies and offering an alternative for emerging market governments, financiers, and enterprises that are in need of capital to grow their businesses and create jobs.

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<sup>32</sup> World Bank Group, *From Billions to Trillions: MDB Contributions to Financing for Development*, DFI Idea Action Booklet (July 2015), <http://pubdocs.worldbank.org/en/69291436554303071/dfi-idea-action-booklet.pdf>.

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## Review

The work reported in this publication benefited from review from experts in the field.

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## Nicholas Institute for Environmental Policy Solutions

The Nicholas Institute for Environmental Policy Solutions at Duke University is a nonpartisan institute founded in 2005 to help decision makers in government, the private sector, and the nonprofit community address critical environmental challenges. The Nicholas Institute responds to the demand for high-quality and timely data and acts as an "honest broker" in policy debates by convening and fostering open, ongoing dialogue between stakeholders on all sides of the issues and providing policy-relevant analysis based on academic research. The Nicholas Institute's leadership and staff leverage the broad expertise of Duke University as well as public and private partners worldwide. Since its inception, the Nicholas Institute has earned a distinguished reputation for its innovative approach to developing multilateral, nonpartisan, and economically viable solutions to pressing environmental challenges.

## Duke University Energy Access Project

The Energy Access Project at Duke University is a new research and policy effort that aims to address the challenges around increasing access to modern energy solutions to underserved populations around the world. It takes an interdisciplinary approach to developing sustainable, modern energy for all. The Energy Access Project is working to provide policy makers, project developers, investors, civil society and impacted communities with the tools and analysis to help drive this transformation. Key Duke collaborators in this effort include the Nicholas Institute for Environmental Policy Solutions, the Duke University Energy Initiative, the Sanford School of Public Policy, Bass Connections, and the Nicholas School of the Environment.

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