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The role of international institutions in fostering sub-Saharan Africa's electrification

By Simone Tagliapietra and Morgan Bazilian

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International institutions, such as multilateral development banks and national development agencies, are crucial in funding the provision of electricity services in sub-Saharan Africa. In the following Commentary, the authors discuss the role of these institutions in bringing electricity to the region. The Commentary shows that the scale and focus of global initiatives is wide and eclectic, and coordination between large and smaller funders remains critical. It highlights how over the past decade, 92 percent of international financial support to SSA's electrification came from World Bank Group (WBG), the African Development Bank (AfDB) and the European Union (EU). The EU's actions in the field appear to be particularly fragmented. The WBG, the AfDB and the US have streamlined their actions largely by focusing resources on a few initiatives. The Commentary concludes with recommendations to help get more large-scale projects funded, and increase technical assistance and capacity building. Better coordination and information-sharing mechanisms to track the rapidly-changing landscape will be critical to achieve the energy access goals in sub-Saharan Africa.

Sub-Saharan Africa's historical electrification challenge

The adoption of the UN's Sustainable Development Goals (SDG) has brought the importance of energy access to the fore.[1] SDG 7 has a set of indicators related to the achievement of universal access to energy services, and tracks progress using metrics of the proportion of the population with access. Partially as a result of SDG 7, there has been a burst of new initiatives aimed to support its achievement. Still, to our knowledge, there was no compilation of them. This commentary provides an initial, non-comprehensive inventory of initiatives focused on access to electricity services. It does not provide considerable analysis on the scale or efficacy of these initiatives, but rather provides the compilation as fodder for future, more detailed work. This short paper begins with some scale and context, then briefly describes some of the institutions and stakeholders active in the area. It then provides the current inventory of activity, and concludes with some observations and recommendations by the authors.

Electrification remains one of sub-Saharan Africa's (SSA) most dramatic socio-economic challenges, and one of the most difficult to achieve of the United Nation's Sustainable Development Goals.[2] Given the size of the investment needed, international institutions, such as international organizations, multilateral development banks and national development agencies, have a critical role in fostering SSA's electrification.

Consider the scope of the problem: Less than a third of the regional population has access to electricity.[3] Around 600,000 premature deaths are registered each year as a consequence of household air pollution resulting from the utilization of polluting fuels for cooking and lighting.[4] Electrification rates average in SSA countries at 35 percent, against 86 percent in South Africa and 99 percent in North African countries. This situation is even more dramatic in rural areas, where SSA's average electrification rate stands at 16 percent, against 71 percent in South Africa and 99 percent in North African countries.[5]

Access is not the only challenge sub-Saharan Africa faces. While two-thirds of SSA's population does not have access to electricity, the remaining one-third cannot consume as it would like, due to regular blackouts and brownouts resulting from a structural constraint of available electricity supply across SSA. This can be seen in the wide disparities in electricity consumption levels between populations with access to electricity in SSA and other parts of the world.[6] In SSA, average electricity consumption per capita stands at 201 kilowatt-

[1] See e.g., https://sustainabledevelopment.un.org/sdgs
[2] The authors are grateful to Alexander Roth for his excellent research assistance.
[3] International Energy Agency (2016a).
[4] World Health Organisation (2014).
[5] World Bank, World Development Indicator database, accessed in May 2017.
[6] World Bank (2016) and World Bank (2017b).

hour (kWh) per year, against 4,200 kWh in South Africa and 1,500 kWh in North African countries.[7] This situation is even worse in SSA's rural areas with access to electricity, as here electricity consumption per capita remains even below 100 kWh per year.[8]

To meet the UN MDG, funding must increase substantially. Annual investments into SSA's electricity sector currently amount to $US8 billion,[9] well short of the estimated $US100 billion per year needed to ensure universal access to electricity by 2030.[10] That is, SSA is clearly not on track to meet the 2030 target.[11]

Filling this gap will require a substantial commitment of international private investments into SSA's electricity sector, which in turn requires that SSA countries reform their (energy) governance. Risks arising from macroeconomic or political instability should be reduced, as well as the risks arising from weak protection of contract and property rights. Furthermore, clear and stable energy regulatory frameworks should be developed, and market-distorting energy subsidies should be reformed.[12] Without good (energy) governance, international private investments will likely continue at their current modest pace across SSA.[13]

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International institutions, including international organizations, multilateral development banks and national development agencies, could channel international private investments into SSA's electricity sector by putting in place dedicated blended finance tools and/or risk-sharing mechanisms.

International financial assistance (i.e., official development assistance -ODA plus other official flows) to SSA's electricity sector has almost quadrupled over the last decade, increasing from 1.3 billion U.S.$ to 4.9 billion U.S.$ in 2015.[14] A recent review of financing flows by the Sustainable Energy for All Initiative shows the contours of the finance gap clearly (Figure 1).[15] The focus of this short paper is on the supply-side of the Sankey diagram (i.e., providers)

[7] *Ibidem*.
[8] International Energy Agency (2014).
[9] *Ibidem*.
[10] Mentis, D. et al. (2017) and Enerdata (2017).
[11] World Bank (2017a).
[12] International Monetary Fund (2013) and International Monetary Fund (2015).
[13] Trimble, C. et al. (2016).
[14] Organisation for the Economic Cooperation and Development, Development Finance Database, accessed in June 2017.
[15] http://www.seforall.org/sites/default/files/2017_SEforALL_FR4_PolicyPaper.pdf

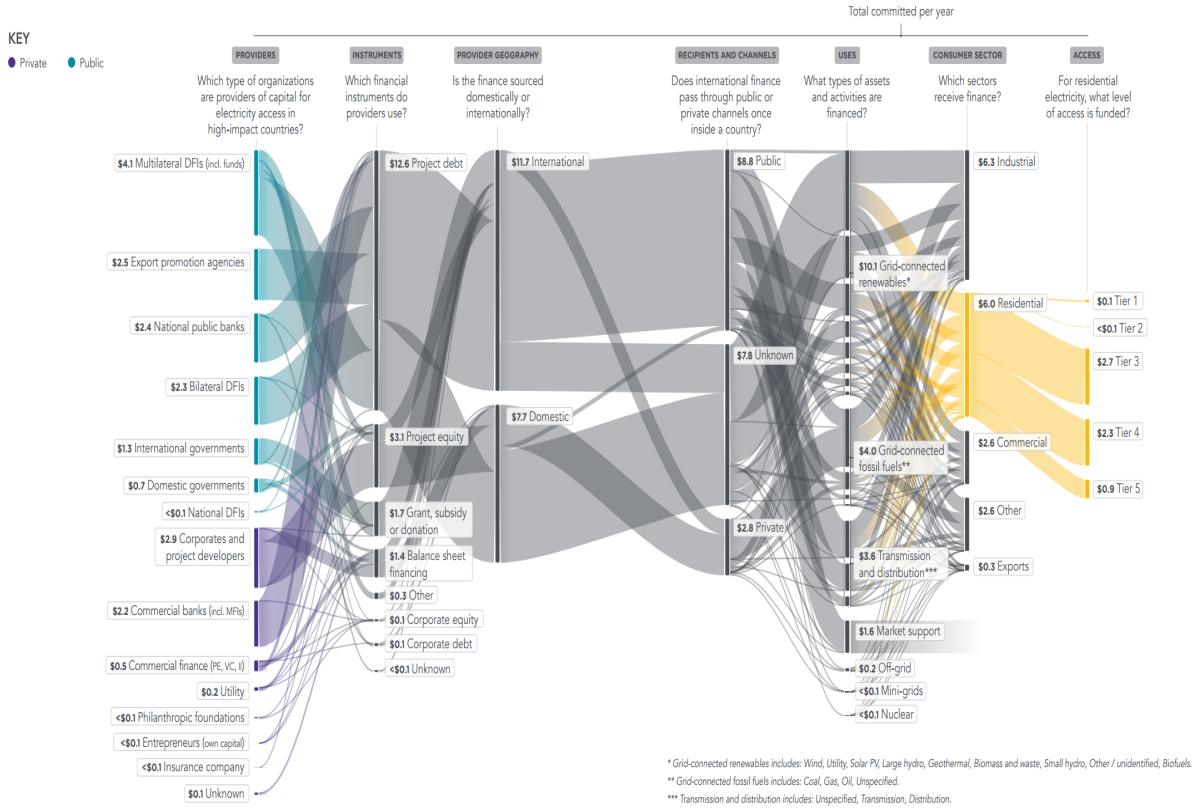

Figure 1: Finance flows for energy access (SE4All, 2017)

Over the last decade, most of the financial assistance came from three players: the World Bank Group (WBG) (40 percent), the African Development Bank (AfDB) (27 percent) and the European Union (EU) (25 percent). Other players (8 percent in total) including, for instance: the Arab Fund for Economic and Social Development, the government of the United States, the OPEC Fund for International Development, the Kuwait Fund for Arab Economic Development, the government of the United Arab Emirates, the Climate Investment Funds, and the Arab Bank for Economic Development in Africa.[16] As an example of highlighting the multi-agency cooperation inherent in many projects, the U.S. Power Africa initiative produces an excellent Annual Report with useful partnership maps (Figure 2).[17]

[16] *Ibidem*.
[17] https://www.usaid.gov/sites/default/files/documents/1860/PA_FINAL_508c.PDF

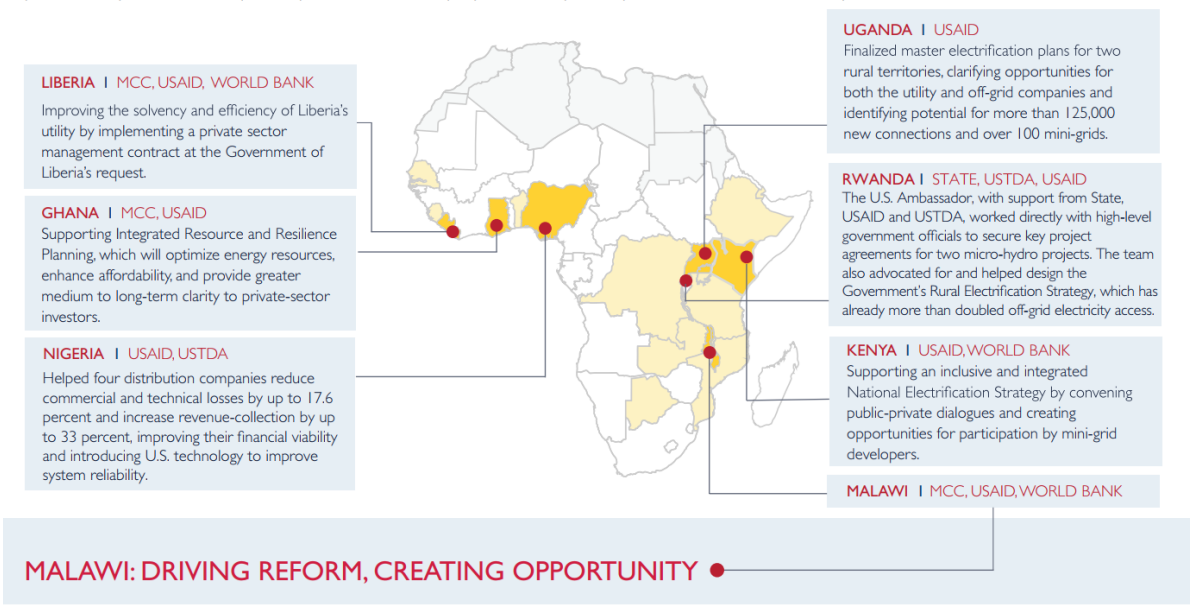

Figure 2: Power Africa capacity building partnership map (Power Africa, 2017)

Notwithstanding their growing importance, these global financing initiatives for SSA's electrification have never been tracked in a coherent manner.[18] It may be useful to employ techniques like those from International Relations employed by Keohane and Victor (2011) to better map the regime complex for energy access.

Our effort to address this gap, which is summarized in Table 1 at the end of this document, offers a non-comprehensive review of global financing initiatives for SSA's electrification.

Our takeaways follow, but it is important to note that **China has taken a different approach.** Over the last decade more studies have been done on the engagement of China into Africa's energy sector.[19] However, this engagement is not captured by this review, since China moves via state owned enterprises (SOEs), rather than via financial assistance institutions. With a seminal report published in 2016, the International Energy Agency estimated that China's SOEs to be responsible for 30 percent of new power capacity additions in SSA between 2010 and 2015, with a total investment of around US$ 13 billion over the last five years.[20]

We derive three principal takeaways from this review:

i) **The scale and focus of initiatives is wide and eclectic.** Taken in isolation this might be considered as good news, as it signals a widespread movement of support across the globe to SSA's electrification. However, when considering that 92 percent of the last decade's international financial support to SSA's electrification came from only three players (i.e., WBG, AfDB, EU), there likely remains a coordination issue between these large well-established funders and the multitude of new initiatives.

ii) **The EU's actions appear particularly fragmented.** The EU has 19 initiatives ongoing in the field (Table 1, A1-B12), originating from either EU Member States and EU Institutions. The variety of EU

[18] To our knowledge, only partial reviews exists. See, for instance: European Union Energy Initiative Partnership Dialogue Facility (2016) and Quitzow, R. et Al. (2016).
[19] See e.g., https://www.iaee.org/en/publications/newsletterdl.aspx?id=232; and http://www.bu.edu/cgef/#/intro
[20] International Energy Agency (2016b).

Member States' initiatives (Table 1, B1-B12) is understandable, as each country has its own political and commercial interests to promote across SSA. What is less understandable is the fragmentation of EU Institutions (Table 1, A1-A7). The EU's current fragmented system seems to favor overlaps, inefficiencies and overall higher transaction costs. It is reasonable to consider that European taxpayers' money would be far better spent if channeled through a unique facility, allowing policy consistency, elimination of overlaps, abatement of transaction costs and, therefore, overall higher efficiency and impact.[21]

iii) **The WBG, the AfDB and the U.S. have streamlined their actions in the field, focusing resources on a few initiatives.** It appears that the WBG, the AfDB and the U.S. do not contribute to fragmentation, as they have a rather streamlined set of action in the field. The WBG operates through its established mechanisms (i.e., The International Bank for Reconstruction and Development, The International Development Association, The International Finance Corporation, The Multilateral Investment Guarantee Agency – Table 1, C1-C4). The AfDB, in addition to its traditional financing tools, has established two initiatives to invest in SSA's (electricity) infrastructure: the 'New Deal on Energy for Africa' and the 'Africa50' (Table 1, D1-D3). The former is a public-private partnership between the AfDB, African governments and global private sector aimed at putting in place innovative financing to achieve universal access to energy by 2025, while the latter is an infrastructure fund owned by the AfDB, African governments and global institutional investors created to specifically mobilize long term savings to promote (electricity) infrastructure development in Africa. The U.S. mainly acts through 'Power Africa' (Table 1, E1), a public-private partnership platform launched in 2013 and involving 12 U.S. government agencies, African governments, more than 100 private sector partners (e.g., energy companies, investment banks, equity funds, institutional investors), and other multilateral partners.

Conclusion: Making the best of these global financing initiatives

Given the wide and growing landscape, it might be useful to focus on what can be done to enhance and scale-up the current global financing initiatives for SSA's electrification. One key is to reduce fragmentation. As outlined by the Africa Progress Panel (2015), SSA's energy needs are poorly served by a fragmented system of financial assistance. This is because available funding often gets transferred through overly bureaucratic delivery structures that combine high transaction costs with low impact, thus resulting in most finance to be earmarked for small-scale projects rather than sizeable programs.

International financial or development institutions need to offer more than financial support to SSA's electrification. Increased technical assistance and help with building capacity building and risk instruments are critical. International institutions with a long record of infrastructure financing could enhance SSA's 'soft' infrastructure of national governments and institutions. They can do this by supporting the development of sound energy policies, regulations, incentive systems, sector reforms, corporate governance, and transparency and accountability best practices. Several programs (e.g., AfDB's 'New Deal on Energy for Africa' or the US 'Power Africa' program) already work with an explicit focus on creating these enabling environments.

Calls for better coordination and cohesion in the development arena are ubiquitous, and there are relatively few success stories. Still, the way to make the most of the global financing initiatives for SSA's electrification could be to establish a coordination, or perhaps compilation and information-sharing mechanism, to better track the rapidly-moving landscape and help inform the actions of leading players and others. Although it is recognized that such centralized mechanisms are difficult to establish and maintain, the World Bank's State of Energy Access Report (SEAR),[22] or its Global Tracking Framework (GTF)[23] may offer venues for housing such a function in their future iterations.

[21] With this regard, see also: Tagliapietra, S. (2017).
[22] https://www.esmap.org/node/55528
[23] http://gtf.esmap.org/

TABLE 1: A review of global financing initiatives for Sub-Saharan Africa's electrification

	Name of the initiative	Responsible institution	Loans	Grants	Guaran-tees	Equity	Risk Sharing	Technical Assistance	Interest rate subsidies	Budget
A	***EUROPEAN INSTITUTIONS***									
A1	The European Development Fund (EDF)	*Managing:* EC and EIB *Donors:* EU Member States								30.5 billion (EUR) 2014 – 2020 (worldwide and not only energy)
A2	The ACP Investment Facility (IF)	*Managing:* EIB *Donors:* EU Member States (via EDF)								3.6 billion (EUR) 2000 - present (not only Africa and energy)
A3	ACP-EU Energy Facility (EF)	*Managing:* EC *Donors:* EU and Member States (via EDF)								445 million (EUR) 2006 - 2013 200 million (EUR) 2014-2020
A4	The EU-Africa Infrastructure Trust Fund (EU-AITF)	*Managing:* EIB *Donors:* EC and 12 EU Member States								811.9 million (EUR) 2007 – present (not only energy)
A5	Africa Investment Facility (AfIF)									NA
A6	Africa Energy Guarantee Fund (AEGF)	*Managing:* EIB and EC *Donors*: EIB (EU-Africa Infrastructure Trust Fund)								601 million (EUR) 2007-2030
A7	EU External Investment Plan (EIP)	*Donors:* EU Budget and EDF								3.35 billion (EUR) (EFSD) Until 2020 (worldwide)
B	***EUROPEAN COUNTRIES***		Loans	Grants	Guarantees	Equity	Risk Sharing	Technical Assistance	Interest rate subsidies	
B1	Proparco	*Donor and managing:* France (AFD)								3.7 billion (EUR) 2014 - 2019

											(not only energy)
B2	Sustainable Use of Natural Resources and Energy Finance (Sunref)	*Donor and managing:* France (AFD)									2.5 billion (EUR) 2015 - present
B3	Danish Climate Investment Fund (KIF)	*Managing:* Investment Fund for Developing Countries (IFU) *Donors:* Denmark									180 million (EUR) (fund's capital) (not only Africa)
B4	DEG – Direct Investments	Germany (KfW)									2.4 billion (EUR) (fund capital) 1962 – present (not only Africa)
B5	Africa's Renewable Energy and Access Program (AFREA)	The Netherlands									28.875 million (USD) 2009 - Present
B6	DFID Impact Fund	*Donors*: UK (CDC)									82 million (USD) (fund's capital)
B7	Energy Africa campaign	UK									46 million (USD) 2015 - 2030
B8	Energising Development (EnDev)	*Donors*: The Netherlands, Germany, Norway, UK, Switzerland and Sweden									350 million (EUR) 2005 - 2019 (Africa receives 58% of funding)
B9	Renewable Energy Performance Platform (REPP)	*Managing:* Camco Clean Energy and GreenStream *Donors*: UK									54 million (EUR) 2016 - 2021
B10	Energy and Environment Partnership South & East Africa (EEP)	*Managing:* KPMG ECO *Donors:* Finland, UK, Austria									60 million (EUR) 2010 - 2017
B11	Green Africa Power (GAP)	*Donors:* UK and Norway									121 million (Pounds) 2014 - 2018

B12	Nordic Climate Facility (NCF)	*Donors:* Denmark, Finland, Iceland, Norway, and Sweden		■						1 billion (EUR) 1989 – present (46% thus far allocated for Africa)
	WORLDWIDE		**Loans**	**Grants**	**Guarantees**	**Equity**	**Risk Sharing**	**Technical Assistance**	**Interest rate subsidies**	
C	*WORLD BANK*									
C1	International Development Association (IDA)	World Bank Group	■							14.4 billion (USD) (investments in electricity in sub-Saharan Africa between 2005 and 2015)
C2	International Bank for Reconstruction and Development (IBRD)	World Bank Group	■	■						
C3	International Finance Corporation (IFC)	World Bank Group	■			■				
C4	Multilateral Investment Guarantee Agency (MIGA)	World Bank Group			■					
D	*African Development Bank (AfDB)*									
D1	Light Up and Power Africa – A New Deal on Energy for Africa	AfDB	■	■	■		■	■		12 billion (USD) 60-90 billion still required from external sources 2015 - 2025
D2	Energy Sector Loans	AfDB	■							840 million (USD)
D3	Africa50 Infrastructure Fund	23 African governments, two central banks and the African Development Bank	■			■				700 million (USD) (fund's capital) 2015 - Present
E	*USA*									
E1	Power Africa	USA	■	■		■		■		7 billion (USD) 2013 - Present
F	*ARAB COUNTRIES*									

F1	Arab Bank for Economic Development in Africa (BADEA)	Member-states of the Arab League	■							1.6 billion (USD) 2015 - 2019 (not only energy)
F2	Arab Fund (AFESD)	Member-states of the Arab League	■							10 billion (USD) 1974 - Present (not only energy)
F3	Kuwait Fund for Arab Economic Development (KFAED)	Kuwait	■	■	■			■		1.3 billion (USD) (not only energy) 1961 - Present
F4	IRENA/ADFD Project Facility	Abu Dhabi Fund for Development	■							350 million (USD) Present (not only Africa)
F5	OPEC Fund for International Development (OFID) – Energy Poverty Program	OPEC Members	■	■		■		■		5.28 billion (USD) 2007 - 2030 (fund)
G	*CHINA*									
G1	China-Africa Development Fund (CAD)	China Development Bank and Exim Bank of China				■				3 billion (USD); estimated to grow to 5 billion 2007 - Present
G2	Akon's Lighting Africa	China Jiangsu International Economic And Technical Cooperation Group	■							1 billion (USD) credit line 2014 - 2030
H	***MULTILATERAL***		**Loans**	**Grants**	**Guarantees**	**Equity**	**Risk Sharing**	**Technical Assistance**	**Interest rate subsidies**	
H1	Green Climate Fund (GCF)	42 countries	■	■	■	■				10.3 Billion (USD) 2010 - Present
H2	Global Environmental Facility (GEF)	39 countries		■						3.2 billion (USD) 1991 - Present
H3	Sustainable Energy for All (SE4ALL) Sustainable Energy Fund	AfDB, UN, World Bank *Donors*: Denmark, Italy, UK, US		■		■		■		95 million (USD) (fund's capital) Present

	for Africa (SEFA)									
H4	The Electrification Financing Initiative (ElectriFI)	*Donors*: EC and USA (Power Africa)								115 million (EUR) 2016 - present
H5	The Africa Renewable Energy Initiative (AREI)	*Partners*: African Union, NEPAD, AfDB, UNEP, IRENA *Donors*: Germany, France, Canada, Italy, Japan, United Kingdom, USA, EU, Sweden, Canada, Japan (also via existing instruments)								> 10 billion (USD) 2015 - Present
H6	*Climate Investment Funds (CIF)* Clean Technology Fund (CTF)	Australia, Canada, Denmark, France, Germany, Japan, Korea, Netherlands, Norway, Spain, Sweden, Switzerland, UK, US								5.8 billion (USD) (global and not only energy) 3.8 billion (USD) (only energy) Present
H7	*Strategic Climate Fund (SCF)* Scaling Up Renewable Energy in Low Income Countries Program (SREP)	Australia, Canada, Denmark, France, Germany, Japan, Korea, Netherlands, Norway, Spain, Sweden, Switzerland, UK, US								839 million (USD) 2008 - Present
I	***PPP / PRIVATE***		**Loans**	**Grants**	**Guarantees**	**Equity**	**Risk Sharing**	**Technical Assistance**	**Interest rate subsidies**	
I1	The Global Energy Efficiency and Renewable Energy Fund (GEEREF)	Advisor: EIB *Donors*: EC, Germany, Norway, 24 private investors								334 million (EUR) (fund's capital) 2008 - Present
I2	African Renewable Energy Fund (AREF)	African Development Bank, GEEREF, EIB, GEF,								200 million (USD) (fund's capital) 2014 - Present

		Sustainable Energy Fund for Africa (SEFA), West African Development Bank (BOAD), Ecowas Bank for Investment and Development (EBID), FMO, Calvert Investments, UK (CDC), BIO, Austria (OeEB)									
I3	Energy Access Ventures Fund (EAV)	EIB, UK (CDC), OPEC (OFID), France (FFEM and Proparco), Schneider Electric									55 million (EUR) (fund's capital) 2015 - Present
I4	Global Climate Partnership Fund (GCPF)	Denmark, World Bank (IFC), Deutsche Bank, FMO, Germany (KfW), UK Austria (OeEB), responsAbility, Ärzteversorgung Westfalen-Lippe, ASN Bank									331 million (USD) (fund's capital) 2010 - Present
I5	Impact Assets Emerging Markets Climate Fund	Calvert Foundation and Private Investors									2.24 million (USD) (fund's capital) 2015 - Present
I6	Rassembleurs d'Energies Solidarity Investment Fund	ENGIE Group									15 million (EUR) (fund's capital) 2010 - Present
I7	Vantage GreenX Fund	South African Pension Funds									220 million (USD) (fund's capital) 2013 - Present
I8	InfraCo Africa – Sub Sahara Infrastructure Fund	Private Infrastructure Development Group (PIDG)									126 million (USD) (fund's capital) Present
I9	responsAbility – Energy Access Fund	IFC, Shell foundation, EIB									30 million (USD) (fund's capital) 2003 - Present
I10	Vital Capital II	Private Investors									500 million (USD) (fund's capital)

										Present
I11	GroFin SGB Fund	Shell Foundation, Germany (KfW), The Norwegian Investment Fund for Developing Countries, Norfund, the Dutch Good Growth Fund (DGGF), GroFin Risk Capital Facility, and GroFin MENA.								150 million (USD) (fund's capital) 2014 - Present
I12	Acumen Fund	Donors and international development agencies								64 million (USD) (fund's capital) 2001 - Present
I13	GuarantCo	Private Infrastructure Development Group (PIDG) (Australia, UK, The Netherlands, Switzerland, Sweden)								300 million (USD) (fund's capital) 2016 - Present
I14	DI Frontier Investment	CDC, Pension Denmark, PFA Pension, Tryg Insurance, GEEREF, Danish Investment Fund for Developing Countries, Seed Capital Assistance Facility (SCAF) funded by AfDB and UNEP								200 million (USD) (fund's capital) 2011 - Present
I15	Emerging Africa Infrastructure Fund (EAIF)	Private Infrastructure Development Group (PIDG) (UK, The Netherlands, Sweden, Switzerland), Germany (KfW), The Netherlands (FMO), SBSA, Standard Charter								587 million (USD) (fund's capital) 2002 - Present

		Investors, OPIC, Duke Energy								
I17	Lereko Metier Sustainable Capital fund (LMSC)	IFC, Lereko, FMO, DEG, South Africa PIC								120 million (USD) (fund's capital) Present
I18	Inspired Evolution Investment – Evolution One Fund	Cyane Holdings Ltd, Quantum Power, Geeref, Ifc, Finnfund, Sifem, Norfund, Afdb, Idc, Scaf								250 million (USD) (fund's capital) 2008 - Present
I19	Apollo Investment Partnership II (Apollo)	IDEAS Managed Fund, African Infrastructure Investment fund 2, Apollo Investment Partnership 2, cookhouse Community Trust, AFPOC								50 million (USD) (fund's capital) 2012 - Present

Source: Authors' elaboration, June 2017.

Simone Tagliapietra is a senior researcher at the Fondazione Eni Enrico Mattei, Italy, and Research Fellow at Bruegel, Belgium. He received his PhD from the Universita Cattolica del Sacro Cuore, Italy, where he lectures on energy economics and policy.

Morgan Bazilian is a non-resident fellow at the Center on Global Energy Policy at Columbia University, a senior associate at the Center for Strategic and International Studies, a research associate at the University of Cambridge, and an affiliate professor at the Royal Institute of Technology, Stockholm, Sweden.

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