

ANNUAL REPORT JULY 2015

POWER
AFRICA





LETTER FROM ANDREW M. HERSCOWITZ

Access to electricity means access to opportunity and the chance for people and economies to flourish. In sub-Saharan Africa, however, all too often opportunity is out of reach; millions of people simply don't have power — in all senses of the word.

Two years ago, President Obama launched *Power Africa*, a bold initiative to double access to electricity across sub-Saharan Africa and help bring electricity to millions of homes and businesses. We set out on a new path for developing cleaner energy projects by leveraging private sector investment and building partnerships with African governments committed to make the tough reforms needed to attract that investment to their energy sectors. *Power Africa* is central to the Administration's new model of development — the U.S. Government and the private sector working together to strengthen the world's economies, build domestic capacity, and help put all of our societies on a more prosperous and sustainable path.

Power Africa's initial success led the President to reaffirm its mission to double access to electricity across all of sub-Saharan Africa at last year's U.S.-Africa Leaders Summit. In addition, President Obama announced

a tripling of *Power Africa's* goals from 10,000 megawatts (MW) of new and cleaner generation capacity to 30,000 MW, and a commitment to increase electricity access by 60 million new connections. As the first Presidential initiative headquartered on the African continent, we've tapped into the best American, African, and international talent to tackle these important goals together. While it will take years to advance some larger projects, we are laying the groundwork for continued progress and are already seeing the impact that *Power Africa* can and will have in the years to come.

Today, *Power Africa* continues to make progress, driven by more than 100 private sector partners, fueled by the vision and experience of African leaders and the needs of their citizens, and enhanced by the public sector's technical and financial resources. As a result, individuals across the continent are tapping into opportunity with every new connection, whether they are connected to the national grid or "beyond" it and using solar powered home systems. But with millions still lacking access, our progress to date is just the beginning, and we are committed to continuing to expand *Power Africa's* reach and impact.

Power Africa has already helped facilitate the financial close of private sector transactions that are expected to

generate over 4,100 MW. We are tracking hundreds of projects, which if completed could generate an additional 20,000 MW. In our first two years, we have learned that *Power Africa* can be the glue and the catalyst among its diverse partners that enable these projects to sustain their momentum and help them overcome common obstacles that too often cause projects in sub-Saharan Africa to derail.

In this Annual Report, you will read about concrete progress made on projects, on critical policy reforms, as well as lessons learned. Sub-Saharan Africa experiences its share of challenges, but what defines the continent is the spirit and character of its people to overcome obstacles and reach for a better future.

Power Africa is our signal to African governments, citizens, businesses, and the world that the United States and our partners are committed to working together with our African partners to remove the obstacles that stand in the way of opportunity. Through the power of partnership, we can and will ensure a brighter future for all.

Andrew M. Herscowitz
United States Coordinator
for *Power Africa*

EXECUTIVE SUMMARY

In June 2013, President Barack Obama launched *PowerAfrica* — a partnership among the U.S. Government, African governments, the private sector, international organizations, NGOs, and bilateral and multilateral partners to double access to electricity in sub-Saharan Africa. In its first year, *PowerAfrica* made progress toward achieving its initial goal of adding 10,000 megawatts (MW) of power generation capacity and 20 million new connections in six countries in sub-Saharan Africa. To expand the reach of *PowerAfrica*, in August 2014, during the first ever U.S.-Africa Leaders Summit (ALS), President Obama announced a tripling of *PowerAfrica*'s goals — adding 30,000 MW and 60 million connections across sub-Saharan Africa. Alongside this announcement, the President pledged to support *PowerAfrica* at a new level of \$300 million in assistance per year.

These new goals are ambitious but achievable. To accomplish them, *PowerAfrica* is expanding the markets it works in and the tools it offers. To date, *PowerAfrica* has assisted with the financial closure of transactions expected to install over 4,100 MW of new, cleaner power generation capacity when fully online. *PowerAfrica* has also made progress toward its connection goals. The additional 4,100 MW of power has the potential to enable

approximately 4 million new connections through increased availability of power. Under *Beyond the Grid*, a *PowerAfrica* sub-initiative that drives private investment in off-grid and small-scale energy solutions, U.S.-Africa Clean Energy Financing facility (ACEF) and the U.S. African Development Foundation (USADF) have funded companies and projects expected to reach 1 million new connections.

Much of *PowerAfrica*'s initial achievements were due to its support of projects that were in development before our launch. Moving forward, we are focused on generating new deals to support, while continuing to ensure existing projects stay on track. In addition to the projects that have reached financial close, *PowerAfrica* has identified transactions in the planning stages with the potential to install more than 20,000 MW of cleaner power generation capacity in sub-Saharan Africa.

Generating new deal flow will be easier if certain conditions on the ground are met including opening the door for private sector investment in the energy sector and addressing many of the regulatory and financial constraints that have historically inhibited private sector investment. In Ethiopia, *PowerAfrica* and its partners are providing legal and technical transaction support

to help the government advance its first independent power purchase agreement (PPA) with Reykjavik Geothermal and partners for the development of up to 1,000 MW of power at the Corbetti, Tulu Moye, and Abaya geothermal energy fields.

In Rwanda, *PowerAfrica* partner, Gigawatt Global, officially commenced operations of East Africa's first ever utility-scale solar energy facility in February 2015 — 8.5 MW of grid-connected power (enough for 15,000 homes). The Solar Field at the Agahozo Shalom Youth Village, in addition to providing the grid with desperately needed power, is also directly benefiting a local community who now receive rental income from the solar facility's land. In part due to critical early stage support from *PowerAfrica*, the project was negotiated and commissioned in slightly over one year's time, demonstrating how quickly solar projects can get power on the grid. The transaction also helped build government capacity to negotiate power projects and increased government and private sector interest in additional projects. This solar field is the first project to come on line through ACEF, which is a key part of the *PowerAfrica* toolbox.

While *PowerAfrica* has made significant strides in the first two years, challenges

abound, we are stressing the need for new financial models and critical reforms that will accelerate access to electricity. We support governments to make tough reforms and build their capacity so that they retain control of their country's energy destiny in a financially and environmentally sustainable way. Whether it is enabling a private developer to tap wind resources to power thousands of homes in Kenya, or to help a woman in a rural village in Tanzania install a small photovoltaic solar panel on her roof, *Power Africa* is equipped with the tools to provide a wide range of support.

The private sector is leading the way. *Power Africa's* over 100 private sector partners have committed more than \$20 billion toward specific projects, including \$1 billion in commitments under Beyond the Grid, our effort to ensure that people living in remote areas also get access to power. Success in mobilizing commitments has been possible because *Power Africa* has put people on the ground on the continent, who seek feedback from the private sector about the key impediments to their investments.

Power Africa's experience over the last two years validates many of the reasons why it was launched. First, there are plenty of investors interested in the energy sector in sub-Saharan Africa, and there are a lot of great ideas for projects. But, there is a shortage of "bankable" projects. In the coming years, *Power Africa* will continue to help advance projects to the point of bankability through interventions such as facilitating the project's financing and risk mitigation, and providing technical and transaction

support to ensure the project is planned and negotiated with best practices. Second, companies see many opportunities for investment, and will quickly shift to other countries in Africa or even to other continents if one country is not willing to make the critical reforms necessary to attract and retain such investments. Third, there are sufficient renewable energy resources in Africa to power the continent many times over, yet there are many challenges in tapping this tremendous potential. *Power Africa* will work with our private sector and government partners to recognize and capture this potential in a low cost manner in order to promote rapid economic growth.

Working in partnership to overcome Africa's energy deficit, *Power Africa's* ultimate goal is to reduce poverty and improve lives by bringing power to health centers and schools, light to homes, and electricity to businesses.

Power Africa recognizes that sometimes plans need changing. Liberia's electricity sector was greatly constrained in 2014-2015 by the Ebola virus disease's devastating toll. In recognition of the critical role of power to help stem the epidemic, *Power Africa* worked with the U.S. Government's Disaster Assistance Response Team (DART) to quickly purchase more than 17 generators for Ebola Treatment Units and Community Care Centers. Within two weeks, *Power Africa* generators were providing light and power to the units, supporting life-saving treatment and allowing healthcare workers to clean their clothes and equipment, reducing the risk of disease transmission.

Power Africa is currently exploring how hybrid solar-diesel units might provide longer-term solutions for healthcare facilities in Liberia and other Ebola-impacted nations through cooperation with governments, donors, and private sector partners.

POWER AFRICA DELIVERING RESULTS

- Transactions brought to financial close expected to generate over 4,100 MW of electricity
- Potential to power roughly 4 million new connections from increased availability of power plus an additional 1 million connections through ACEF and the Off-Grid Challenge funded projects
- \$20 billion in private sector commitments from over 100 partners leveraged by an initial USG commitment of \$7 billion — nearly 3:1 leveraging of funds
- The Government of Sweden committed \$1 billion, adding to the World Bank Group's commitment of \$5 billion, and the African Development Bank's commitment of \$3 billion





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CHAPTER I

EXPANDING POWER AFRICA'S REACH

In August 2014, at the U.S.-Africa Leaders Summit, President Obama said that in its first year, response to *Power Africa* had exceeded expectations. As a result, the President added, "We're tripling our goal, aiming to bring electricity to more than 60 million African homes and businesses that can spark growth for decades to come."

To reach these new ambitious goals, *Power Africa* is expanding and deepening its efforts in countries across the continent where we see the greatest potential and commitment. *Power Africa* needs to mobilize more public and private sector investment with more partners, identify new deals, deploy more tools to improve project bankability and expedite

their development, and fast-track key enabling environment reforms.

This expansion focuses on three broad criteria.

- Willingness, capability, and commitment of host country governments to establish an environment conducive to private investment.
- Private sector interest and the existence of a pipeline of transactions that will advance generation and access goals.
- Availability of tools from the U.S. Government and our multi- and bilateral partners to support the first two criteria.

Power Africa is expanding the breadth and depth of its involvement throughout the continent. Enhanced and additional tools include:

- Deployment of additional transaction advisors and deal origination teams at the country and regional level;
- Expansion of project preparation activities;
- Expansion of risk mitigation and other financial tools;
- Increases in technical assistance to improve enabling environments;
- Expansion of grants to build capacity for innovation; and
- Additional rounds of the Power Africa Off-Grid Energy Challenge and follow-on support.

POWER AFRICA'S GROWING TOOLBOX OFFERS THE COMBINED TECHNICAL RESOURCES OF 12 U.S. GOVERNMENT AGENCIES



Transaction Assistance

- Early-stage support for innovative energy solutions, resource evaluations, feasibility and grid impact studies, social and environmental impact studies, project appraisal and costing, engineering designs, public private partnerships, and other project preparation activities
- Late-stage expert technical, regulatory, and financial assistance to host country governments to advance power transactions to financial close and beyond

Who is it for?

Project developers, investors, host-country governments, entrepreneurs, African-owned and operated enterprises



Finance

- Equity, mezzanine financing, senior and sub-senior loans, guarantees, export credits, grants, and insurance programs

Who is it for?

Project developers, financing institutions, entrepreneurs, host-country governments, U.S. lenders and exporters



Policy/Regulatory Design & Reform

- Technical assistance to improve the enabling environment for private sector investment in the power sector through policy, legal, regulatory and utility reforms, improved procurement practices and power sector planning, and the adoption of financial incentives and risk mitigation schemes

Who is it for?

Host-country governments, utilities, regulators, and other stakeholders



Capacity Building

- Technical assistance to support institutional strengthening, technical and regulatory skill development, and project development and management activities
- Trade missions to the U.S. and to sub-Saharan Africa

Who is it for?

• Host country governments, utilities, energy regulators, public procurement agencies



Legal Assistance

- Legal assistance to strengthen host country government expertise and negotiating capacity in structuring, financing and closing power transactions

Who is it for?

Host-country governments and African utilities

For more information on Power Africa's Toolbox please visit:
www.usaid.gov/documents/1860/power-africa-toolkit

CHAPTER 2

MOBILIZING NEW INVESTMENT

Power Africa is succeeding in its efforts to make energy more available in sub-Saharan Africa because it focuses on building a wide range of partnerships with African governments, the private sector, NGOs, and multilateral organizations. Throughout 2014 and early 2015, existing partners increased their commitments while new partners brought both new financing commitments and technical expertise to the effort.



INCREASED INVESTMENT FROM THE PRIVATE SECTOR

While *Power Africa* initially forged partnerships primarily with developers, sponsors, and financiers, we soon recognized the need to collaborate with other types of partners across the power value chain. Partners now range from developers and project sponsors to equity and debt providers, equipment suppliers, associations, and NGOs. Of *Power Africa*'s more than 100 private sector partners, more than 40 are specific to Beyond the Grid.

Highlights of partner progress include:

AFC: The Africa Finance Corporation (AFC) exceeded its initial commitment to invest \$250 million in large-scale power projects across sub-Saharan Africa with major projects in Ghana, Kenya, and Nigeria. In January 2015, the AFC announced the provision of a \$25 million loan as part of a \$150 million senior unsecured syndicated loan facility to Kenya Power and Lighting Company (KPLC). The facility will support the rehabilitation and expansion of Kenya's power transmission and distribution network to increase its capacity from the current 2,000 MW to 5,000 MW by 2020.

“Vestas can greatly benefit from the *Power Africa* partnership. From a business development point of view, this cooperation will allow us to share our experiences with other partners in the region, as well as to have a fluent working relationship with OPIC, EX-IM, USAID and other USG agencies. A closer relationship with the World Bank, African Development Bank and other donors will also help us attract investment, lending and technical assistance to new project developments in the region.”

— James White, Regional Sales Manager
Southern and Eastern Africa, Vestas



SunFunder: In 2014, a Sunfunder portfolio company, SolarNow, closed more than €2 million in equity financing from Novastar Ventures and Acumen. SolarNow, which provides homes, schools and businesses in Uganda with high-quality solar power systems and short-term financing, expects to close an additional \$2 million in debt capital before the end of 2015. SunFunder has received early stage support from OPIC's ACEF.

Standard Chartered: In 2014, USAID's Development Credit Authority (DCA) and GuarantCo guaranteed a loan from Standard Chartered that will provide Zenith Bank with \$90 million in new capital earmarked for on-lending to Nigeria's recently privatized distribution and generation companies. The funding is providing much-needed liquidity to the sector and supporting capital expenditures required by these companies to enable reliable power distribution. USAID's DCA and Standard Chartered are working on a number of additional guarantee partnerships across new markets.

FORGING STRATEGIC PARTNERSHIPS

By spurring further investment, building on existing partnerships, and creating new ones, *PowerAfrica* is moving towards its goal of improving energy availability and access for millions of people in sub-Saharan Africa.

Sweden became the first foreign government to make a bilateral financial commitment in support of *PowerAfrica*. In August 2014, Sweden committed \$1 billion, including grants for distribution and transmission projects, as well as guarantees and loans for additional projects. Since then, the Swedish development agency (Sida) has established a new office in its headquarters in Stockholm dedicated to its work in sustainable energy and the *PowerAfrica* partnership. In May 2015, Sida held its first *PowerAfrica* planning workshop in Zambia, to establish priorities and plans for its engagement in the power sector. Sida is developing a program of guarantees and grants focusing on the rural, off-grid sector, which is expected to

reach 1.5 million people in Zambia. The project has a budget of \$11.7 million and is expected to leverage an additional \$117 million by the end of 2019. Sida is also focused on providing assistance instead in Tanzania and Mozambique, as well as regional energy cooperation through capacity building and institutional support to the Southern Africa Power Pool (SAPP), East Africa Power Pool (EAPP), and the Nile Equatorial Lakes Subsidiary Action Program (NELSAP).

“Our work with *PowerAfrica* in Nigeria exemplifies how the right collaboration and financing models can address the problem of power distribution. It also demonstrates our commitment to *PowerAfrica*, a catalyst that galvanizes partnerships and facilitates the delivery of efficient electricity in sub-Saharan Africa.”

— Julio Rojas, CEO Americas, Standard Chartered

MORE THAN 100 PRIVATE SECTOR PARTNERS FUELING POWER AFRICA'S PROGRESS

Abengoa*	Fotowatio Renewable Ventures (FRV) (Denham Capital Management)	Peppermint Energy†*
Abraaj Group	General Electric	Persistent Energy Partners†
Acumen Fund†	Geothermal Energy Association	PowerGen Renewable Energy†*
Aeolus Kenya Ltd	GG Energy Holdings	Powerhive†
AFCORP Investments	Gigawatt Global†*	Proton Energy*
African Capital Alliance*	Global Off-Grid Lighting Association†	Quantum Power*
Africa Finance Corporation	Global Village Energy Partnership†*	responsAbility Investments AG†*
African Infrastructure Investment Mgmt (AIIM)	Globeleq Advisors*	Reykjavik Geothermal*
Aldwych International	Goldman Sachs	Rockefeller Foundation†*
American Capital Energy Infrastructure (ACEI)	Gray Ghost Ventures†	Schneider Electric†
APR Energy	GreenMax*	Shell Foundation†
Azura Power Holdings*	Harith General Partners	SoEnergy International*
Azuri Technologies†*	Hecate Energy	Solar Mosaic†
Bamboo Finance†	Heirs Holdings	Solar Reserve*
Barclays Africa*	Husk Power Systems	Solar Sister†
BBOXX†	IAP Worldwide Services	Standard Bank Group, Ltd
Berkeley Energy*	Imprint Capital†*	Standard Chartered
Beyond Capital Fund†*	Industrial Development Corporation of South Africa*	SunEdison
BioTherm Energy (Denham Capital Management)	Industry Capital	SunFunder†
Black Rhino	Initiative for Global Development	Symbion Power
Blue Haven Initiative†*	Investec Capital*	Tony Elumelu Foundation†
Calvert Foundation†*	Invested Development†	U.S. Energy Association
Capricorn Investments†	JCM Capital*	United Bank for Africa
Christian Super†*	Khosla Impact†	United Nations Foundation†
Citigroup*	Kiva†*	Upepo Energy*
Consolidated Infrastructure Group*	KMR Infrastructure	Vestas*
Corporate Council on Africa	LGT Venture Philanthropy†	Viability Africa
CrossBoundary†	Liberia Energy Network†	Virunga Power†
d.light Design†	Little Sun†*	Vital Capital*
Denham Capital Management	Low Carbon Enterprise Fund (ERM Foundation)†	
Dominovas Energy*	Mobisol†*	
dVentus	National Rural Electric Cooperative Association	
EA Power, Ltd	Nedbank	
EGG-Energy	NextGen Solar	
Eleos Foundation†*	Nigeria Solar Capital	
Embark Energy†	NOVI Energy*	
Endeavor Energy Holdings (Denham Capital Management)	Off Grid Electric†	
Energija Global†	Orchid Business Group	
Fenix International†	Ormat Technologies	

† Beyond the Grid

* New Power Africa Partners
since June 2014



Jake Lyell for Millennium Challenge Corporation

In 2013, the World Bank Group committed \$3.3 billion in new technical and financial support in both loans and guarantees in *Power Africa*'s initial six focus countries of Ethiopia, Ghana, Kenya, Liberia, Nigeria, and Tanzania. In 2014, the World Bank agreed to increase this commitment to \$5 billion. The World Bank Group's FY 2015 Africa energy portfolio consists of 46 active projects totaling \$9.7 billion. To date, \$2.34 billion has been allocated in these six countries. One example of this partnership at work is the World Bank and *Power Africa*'s collaboration with the Ministry of Power in Ghana to develop parameters for screening potential Independent Power Producer (IPP)-led projects.

In 2013, the African Development Bank (AfDB) announced its support to advance *Power Africa*'s goals as an anchor partner, with a commitment of \$3 billion. In 2014, AfDB approved approximately \$335 million in electricity projects in Ethiopia, Ghana, Kenya, Nigeria, and Tanzania. In the first half of 2015, AfDB approved an additional \$265 million in electricity projects in Tanzania and Kenya. AfDB's support of a transmission line in Kenya is pivotal for the Lake Turkana wind project, a *Power Africa* supported project. AfDB has also invested in CEC Africa, a power developer with assets in Nigeria, and broader plans to invest across sub-Saharan Africa.

The New Partnership for Africa's Development (NEPAD), a technical body of the African Union, signed a Memorandum of Understanding (MoU) with *Power Africa* in September 2014. The MoU allows for enhanced collaboration between *Power Africa* and NEPAD to advance the development of energy projects included in the Africa Power Vision — a prioritized list of regional or otherwise potentially transformational energy projects. This partnership will focus on the development of a few projects across sub-Saharan Africa to demonstrate that by working together, we can move beyond making lists of priorities to getting them across the finish line. At the UN Climate Summit 2014, *Power Africa* signed an agreement with Sustainable Energy for All (SE4ALL) to improve access beyond the grid and to develop investment profiles for SE4ALL countries to support transactions. The agreement will also help African leaders to advance regional energy transactions and country coordination.

Power Africa looks to deepen its bilateral and multilateral partnerships as we continue to expand our footprint across sub-Saharan Africa. This year on the sidelines of the African Development Bank's annual meeting, *Power Africa* convened its first ever donor partners meeting. At this event, we rolled out access to an innovative web-based platform to increase communications and strategic alignment with our partners on specific transactions we are jointly moving forward.

CHAPTER 3

ADDRESSING POWER DEMAND NEEDS

“Turning on the lights” in sub-Saharan Africa requires both new sources of generation, as well as the build-out of transmission and distribution systems. *Power Africa*’s efforts have increased available MW online by enabling or accelerating the financial close of many grid scale projects.

To date, *Power Africa* has helped transactions expected to generate 4,100 MW reach financial close. This amount includes approximately 1,600 MW of new power plus approximately 2,500 MW of additional capacity expected to result from the privatization of Nigerian assets. In order to deliver on the new contracted capacity for these plants, upgrades with more private capital and reliable gas supply among other improvements are needed.

REACHING FINANCIAL CLOSE

While the goal for *Power Africa* is to bring megawatts online and increase electricity access to millions of sub-Saharan African households and businesses, reaching financial close is a critical, difficult milestone that represents one of the best measures of *Power Africa*’s impact in the short term. Often the most difficult aspects of closing a power deal are securing the financing and finalizing the necessary agreements with a host government.

Private sector partners repeatedly point to the length of time for projects to reach financial close as a significant barrier to investment. There is an enormous opportunity cost — especially for developers who place their own equity and resources on the line — to operating

in an environment where financial close takes significantly longer than in alternative emerging markets.

In most cases, construction of project-financed power stations cannot start until a project reaches financial close, which can occur only after the proposed developer has reached a number of milestones: demonstrating project, commercial and financial viability, which may include sovereign guarantees or credit support; performing environmental and social assessments; conducting land surveys; reaching Power Purchase Agreements (PPAs); and securing government approvals and permits. Most significant project risks must be mitigated before financial close, or investors will not invest.





As such, *Power Africa's* interventions aim to ensure and accelerate financial close — from facilitating the project's bankability with financing and risk mitigation to providing technical and transaction support that ensures the project is planned and negotiated with best practices and developmental considerations.

We recognize *Power Africa* that stumbling blocks can occur even after financial close is reached. *Power Africa* closely monitors projects and provides support by engaging with local communities, resolving technical issues, and working with host governments to provide assistance, as needed. *Power Africa* continues to support transactions, investors, communities, and governments along the entire spectrum of project development through to power coming online and beyond.

The Millennium Challenge Corporation (MCC), one of the 12 U.S. Government Agencies participating in *Power Africa*, utilizes compacts and threshold programs in order to advance investments in electrical infrastructure and reform agendas in Benin, Ghana, Malawi, Liberia, Sierra Leone, and Tanzania.

In August 2014, MCC signed the \$498 million, five-year Ghana Power Compact, an agreement to create a financially viable power sector that will meet the current and future needs of households and businesses — and ultimately help fight poverty across the country. At the heart of the compact is a strong commitment from the Government of Ghana to implement reforms needed to transform its power sector and put it on a path to profitability and sustainability, ultimately creating a climate that will attract private investment. This includes introducing private sector participation in the operations of the distribution utility, the Electricity Company of Ghana, as well as significant infrastructure investments to improve reliability and reduce technical losses.

In June 2015, the MCC Board of Directors approved the five-year, \$375 million Benin Power Compact. The Government of Benin will contribute an additional \$28 million towards the cost of the program, which seeks to strengthen the country's power sector and draw private investment. The compact will invest in: policy reform and institutional strengthening, with a focus on regulation, tariffs, IPPs, and the national distribution utility; 78 MW of power generation capacity (including 45 MW for utility-scale solar generation); modernization of electrical distribution network in Cotonou, selected regional cities, and construction of a national dispatch center; and off-grid electrification for households, communities, and critical public infrastructure.



TRANSACTION HIGHLIGHTS

Cenpower Kpone Gas

The Government of Ghana (GOG) has pursued its policy of attracting private sector investment for additional generation capacity with the Cenpower Kpone Independent Power Project (KIPP). In December 2014, the Cenpower KIPP achieved financial close. The 340 MW combined cycle power plant is being built on the West African Gas Pipeline (WAGP) route at a cost of approximately \$900 million. Project construction began in January 2015, and commercial operations are expected to begin in 2016. In support of the Cenpower project, *Power Africa* reviewed loan documents; assisted with lender requests; consulted on the PPA negotiation; and provided due diligence on Cenpower's financial models, reports, and recommendations for the Electricity Company of Ghana and the Ministry of Finance and Economic Planning.

Cummins Baringo Biomass

Cummins Cogeneration Limited (CCL) is a joint-venture between U.S.-based Cummins and U.K.-based Gentech. CCL is developing up to 12 MW of biomass-fueled, on-grid electricity generation in Baringo County, Kenya. CCL uses biomass gasification technology that converts biomass to electricity. This process, which uses the Juliflora plant, is not only providing electricity to the grid, but is also helping to eradicate an invasive plant from agricultural and pasture land, watercourses, and roadsides. This venture will also help to stimulate the local economy and create employment opportunities for farmers and workers. Cummins will work with local community-based organizations to train local

workers to harvest the Juliflora plant. Construction of the power project is underway, with the first 2.4 MW due for commissioning by fall 2015. Under the U.S.-Africa Clean Energy Financing facility (ACEF), OPIC provided crucial early-stage funding of \$518,000 to develop up to four additional biomass projects in multiple locations in East Africa to help replicate the Baringo model.

Kinyerezi I Gas

Kinyerezi I is the first of four planned gas-fired power plants built near a gas-receiving station linking the site to Tanzanian natural gas in the south. The 150 MW plant is under construction for the Tanzanian utility TANESCO by Jacobsen Electro Company, and includes four dual fuel (gas and light fuel oil) turbines manufactured by *Power Africa* partner General Electric (GE). *Power Africa's* Energy Advisor assisted TANESCO in reviewing options for ensuring timely payments for the new plant, which is expected to be commissioned by late 2015. Tanzania's efforts to develop its natural gas resources and make them available for power generation is critical to the country's efforts to increase generation capacity while decreasing the overall cost producing power. The plant will be commissioned with light fuel oil initially, but with completion of a new gas pipeline expected by the end of the year, it will begin running on cleaner, domestic natural gas.

Solar Field at the Agahozo Shalom Youth Village

In February 2015, Gigawatt Global (GWG) commissioned an 8.5 MW grid-connected solar power plant in a residential community farm east of the Rwandan capital Kigali. The project represents the first utility-scale solar facility in East Africa adding 6 percent to Rwanda's total energy generation capacity. In March 2015, GWG was nominated for a Nobel Peace Prize for this project. Under ACEF, OPIC funded GWG at a crucial early stage, covering \$400,000 of project preparation costs, including legal fees associated with drafting loan and security documentation relating to the project's financing and PPA negotiations. Proving ACEF's catalyzing effect, the project matured to receive project financing and is now providing power to Rwanda's national grid.

“With continued commitment from OPIC, USAID and the other U.S. Government agencies, we will see the projects initiated under *Power Africa* come to fruition and lead to a ripple effect with a greater number of deals, thereby creating sustainable and robust power infrastructure in several parts of sub-Saharan Africa.”

— Yash Krishna, Managing Director
Cummins Cogeneration Kenya Limited

OVERCOMING OBSTACLES

While investor interest in Africa's power sector is high, bankable projects remain scarce. Energy projects in Africa face significant challenges — some related to broader issues of political uncertainty, corruption, inadequate infrastructure, among others. Others are more specific to risk and financing for energy projects. *Power Africa*'s tools and resources address these challenges by helping advance specific transactions and strengthening the overall environment and institutional capacity for power sector investment.

In Nigeria, *Power Africa* continues to support the government's ongoing reforms in the power sector, including the privatization of previously state-owned assets. However, setbacks including a shortage of gas supply to power plants, a spike in pipeline vandalism, and an ongoing dispute between the government and gas marketers continue to hinder the sector. In addition, the recent political transition — while an overall positive change for the country — has stalled numerous priority transactions.

Power Africa remains committed to working with Nigeria's government and the private sector to realize the successful completion of Azura-Edo, a landmark 459 MW open cycle gas turbine power plant that potentially represents Nigeria's first new project-financed IPP in over a decade. In November 2014, the transaction

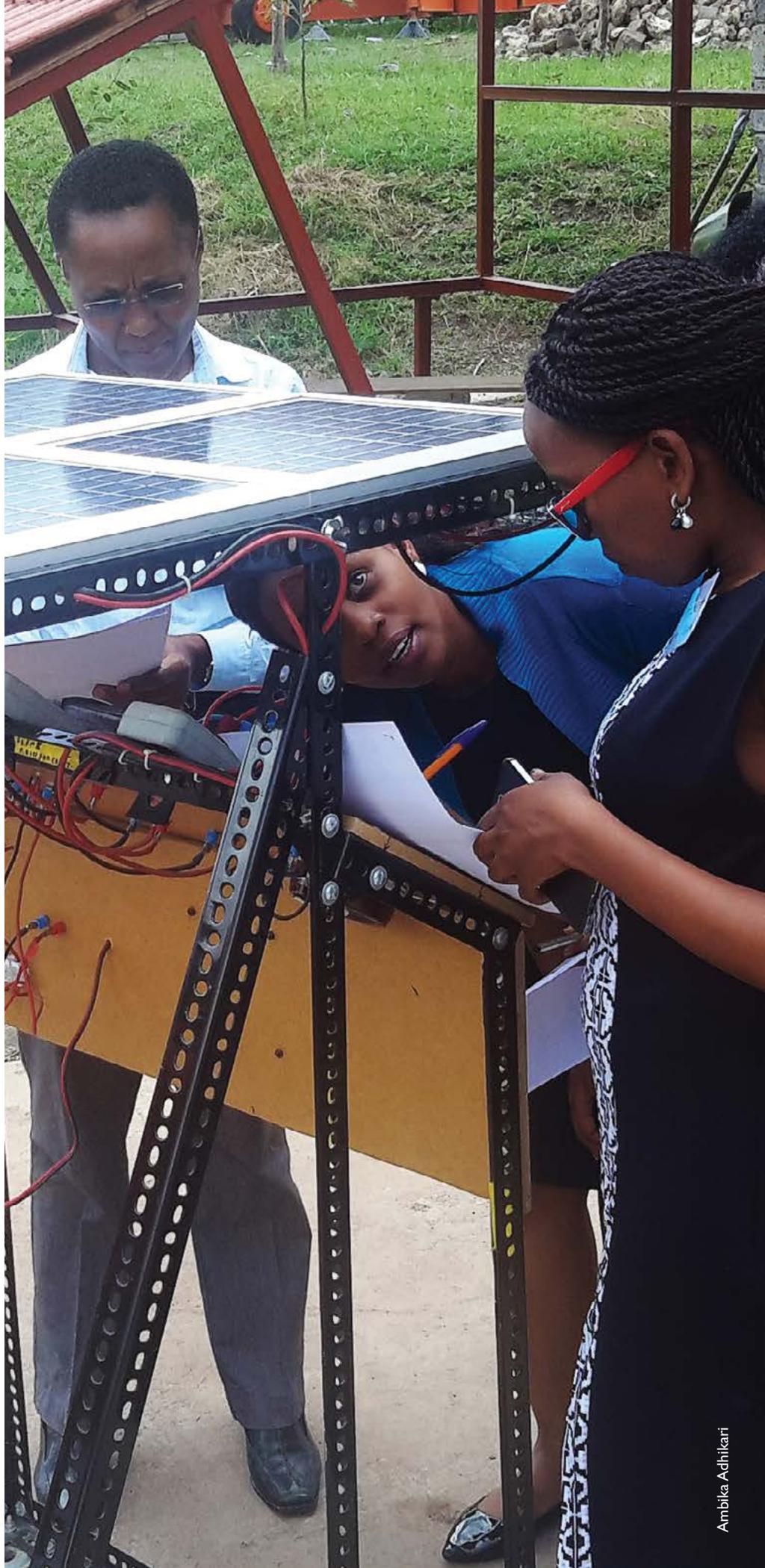
reached the first stage of financial closure thanks to USAID's significant transaction advisory assistance on the Power Purchase Agreement, OPIC's commitment of \$50 million in financing, and additional financing and hedging tools from the World Bank Group. However, a subsequent change to Nigeria's policy on sovereign immunity has stalled progress towards project completion. To overcome this roadblock, *Power Africa* is working closely with the newly elected Government of Nigeria to establish an approach to the sovereign guarantee clause that is agreeable to all parties, which would pave the way for not only Azura-Edo, but a number of significant power projects to follow.

Leadership from the new administration in Nigeria is critical to seeing through the fragile reform process, and finally unlocking the inflows of private capital that are fundamental to realizing the success of privatization. Based on initial interaction with the new government, *Power Africa* is optimistic that Nigeria's energy sector will make great strides in the next 12 months. *Power Africa* will continue to work with the new administration to ensure the reforms in the sector are sustained.

ACEF, an innovative financing program developed by OPIC, USTDA, and USAID, is designed to catalyze much needed private sector investment in clean energy projects in Africa by providing support for early stage project development costs. Since ACEF's launch, OPIC and USTDA have committed funds to 32 renewable energy projects across 10 African countries. The initial \$20 million of funding has the potential to lead to more than 300 MW of new renewable power in Africa and could mobilize more than \$1.3 billion in project capital, a ratio of \$67 for every \$1 from the ACEF program. Already, two projects — Gigawatt Global's 8.5 MW solar project in Rwanda and PAMIGA's micro-lending program for home solar systems — have graduated from ACEF development support to full-debt financing, ultimately receiving financing through OPIC or other sources. Building on this initial success, Secretary Kerry announced at the U.S.-Africa Leaders Summit in August 2014 that the State Department would support an additional \$10 million investment in ACEF, which will be made available to promising projects later in 2015.

“We have been stunned by the pace and magnitude of innovation across the energy sector in sub-Saharan Africa. As a private investor, we are keen to support this growth, but often find ourselves evaluating opportunities in uncharted waters with new business models and sources of revenue that haven’t yet proven out. *Power Africa* has brought to bear the full suite of services offered by the U.S. Government in support of the deployment of private investment capital in promising business models that are increasing long term access to energy in the region. As a result, BHI is able to support private companies earlier and with more capital than we might have in the absence of this highly catalytic support.”

— Lauren Cochran
Director of Private Investments
Blue Haven Initiative



POWER AFRICA'S TOOLBOX AT WORK

A timeline of Cenpower's 350 MW gas-fired power plant in Ghana and *Power Africa's* assistance to the government. As exemplified below, independent private sector power projects in sub-Saharan Africa often take many years to develop. The Cenpower project in Ghana is a good example of the different types of technical and transaction assistance that *Power Africa* employs to help bring projects to financial close.

2003 to 2005

- Country's first private sector sponsored "greenfield" independent power project (IPP) launched by Ghanaian investor group
- Land for the project site identified and feasibility, engineering, and environmental studies initiated

2005 to 2010



- New multi-donor funded project developer — InfraCo joins founding shareholders
- Detailed engineering, social, and environmental studies completed
- First Wholesale Electricity Supply License to an IPP in Ghana obtained
- Power Purchase Agreement (PPA) executed (2009)
- USAID assists the Grid Company of Ghana in drafting Power Transmission Services and Grid Connection Agreements¹
- Procurement process for construction contractor begins

2010 to 2012



- Africa Finance Corporation (AFC) acquires controlling stake in Cenpower, becoming lead project developer and arranger of financing
- AFC requests to restructure the PPA to run on dual fuel (light cycle oil and natural gas when available)
- USAID provides technical assistance and transaction support to the Electricity Company of Ghana (ECG) and the Ministry of Finance helping it to review the project's financial models, re-negotiate the PPA to include cost of service tariff principles, and revise its initial Government Consent and Support Agreement (GCSA) to conform to international best practices^{1,2}

2012 to 2014

- With Amended PPA and GCSA approved by Parliament, Cenpower commences discussions for project financing from lenders

2014



- Lenders seek amendments to the PPA to make the project bankable
- USAID assists ECG in reviewing amendments to the PPA and in revising the tariff¹
- PPA Addendum finalized and Financing Agreement executed
- USAID assists the government of Ghana in reviewing its gas market plan to better enable power plants, including Cenpower, to access gas instead of oil^{2,3}
- December 2014 — Project reaches financial close and construction soon after commences

2015



- USAID assists the government of Ghana in proposing the reverse flow of gas in the West African Gas Pipeline to supply gas to power plants, including Cenpower, and in helping it consolidate its financial frameworks for IPPs³

POWER AFRICA TOOLS

1



Transaction Assistance

2



Capacity Building

3



Policy/Regulatory Design & Reform



ACCELERATING DEAL FLOW WITH FINANCING TOOLS

The issue of greater availability of power cannot be addressed unless there is enough accessible financing and enough bankable deals. *Power Africa* is deploying sufficient accessible financing and enough bankable deals to improve project viability.

For example, USAID’s Development Credit Authority is providing partial credit guarantees. These flexible tools can be used in a wide variety of ways, from covering loans for household connectivity to lending for large scale power projects. To date, DCA guarantees have leveraged approximately \$171 million of private debt finance into power-related projects under *Power Africa*. In 2014, DCA signed five such guarantees: \$90 million for on-lending to Nigerian distribution and generation companies; \$50 million for a portfolio of distributed solar-battery hybrid power systems in Nigeria; \$11 million for a 10 MW run-of-river hydro project in Tanzania; \$12 million for a 10 MW hydro project on the Kiwira River; and \$8 million for retail loans

to finance household connections to local power distribution in Kenya.

As part of its *Power Africa* lending portfolio, the Export-Import Bank (Ex-Im) provided a \$17 million loan guarantee for BOAD, the West African Development Bank, to support long-term financing for the Azito Power project in Cote d’Ivoire — financing that will support 100 U.S. jobs in Schenectady, NY, and Bangor, ME. Converting the existing 288 MW simple cycle plant to a 426 MW combined cycle power plant will increase its capacity by 138 MW. Ex-Im financing is tied to the procurement of a condensing steam turbine for combined cycle conversion. The conversion of Azito will boost electricity supply in the country by 15%. The expansion will create one of the most efficient power plants in West Africa, and provide one third of the electricity capacity in Côte d’Ivoire.

In June 2015, OPIC’s Board of Directors approved \$350 million in financing for two thermal generation power facilities: Senegal’s Cap des Biches (53 MW) and Ghana’s Amandi (approx.

200 MW). Including these projects, OPIC has now approved \$1.1 billion in funding and insurance for power sector projects in sub-Saharan Africa since June 2013. (This figure includes approvals for projects which will partially or fully utilize OPIC funds to on-lend or otherwise support power projects in sub-Saharan Africa).

When projects require further risk mitigation, other innovative tools sometimes need to be utilized to attract investors. One new structure that is being tested in Nigeria is a Put-Call Option Agreement, in which the host government will purchase an asset at an agreed price in the event of default. Although still a contingent liability to the host government, this provides adequate comfort to investors to help deals move forward.

Power Africa continues to demonstrate that there are solutions available to address the energy sector’s challenges through the joint efforts of the private sector, host governments, and bilateral and multilateral partners.

CHAPTER 4

INCREASING ACCESS TO ELECTRICITY

In 2014, President Obama announced a new ambitious goal of adding 60 million new connections throughout sub-Saharan Africa. Although a “connection” is typically thought of as running a power line directly to a building, that’s not always the case. There are millions of homes located close to the grid, but that are not connected to it — often due to the high cost of connections. The definition of what constitutes a connection is also less applicable in rural areas where houses and businesses are far from the central power grid. Meeting the ambitious target for access requires both expanding grid access and deploying of off-grid systems.



MOVING BEYOND THE GRID

Recognizing that *PowerAfrica* cannot achieve energy access goals through the use of large grid extension projects alone, *PowerAfrica* launched Beyond the Grid in June 2014, a sub-initiative focused on unlocking investment and growth for off-grid and small-scale energy solutions on the African continent.

These off-grid, small-scale energy solutions can more reliably, rapidly, and cost-effectively bring power to communities that may not otherwise get access to the traditional grid. These solutions also generate more economic opportunity as creative small and medium enterprises develop and operate off-

grid and small scale technologies in their communities to serve the energy needs for Africa's rural poor. Beyond the Grid is partnering with more than 40 investors and practitioners that have committed to invest more than \$1 billion into off-grid and small-scale solutions over the next five years. MCC is using its resources to increase its off-grid activities, and has incorporated into its upcoming Benin Power Compact an off-grid program that is expected to bring innovative business models and technologies to increase electricity access using renewable energy resources.

“CrossBoundary Energy’s launch of solar financing solutions for African enterprises has been greatly supported by our participation in *PowerAfrica*’s Beyond the Grid initiative. The opportunity to directly engage with U.S. Government stakeholders has assisted us with relevant OPIC and USAID programs, while the *PowerAfrica* private sector forums have helped us engage with peer firms doing similar work and provided greater exposure to interested investors. *PowerAfrica* is one of the pioneers of an innovative and more transaction-centered approach to development, for which we have long hoped.”

— Jake Cusack, Managing Partner
CrossBoundary Energy



TRANSACTION HIGHLIGHTS

PowerAfrica's commitment to access helps drive innovative projects such as the "pay as you go" solar companies Off Grid Electric and M-Kopa by providing early-stage funding through ACEF and the U.S. Trade and Development Agency (USTDA).

Some of the access-oriented projects that have received funding in the past year include:

Participatory Microfinance Group for Africa (PAMIGA): OPIC partnered with the microfinance network PAMIGA on a project to provide small loans to African farmers to purchase home solar kits. PAMIGA is the first recipient of financing through OPIC's Portfolio for Impact, a program to facilitate financing of highly developmental and innovative early-stage projects. OPIC first funded PAMIGA at an early stage through ACEF, then provided \$4.75 million in financing to expand the microfinance lender's portfolio. Ultimately, OPIC support, combined with other financing, will enable the issuance of 100,000 micro loans across eight African countries.

Off Grid Electric: Four years ago, start-up Off Grid Electric, a founding partner of Beyond the Grid, set out to address the electricity access gap in Tanzania. After early-stage support from ACEF and USAID's Development Innovation Ventures Program, the company raised private equity and debt. Then in 2015 the company announced a goal to bring affordable electricity to one million Tanzanian homes by 2017. As of January 2015, more than 30,000 households in Tanzania were already receiving electricity through M-POWER, Off Grid Electric's local brand.

Off-Grid Challenge Awardees: With support from GE and USAID, USADF has already exceeded its original Off-Grid Challenge commitment of \$2 million — approving more than \$2.8 million for 28 awards in six countries. These African companies and organizations will provide off-grid solutions that deploy renewable resources and power local economic activities in sub-Saharan Africa. For example, the Afrisol Energy Ltd. Nairobi Biogas Project in Kenya will utilize bio-digesters to produce electricity and biogas for small businesses in Nairobi's urban slums. Mibawa Suppliers in Kenya will expand its delivery of pay-as-you-go lighting and chargers to households in rural parts of western Kenya.

Tulila Hydro: In July 2014, Tulila Hydroelectric Plant reached financial close on a project to build, own, and operate a run-of-river 7.5 MW hydropower plant located on the Ruvuma River in southern Tanzania. The project is being developed by the African Benedictine Sisters of St. Agnes Chipole Convent. Managing Director Sister Yeola Luambano has been a particularly strong force in pushing this project forward. In support of the project, *PowerAfrica's* Transaction Advisor facilitated support letters to the lenders from Tanzania's Ministry of Energy and Minerals and TANESCO, a final hurdle to reaching financial close with few conditions precedents. Construction of the project is underway and completion is currently scheduled by the third quarter of 2015.

Amahoro Energy: USTDA provided a grant to Amahoro Energy, a Rwandan company formed to electrify the Shyira Hospital in the country's Northern Province and to provide reliable energy to the local population. The project will support Amahoro's plans to develop a greenfield run-of-the-river hydroelectric plant and to upgrade and expand an existing small hydropower site. This effort will bring over 6 MW of new generation online. The project expects to reach financial closure in late 2015.

Tanzanian company and *PowerAfrica* partner Off Grid Electric launched a "Million Solar Homes" initiative with the Government of Tanzania that aims to connect over one million Tanzanian off-grid households to modern energy and create 15,000 jobs by the end of 2017. The timeline below highlights how off-grid companies can access greater levels of support as they scale up.

INVESTMENT TIMELINE

- 2011: Company founded
- 2013: DIV Stage 1 and OPIC ACEF
- 2014: Raises \$7 million in equity round
- 2014: DIV funds Stage 2 for \$1 million
- 2014: Raises \$16 million in equity round
- 2015: Raises \$7 million in debt (\$4.5 from IFC)
- 2015: Announcement of 1 million solar homes initiative with government

ACCESS: DEFINITION AND PROGRESS TOWARDS 60 MILLION CONNECTIONS

Power Africa is defining access in line with the United Nations' Sustainable Energy for All (SE4ALL) definitions for access (Global Tracking Framework), which starts with the minimum level of "task lighting" and cell phone/radio charging. While that first kWh or lumen is the most valuable, *Power Africa* also strives to achieve community level solutions that will offer "access" above that first tier.

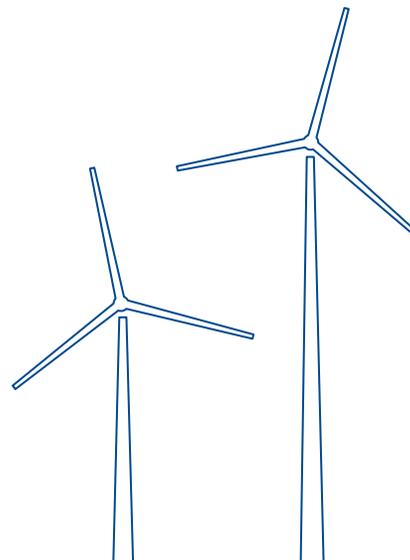
Power Africa counts new connections in two ways: (1) through inferred access from new generation, and (2) through new grid connections or new off-grid access directly enabled by *Power Africa*.

New generation can be linked to connections because it can enable utilities to increase access by removing capacity as a constraint to grid expansion. Computing "inferred access" (i.e., estimating how many new connections could result from each new MW in generation) is not an exact science. *Power Africa* makes an inferred access calculation by estimating the average number of households that can be served by

additional MW of new generation capacity. The estimate is based on World Bank methodology and takes into account existing residential and per capita consumption, household size, capacity factors for various forms of generation, and other relevant metrics to derive these estimates. More directly, *Power Africa* is working to enable the build-out of distribution systems, new grid connections, and off-grid systems, which are counted toward the access target.

As *Power Africa* expands, it will further refine and develop in a transparent manner the methodology for assessing progress towards meeting the connection goals, both on and off the grid.

Power Africa is making progress on its access target of 60 million connections by enabling greater capacity on the grid and helping companies scale up off-grid solutions. *Power Africa* is indirectly assisting with new connections through ensuring there is additional power available to justify extending the grid to new end-users. Using the inferred access methodology, the new MW from *Power Africa* projects will enable approximately 4 million new connections. Through support to ACEF and the *Power Africa* Off-Grid Challenge, *Power Africa* has funded off-grid projects that will lead to an estimated 1 million additional connections. These numbers should grow rapidly as *Power Africa* expands its support for grid connections, including providing loan guarantees for households in Kenya as well as funding additional off-grid projects.



CHAPTER 5

IMPROVING THE ENABLING ENVIRONMENT

Power Africa is founded on the premise that capacity building, private sector investment and public policy reform are critical to expanding and sustaining electricity access. *Power Africa* works with governments that demonstrate the political will to implement difficult, but necessary, reforms to open their energy sector to private investment. Our support to country-led efforts have focused on key factors that facilitate private sector participation, promote electricity trade, ensure commercially viable distribution to end-users, promote investor confidence, and ensure that power sector improvements contribute to a country's broader economic and social development goals. We bring together some of Africa's and the world's most brilliant minds to tackle or simplify the most difficult and time-consuming issues.

BUILDING CAPACITY

Power Africa is helping build much needed legal capacity to improve and expedite negotiations between public and private sector entities. *Power Africa*, through the U.S. Department of Commerce's Commercial Law Development Program (CLDP), finalized and rolled out the world's first practitioner's guide to drafting Power Purchase Agreements. CLDP brought together African government lawyers who are directly involved in drafting these documents with the lawyers who represent banks and project developers to come up with a clear guide in both English and French (www.usaid.gov/powerafrica/PPAhandbook) that will help reduce the time it takes to negotiate deals.

Additionally, *Power Africa* has made the African Development Bank's African Legal Support Facility (ALSF) available to partner governments so that they can hire international legal counsel to represent them and train local lawyers when negotiating energy deals. *Power Africa* is actively responding to African government requests for support, and has helped the government of Ethiopia deploy ALSF-provided legal counsel to assist them with the negotiations for the 500 MW Corbetti geothermal project that is part of the potential 1000 MW Reykjavik Geothermal development. By facilitating high-quality international legal support for projects such as Corbetti, *Power Africa's* aim is not to provide support for just one project, but to build government capacity to better negotiate many independent power projects over the years to come.

In addition, *Power Africa* is in the process of collaborating with President Obama's Young African Leaders Initiative (YALI) to bring brilliant young African leaders working in the energy sector to the United States for practical learning and training.

LEGAL, REGULATORY AND POLICY REFORM

Power Africa works with committed African leaders to support their efforts at making the legal and regulatory reforms needed to create an energy sector inviting to private investment. Towards this end, *Power Africa* provides technical assistance and capacity building to support:

- Strong, Transparent Legal and Regulatory Frameworks
- Creditworthy Off-takers
- Cost-Reflective Retail Tariff Structures
- Technical and Commercial Efficiency
- Clear and Transparent Procurement Processes
- Sound, Strategic and Integrated Power Sector Planning
- Streamlined and Transparent Processes for Project Development
- Increased Clean Energy Share
- Strong Regional Power Pools
- Universal Electricity Access, Achieved through the Strategic Use of On-grid, Off-grid, and Small-scale Solutions
- Adherence to Internationally-Recognized Environmental and Social Standards and Best Practices
- Gender Equality and Female Empowerment

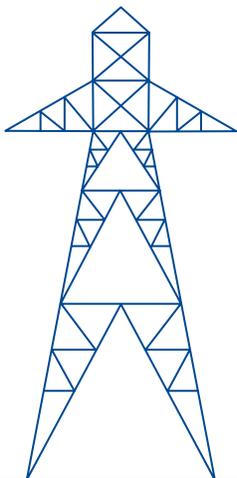


Power Africa contributed to a number of significant policy reforms and the development of enhancing enabling environments in the following countries:

Ghana: *Power Africa*, the World Bank Group, and the Government of Ghana (GOG) are collaborating on sector reform issues, including tariff reform, private sector participation, and securitization for natural gas and electricity supply chains. In August 2014, the Millennium Challenge Corporation (MCC) signed the Ghana Power Compact, an investment of up to \$498.2 million to support the transformation of Ghana's electricity sector and stimulate private investment, which has bolstered the Electricity Company of Ghana. Ensuring that tariffs fully reflect the cost of producing power is critical to the liquidity of the institutions in the sector and helps attract investors who can be confident that their investments will yield a return. MCC estimates that its work with the GOG to reform the country's power sector is expected to catalyze at least \$4.6 billion in new private energy investment and activity from American firms in the coming years. As required under the MCC compact, the GOG announced in April 2014 that it would seek a concession for a private firm to run its main distribution utility.

Kenya: Ensuring that energy projects meaningfully engage local communities and adhere to sound environmental practices is a core element of *Power Africa's* engagement. When the Kinangop 60 MW wind power (KWP) project was halted due to community opposition, *Power Africa* actively engaged project developers, financiers and the highest levels of the Kenyan government to try to find a solution to the issue at hand and save the project from imminent collapse, which would have a devastating impact on private sector investments in the country. Negotiations are still ongoing. In response to the Kinangop project and similar community engagement issues in Kenya, *Power Africa* is initiating a new program to help ensure that private sector renewable energy projects actively involve, support and protect local communities, including women and youth, and more effectively address social and environmental issues and concerns.

Power Africa also continues to work with Kenya's Geothermal Development Company (GDC) to explore different investment models for engaging the private sector in the development of future geothermal energy fields and options to use excess geothermal heat for commercial geothermal direct use applications in the area of dairy and meat processing, as well as tea drying and fish farming.



Liberia: MCC, USAID, and the State Department are working closely together with the Government of Liberia to develop a compact primarily focused on the electricity sector. *Power Africa* helped facilitate alignment of donor policy reform objectives on draft electricity legislation and a plan to improve effectiveness of the Liberia Electricity Corporation (LEC). The LEC Board decided in June 2015 to keep its management contract in place and is working closely with *Power Africa* on a study to evaluate options for private sector participation. While the broader electricity sector legislation is expected to reach the legislature by late 2015, the Senate in Liberia passed legislation in June 2015 that formally authorizes the Rural and Renewable Energy Agency (RREA), following the House's passage of similar legislation last year. In the midst of the Ebola crisis, USAID maintained its long-standing commitment to RREA and launched a capacity building program with *Power Africa* partner, the National Rural Electric Cooperative Association.

Malawi: Through a MCC compact, *Power Africa* is investing \$350 million to revitalize the country's energy sector to drive trade and investment. In support of this compact, USTDA hosted delegates from Malawi's power sector on a reverse trade mission to the United States and signed a grant agreement with the Ministry of Natural Resources, Energy and Mining to support the development of hydropower. To generate further investor interest, MCC led a business development mission to Malawi in June 2015. Additional investments include infrastructure upgrades and support to the Malawi government's policy reform agenda utility turnaround efforts, and institutional capacity building, all to improve the availability, reliability, and quality of the nation's power supply.

Tanzania: The nation released its new draft energy policy for 2015, which includes items promoting private sector participation in the energy sector. Amendments to the Public-Private Partnership Act (PPP) were passed and signed in January 2015. The legislation creates a new PPP Centre aimed at streamlining the PPP process while also requiring increased competition for unsolicited proposals. A U.S. Department of Treasury Resident Advisor works in the Ministry of Finance PPP unit to facilitate the government's work on PPPs, which are expected to play a key role in addressing energy needs.

“The *Power Africa* initiative has done a great job of focusing attention on both the great need for and the major opportunity inherent in developing the power sector in Africa. The initiative has laid the foundation for real, long term change in the power landscape on the continent. The key will be having the patience to sustain the effort — timelines in infrastructure are long. These are large, complex projects of strategic interest to their home countries and it takes time to ensure that all stakeholder needs are being met.”

— Michael Philipp, Chairman, Reykjavik Geothermal



Sameer Hajaj and SolarNow

CLEANER ENERGY INVESTMENT AND INTEGRATION

Since its launch in 2013, *Power Africa* has emphasized the development of cleaner energy sources, especially renewables, which can be tapped throughout sub-Saharan Africa.

Power Africa's Grid Management Support System Program (GMSP) in Kenya helps the Kenya power grid integrate wind, solar, and other intermittent sources. GMSP also identifies key gaps in system operations, and supports the development of Transmission and Distribution Grid Codes to regulate the electricity network. Grid codes define the rules for connecting to and using the transmission system to help consistently ensure safety, security, and efficiency.

The Government of Kenya has also proposed auctions for renewable energy. Reviewed by *Power Africa*, the auctions would replace feed-in tariffs for projects exceeding 10 MW and should enhance private sector investment in clean energy.

Power Africa also created the grid code for Swaziland and helped revise the grid code in Lesotho to make it suitable for the integration of renewables.

USTDA's U.S.-Africa Clean Energy Standards Program will include a series of workshops across the continent to facilitate greater engagement between the U.S. and Africa on technical standards and regulations for energy infrastructure. The program will help ensure African markets adhere to internationally



recognized standards, which are key to embracing new technologies and building modern energy infrastructure.

The West Africa Regional Clean Energy Advisor for *Power Africa*, based in Accra, works with the Private Financing Advisory Network (PFAN), advising clean energy developers, providing mentoring services, and connecting clean energy developers to financiers. Additionally, the *Power Africa* transaction advisor provided support to several potential renewable energy projects.

In Zambia, Namibia, and Mozambique, *Power Africa* is spearheading the formulation of Renewable Energy Feed in Tariff (ReFIT) programs. These programs incentivize the development of small scale renewable energy

projects and are an effective means to attracting private sector investment in clean energy in both on and off grid applications. In Zambia, *Power Africa* supported the government to develop the ReFIT policy and their efforts to determine the pricing of individual technologies.

In Tanzania, in collaboration with the World Bank, *Power Africa* helped develop a cost-reflective ReFIT Program for small hydro, wind, solar, and biomass based projects under 10 MW. It involves associated regulations in addition to a Power Purchase Agreement (PPA), Guidelines, and Application Procedures.

Building on this *Power Africa* and World Bank support, Tanzanian regulator EWURA created a “second generation” framework to incentivize and regulate small small-scale power producers and mini-grids. This framework has played a key role in making Tanzania a leader in off-grid energy development.

In Nigeria, *Power Africa* transaction advisors have worked closely with the Bulk Electricity Trading Company to negotiate and finalize a model PPA for solar and wind energy projects connecting to the grid. Six solar “farms” totaling 600 MW are in various stages of project development and PPA negotiations, all of which require a bankable PPA to lock in project finance terms. Key to these negotiations is agreement on a “tie-in tariff” that can withstand critical review with the electricity regulator.

Power Africa also sponsors activities that will help Nigeria’s distribution companies develop roadmaps to implement smart grid solutions throughout their networks. One feasibility study will assess the technological, economic, regulatory and financial frameworks required to expand the Eko and Ikeja Electricity Distribution Companies’ networks by focusing on business process reengineering and distribution automation. The study will include recommendations on how the companies can collaborate to ensure network interoperability.

In Ghana, *Power Africa* facilitated negotiations for several renewable energy projects in keeping with the GOG’s goal of increasing the share of generation from renewables to 10 percent by 2016. Ghana’s Energy Commission has become a leader in appliance standards, labeling, and testing — embracing energy efficiency to advance sustainable energy and expand access.

The Economic Community of West African States (ECOWAS) has made important strides.

Power Africa is working with host governments, the private sector, and the National Association of Regulatory Utility Commissioners (NARUC) to support West African regulators. NARUC and its partners developed a cornerstone document, *Principles of Regulating Clean Energy in the ECOWAS Region*, finalized in October 2014. The Principles will help regulators and policymakers understand the regulations and incentives available for renewable energy and how different choices might play out in their national markets.

BUILDING REGIONAL TRADE CAPACITY

Solutions to the energy shortfall in sub-Saharan Africa require regional efforts, as well as national ones. Optimization of natural, technical, and financial resources calls for increased cross-border trade and related governance and planning structures. In the past year, *Power Africa* support to the West Africa Power Pool (WAPP) has been instrumental in the signing of the Joint Development Agreement between WAPP and the Africa Finance Corporation, a *Power Africa* partner. The two entities will develop the first regional PPP power projects in Ghana and Benin, with *Power Africa* providing continuing support via a transaction adviser who will aid developing off-taker, fuel supply and power purchase agreements. *Power Africa* is also providing support for additional staff at WAPP to manage and monitor the progress of regional transmission interconnections.

In East Africa, *Power Africa* works with the East Africa Power Pool, the Nile Equatorial Lakes Subsidiary Action Program and member utilities to advance power trade. In November 2014, *Power Africa* convened members of the East Africa Power Pool to help power planners and grid operators accommodate and dispatch intermittent renewables throughout the region. Twelve regional utilities and ten EAPP member countries participated, setting the stage for expanded regional cooperation.

While the East Africa Power Pool is still in an early development stage, the successful development of key bilateral and multilateral agreements are critical first steps that will set the stage for essential standards and guidelines to be adopted more broadly. Working with utilities and regulators from Ethiopia, Kenya and Tanzania, *Power Africa* developed Principles for the Negotiation of Wheeling Agreements that was approved by the EAPP's Independent Regulatory Board to guide the countries in negotiating the sale of 200 MW of power from Ethiopia to Tanzania over Kenya's transmission lines.

“*Power Africa* in conjunction with OPIC was crucial to assist Aldwych with bringing the 310 MW Lake Turkana Wind Project to financial close. OPIC's debt commitment together with *Power Africa's* involvement in studying the grid with an aim to ensure the wind power is integrated into the system was essential for us and the country. In general, *Power Africa* is now one of the first ports of call when we begin to look at a new country or a new project. Their responsiveness, expertise and resources are changing the way we view the development risk of important deals.”

— Christian Wright, Regional Director, East Africa, Aldwych International Ltd.



LOOKING FORWARD

With President Obama's leadership, and the hard work and steadfast commitment of our more than 100 private sector partners, and our multilateral and bilateral partners, *Power Africa* is demonstrating the value of unifying the public and private sectors to increase electricity access throughout sub-Saharan Africa. Addressing the critical energy needs and gaps where more than 600 million people still lack basic access to electricity will require a tremendous amount of effort for years to come. Together with our dedicated partners, *Power Africa* looks forward to the challenge.



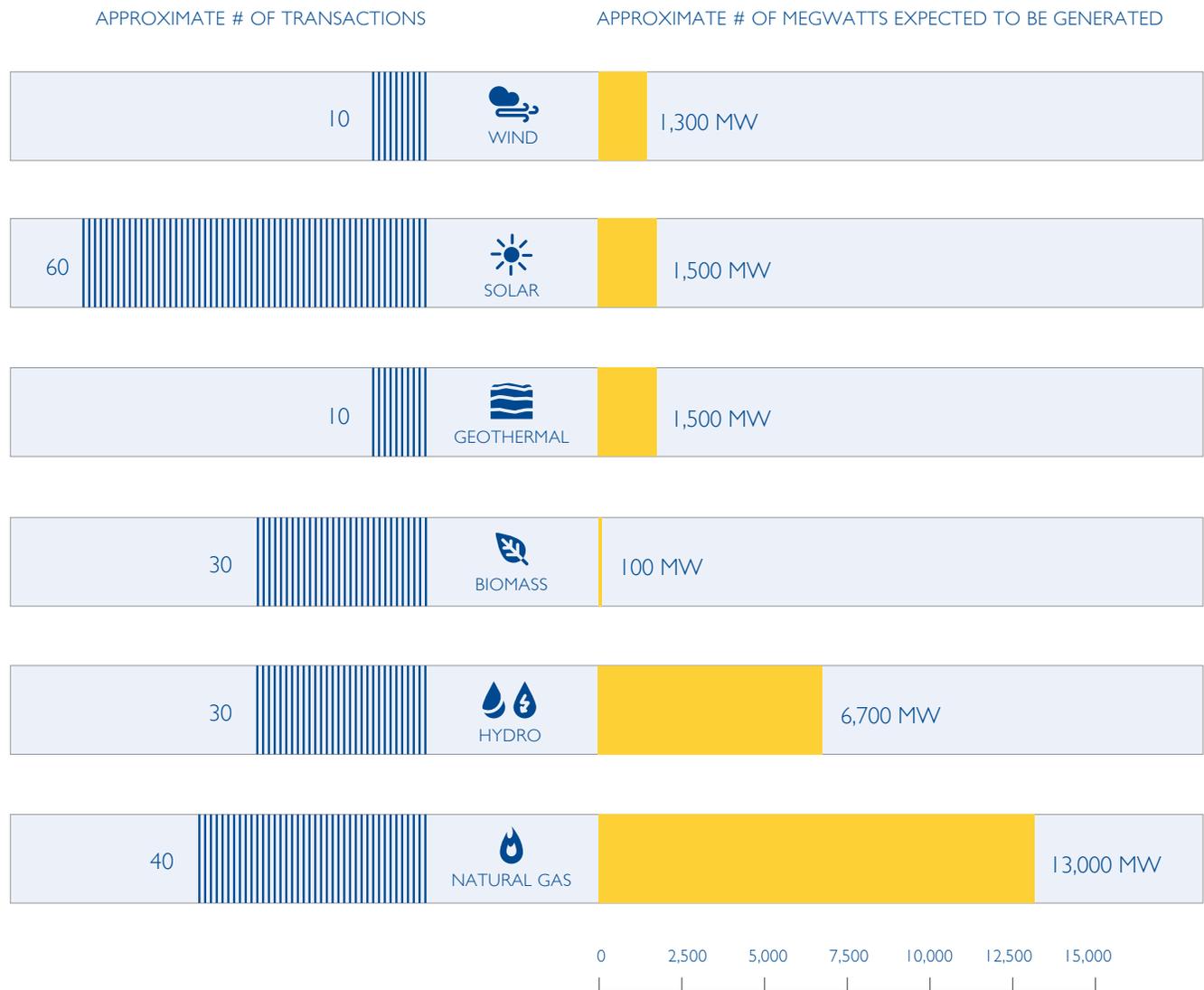


ANNEX I

POWER AFRICA'S TRANSACTION TRACKER

As of June 2015, *Power Africa* has identified and is actively monitoring more than 24,000 MW of projects and assisting a subset of them with *Power Africa* tools. This graphic provides an illustrative summary of these transactions. *Power Africa* continues to look for new deals it can support with its innovative toolbox.

BY TECHNOLOGY



ANNEX 2

PROJECTS TO REACH FINANCIAL CLOSE TO DATE: A CRITICAL MILESTONE TO BRINGING MEGAWATTS ONLINE

COUNTRY	NAME	MW
GHANA	Cenpower Kpone Gas	350
KENYA	Cummins Baringo Biomass	8.4
	Kinangop Wind	60
	Lake Turkana Wind	310
NIGERIA	Azura-Edo*	459
	Afam Independent Power	180
	Elema IPP	75
	Omoka IPP	25
	Privatized Generation Assets in Nigeria	2496
RWANDA	Gigawatt Global Solar	8.5
TANZANIA	Kinyerezi I Gas	150
	Tulila Hydro	7.5

** Azura-Edo reached the first stage of financial closure in November 2014, but to date not all conditions precedent have been fulfilled*

ANNEX 3

ENABLING ENVIRONMENT PRINCIPLES

PowerAfrica is founded on the premise that private sector investment and policy, legal, regulatory, and governance reforms are critical to expanding electricity access and achieving sustainable growth in sub-Saharan Africa's power sector. Reaching *PowerAfrica*'s goals — adding 30,000 MW of new, cleaner electricity generation capacity and increasing electricity access by at least 60 million connections — requires creating and maintaining a sound and sustainable climate for investment and governance. These efforts must focus on key enabling factors that facilitate private sector participation, promote electricity trade, ensure commercially viable distribution to end-users, promote investor confidence, and ensure that power sector growth contributes to a country's broader development goals.

To this end, *Power Africa* partners with host-country governments to strengthen enabling environments and implement critical reforms. While every economic and political environment requires a unique, tailored approach, *Power Africa* is guided by two core sets of principles that highlight key elements for achieving our capacity and access goals. The first comprises principles for creating and maintaining a functional power system that meets demand, remains financially solvent, attracts private and public investment, and provides quality, affordable service to end-users. The second includes principles to ensure that the power sector contributes optimally to a country's national and regional agenda for environmental, economic, and social development.

PRINCIPLES FOR A STRONG, FUNCTIONAL AND SUSTAINABLE POWER SYSTEM

Strong, Transparent Legal and Regulatory Frameworks

Creating and maintaining an effective enabling environment requires a strong and transparent regulatory framework that facilitates both private and public investment. This framework should include a regulatory institution that [1] is autonomous, [2] has clear authority and capacity to fulfill its mandate, and [3] is held accountable for its decisions and actions. It should also establish and maintain clear relationships and lines of accountability between key power sector institutions, including ministries, utilities, and regulators. The framework should also clarify important regulatory aspects such as pricing, land rights, offtake arrangements, and performance standards — which can reduce investor risk while contributing to other public policy objectives such as environmental protection and universal access.

Creditworthy Off-takers

Lack of investor confidence in the creditworthiness of off-takers hinders electricity sector development. Efficient, financially solvent off-takers mitigate investor risk and encourage increased private sector participation.

Cost-Reflective Tariff Structures

Investments in the power sector will only be sustainable if the tariff structure accurately reflects costs and risks, and provides a rate of return that encourages continued private sector engagement. This must be carefully balanced against the critical need to protect consumers, ensure affordability, and expand electricity access. Cost-reflective tariffs often take time to achieve, and there are many different ways to structure the retail tariff system depending on the best fit for a particular country or context. In general, effective tariff management strategies include public engagement, transparent processes, regular adjustment, and appropriate measures to ensure affordability.

Technical and Commercial Efficiency

Improved technical and commercial efficiency in the electricity sector will enable delivery of more services to more consumers; lower costs throughout the supply chain; and increase quality and commercial viability. Efficiency can be improved through interventions including infrastructure investment and maintenance, improved metering and bill collection, demand-side management, and consumer education.

Clear and Transparent Procurement Processes

Procurement processes that integrate international best practices such as fair and competitive bidding, life-cycle cost analysis, and best-value determination will increase investor confidence, lower costs, and facilitate sustainable, longer-term investments.

Sound, Strategic and Integrated Power Sector Planning

Effective planning helps ensure the development of a resilient and least-cost power system that continues to meet demand over time. Power sector planning should consider and integrate key development goals as well as interactions with water, land-use, and air quality. Effective planning will prioritize an optimal mix of energy resources to meet the expected load, new or extended transmission and distribution infrastructure, energy efficiency measures, and off-grid solutions.

Streamlined and Transparent Processes for Project Development

Overly complex procedures for mobilizing energy projects often hinder sector development. Streamlining and clearly communicating the steps required to achieve essential project components such as land acquisition, feasibility studies, standards compliance, helps private sector actors navigate and accelerate this process while bringing down transaction costs.

PRINCIPLES FOR POWER SYSTEMS THAT FUEL ECONOMIC AND SOCIAL DEVELOPMENT

Increased Clean Energy Share

Employing clean energy technologies is crucial for diversifying energy markets, increasing energy security and resilience, expanding off-grid access, and mitigating environmental impacts. Portfolios of targeted regulatory and support mechanisms contribute to a framework that incentivizes renewables at multiple scales.

Strong Regional Power Pools

Functional regional power pools facilitate cross-border electricity trade, create economies of scale, and present opportunities to harness regional energy resources at lower cost. Critical to the success of regional power pools is the extent to which participating governments and operators can define a common legal and regulatory framework. Fundamental consensus building documents including intergovernmental and inter-utility MOUs should clearly define utilities' contractual rights, ownership of assets, and basic principles covering the technical planning, operations, and commercial aspects of regional power system integration.

Universal Electricity Access, Achieved through the Strategic Use of On-grid, Off-grid, and Small-scale Solutions

Investments in new power supply should respond to the demand of key market sectors, including commercial and urban consumers, while expanding access to underserved, low income, and off-grid communities. Interventions to support universal access should consider a strategic mix of on-grid, off-grid, and small-scale power solutions such as mini- and micro-grids. Activities could also include strengthening or creating rural electrification agencies; establishing targeted cross-subsidies; implementing net metering programs; and promoting the development of a functional market for mini-grids and other distributed generation solutions.

Adherence to Internationally-Recognized Environmental and Social Standards and Best Practices

The environmental and social soundness of power sector projects are critical to the success and sustainability of these investments. Engagement with local communities, including traditionally marginalized groups, to identify and mitigate risks begins at the earliest stages of project development and continues throughout project implementation in a transparent and inclusive manner. Demonstrated commitment to environmental and social sustainability is evidenced by the adoption and application of national laws, regulations, and best practices.

Gender Equality and Female Empowerment

Advancing gender equality and female empowerment is a key tenet underlying US foreign policy and development assistance. The human development and economic growth opportunities that arise from growth in the energy sector often may not offer equal participation and impact between men and women. Energy related projects, programs and policies that explicitly recognize potential imbalances and intentionally strive to reduce inequities and foster effective engagement of all, result in better outcomes, both in terms of the sustainability of the energy sector and human development opportunities.



ANNEX 4

POWER AFRICA ASSISTANCE IN SUB-SAHARAN AFRICA: CATEGORIZED BY U.S. GOVERNMENT AGENCY

ANGOLA DOS DOC DOE	CENTRAL AFRICAN REPUBLIC DOS	ETHIOPIA USAID OPIC DOS DOC DOE USADF USTDA	GUINEA-BISSAU DOS
BENIN USAID MCC OPIC DOS DOE	CHAD DOS	COMOROS DOS	KENYA USAID OPIC DOS DOC DOE USADF
BOTSWANA DOS	CONGO (BRAZZAVILLE) DOS	GABON DOS	LESOTHO USAID DOS
BURKINA FASO OPIC DOS	COTE D'IVOIRE EX-IM DOS	GAMBIA DOS	LIBERIA USAID MCC DOS USADF USACE
BURUNDI USAID USTDA DOS	DJIBOUTI USAID DOS DOE	GHANA USAID MCC OPIC EX-IM USTDA DOS DOC DOE USADF USACE	MADAGASCAR OPIC DOS
CAMEROON OPIC DOS	DRC USAID DOS	GUINEA USAID DOS	MALAWI MCC USTDA DOS
CAPE VERDE DOS			

MALI USAID DOS	NIGER DOS	SEYCHELLES DOS	TANZANIA USAID MCC OPIC USTDA DOS DOC DOE USADF USACE DOT
MAURITANIA DOS	NIGERIA USAID OPIC USTDA DOS DOC USADF	SIERRA LEONE USAID MCC DOS USACE	
MAURITIUS DOS	RWANDA USAID OPIC USTDA DOS	SOUTH AFRICA USAID OPIC EX-IM USTDA DOS DOC DOE	TOGO OPIC DOS
MOZAMBIQUE USAID USTDA DOS DOC	SAO TOME AND PRINCIPE DOS	SWAZILAND USAID DOS	UGANDA USAID OPIC DOS
NAMIBIA USAID OPIC DOS	SENEGAL USAID OPIC DOS		ZAMBIA USAID DOS

LEGEND

DOC
Department of Commerce

DOT
Department of Treasury

USACE
U.S. Army Corps of Engineers

DOE
Department of Energy

MCC
Millennium Challenge Corporation

USADF
U.S. African Development Foundation

DOS
State Department

OPIC
Overseas Private Investment Corporation

USTDA
U.S. Trade and Development Agency

Transaction Assistance

Technical Assistance and Advocacy

EX-IM
Export-Import Bank of the United States

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