Policy Contribution
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Electrifying Africa: how to make Europe's contribution count

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Executive summary

ELECTRIFICATION IS ONE of sub-Saharan Africa's most pressing socio-economic challenges. Less than a third of the sub-Saharan population has access to electricity, and around 600,000 premature deaths are caused each year by household air pollution resulting from the use of polluting fuels for cooking and lighting.

SOLVING THIS ISSUE is a fundamental prerequisite for unleashing sub-Saharan Africa's economic potential. Given the magnitude of the challenge, only a joint effort involving sub-Saharan African countries and international public and private parties would pave the way to a solution.

SUB-SAHARAN AFRICAN COUNTRIES should be the first to move. They should reform the governance of their energy sectors, in particular by reforming their generally inefficient state-owned electricity utilities, and by phasing-out market-distorting energy subsidies. Without such reforms, international investment will never scale-up across sub-Saharan Africa.

INTERNATIONAL PUBLIC AND private parties must play a key role in facilitating sub-Saharan Africa's energy transformation, particularly the electrification of rural areas, where three-fifths of the sub-Saharan African population lives. International public support is particularly important to crowd-in international private investors, most notably through innovative public-private partnerships.

CHINA AND THE United States are already engaged in electrification in sub-Saharan Africa. China has substantially invested in large-scale electricity projects, while the US has put in place a comprehensive initiative – Power Africa – to scale-up electrification, particularly in rural areas, through public-private partnerships.

EUROPE HAS, INSTEAD, created a myriad of fragmented initiatives to promote electrification in sub-Saharan Africa, limiting their potential leverage in crowding-in private investment and in stimulating energy sector reforms in sub-Saharan African countries. This sub-optimal situation should be changed by coordinating the initiatives of European institutions and EU countries through a unique platform. We propose such a platform: the EU Electrify Africa Hotspot.

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1 Introduction

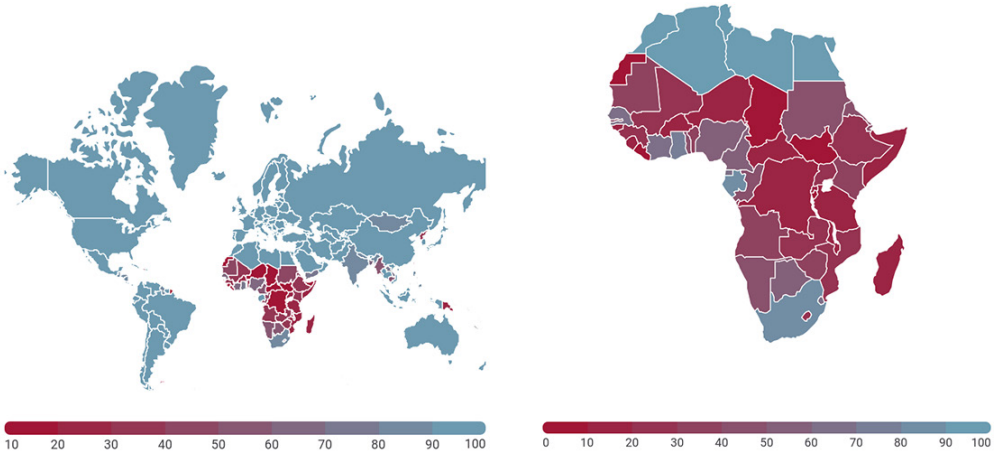
The lack of access to modern energy solutions in some parts of the world continues to hinder socio-economic development, and even represents a primary cause of mortality[1]. In sub-Saharan Africa[2], less than a third of the population has access to electricity, and around 600,000 premature deaths – mostly of women and children – are registered each year as a consequence of household air pollution resulting from the use of solid biomass for cooking and of candles and kerosene lamps for indoor lighting (World Health Organisation, 2014). Overcoming the barrier of access to electricity is a fundamental prerequisite to unleash Africa's economic potential.

Europe can play a role in accompanying sub-Saharan African countries along this path. However, to do so Europe should simplify its currently piecemeal approach, on the basis of a pragmatic understanding of sub-Saharan African countries' peculiar contexts and priorities. We put forward a practicable proposal to concretely move in this direction.

2 Understanding sub-Saharan Africa's two-fold electrification challenge

Electrification is the main challenge for the achievement of universal energy access in sub-Saharan Africa. A simple look at the overall situation of access to electricity worldwide (Figure 1) provides a first idea of the order of magnitude of this challenge.

Figure 1: Electricity access worldwide: the unique situation of sub-Saharan Africa (% of population with access to electricity, 2014)



Source: World Bank, Sustainable Energy for All database, accessed May 2017.

1 Various studies have illustrated the correlation between energy consumption, particularly electricity consumption, and economic growth. See for example Asafu-Adjaye (2000), Casillas (2010), Ebohon (1996) and Ozturk (2010). Numerous studies have also illustrated the causal effects of access to electricity on labour markets, household welfare and business activities: Allcott *et al* (2014), Bensch *et al* (2011), Bernard (2012), Bernard and Torero (2013), Chakvravorty et al (2014), Dasso and Fernandez (2013), Dinkelman (2011), Grogan and Sadanand (2013), Khandker *et al* (2013), Khandker *et al*, (2012), Khandker *et al* (2012), Libscom *et al* (2013), Peters *et al* (2011), Rud (2012) and van de Walle *et al* (2013).

2 In this Policy Contribution, the category 'sub-Saharan Africa' includes all African countries with the exception of the five North African countries and South Africa. South Africa is excluded because it has a profoundly different socio-economic and energy situation compared to other countries in Africa.

Electrification rates in sub-Saharan African countries average 35 percent, compared to 86 percent in South Africa and 99 percent in North African countries. The situation is even starker in rural areas, where the average electrification rate in sub-Saharan Africa stands at 16 percent, compared to 71 percent in South Africa and 99 percent in North African countries (Table 1).

Table 1: Electrification rates in selected countries (2014)

	National electrification rate	Urban electrification rate	Rural electrification rate
Sub-Saharan Africa	*35%*	*67%*	*16%*
Angola	32%	70%	3%
Burkina Faso	19%	59%	3%
Burundi	7%	45%	2%
Central African Republic	12%	26%	3%
Democratic Republic of Congo	14%	32%	0%
Ethiopia	27%	91%	12%
Guinea	28%	69%	4%
Kenya	36%	100%	13%
Mozambique	21%	54%	6%
Namibia	50%	83%	21%
Nigeria	58%	78%	39%
Rwanda	20%	48%	9%
Somalia	19%	31%	11%
Uganda	20%	74%	10%
South Africa	*86%*	*94%*	*71%*
North Africa	*99%*	*100%*	*99%*

Source: Bruegel based on World Bank, World Development Indicator database, accessed May 2017.

Furthermore, the number of people living without electricity in sub-Saharan Africa is rising, as ongoing electrification efforts are outpaced by rapid population growth. The sub-Saharan African population is projected to more than double by 2050[3].

But access to electricity is not the only component of sub-Saharan Africa's electrification challenge. There are also wide disparities in electricity consumption between those populations with access to electricity in sub-Saharan Africa and populations elsewhere in the world.

In sub-Saharan Africa, average electricity consumption per capita is 201 kilowatt-hours (kWh) per year, compared to 4,200 kWh in South Africa and 1,500 kWh in North African countries (Table 2). The situation is even worse in rural areas of sub-Saharan Africa with access to electricity, where electricity consumption per capita remains even below 100 kWh per year (IEA, 2014).

3 UNDESA Population Division, *World Population Prospects*, 2015 Revision, accessed April 2017. Note: projections according to the UNDESA medium fertility variant.

Table 2: Electricity consumption per capita in selected sub-Saharan Africa countries (kWh per capita, 2014)

Sub-Saharan Africa	201
Angola	347
Democratic Republic of Congo	107
Ethiopia	70
Ghana	357
Kenya	171
Mozambique	463
Nigeria	144
Tanzania	100
Zimbabwe	543
South Africa	4,200
North Africa	1,500
World, high income countries	9,066
World, low and middle income countries	1,943

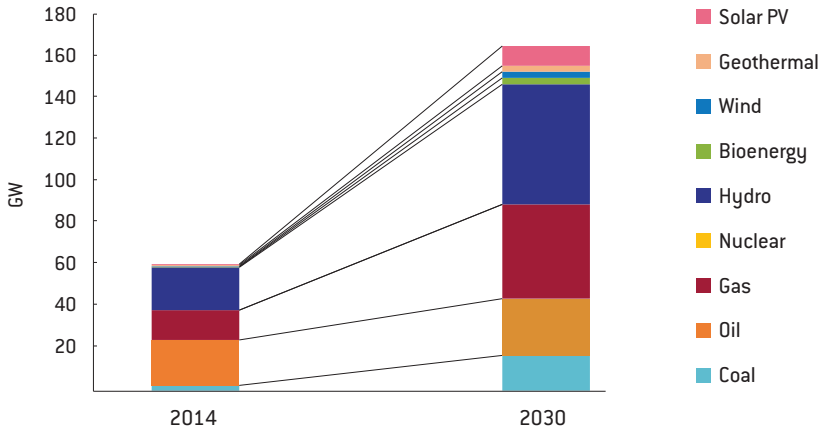
Source: Bruegel based on World Bank, World Development Indicator database, accessed May 2017.

The one-third of the sub-Saharan African population that does have access to electricity cannot consume as it would like because of regular blackouts and brownouts resulting from structural constraints in the available electricity supply across sub-Saharan Africa.

3 Sub-Saharan African governments' energy strategies: not up to the challenge

How are the governments of sub-Saharan Africa responding to this situation? The International Energy Agency's (IEA) New Policies Scenario provides a useful quantification of the broad policy commitments and plans announced by sub-Saharan African countries. This modelling exercise shows that sub-Saharan African countries plans to almost triple their electrical capacity by 2030 (Figure 2).

Figure 2: Electrical capacity in sub-Saharan Africa (excl. South Africa), IEA New Policies Scenario



Source: Bruegel based on International Energy Agency (2016a).

The jump in capacity is projected to be based mainly on hydropower (35 percent of total capacity in 2030) and gas (27 percent), plus oil (16 percent), coal (10 percent), solar photovoltaic (6 percent), geothermal (2 percent), biomass (2 percent) and wind (2 percent). Such a development lacks ambition, both quantitatively and qualitatively.

From the quantitative perspective, reaching a level of total electrical capacity of 167 gigawatts (GW) by 2030 would not be sufficient to ensure access to electricity to all people in sub-Saharan Africa. The electrical capacity of sub-Saharan Africa would need to be expanded up to 400GW by 2030 in order to guarantee energy access to all (Enerdata, 2017), which is an aim of the United Nations' Sustainable Development Goals[4].

From the qualitative perspective, sub-Saharan African governments' current energy strategies remain focused on traditional sources of energy and lack ambition in relation to sources of energy such as solar and wind. For example, current strategies envisage reaching a solar capacity of 10GW by 2030. To meet the Sustainable Development Goals, this capacity should rather be around 80GW (Enerdata ,2017).

The limited role foreseen for modern renewables should not be a surprise. Notwithstanding narratives about the potential of sub-Saharan Africa to leapfrog to a low-carbon economy[5], the top energy priority for sub-Saharan African governments is to expand their electricity systems in the quickest way possible – regardless of their carbon footprints. With more than two-thirds of their populations still lacking access to electricity, this priority can well be understood.

The limited interest in renewables goes in tandem with a lack of commitment to climate change mitigation in sub-Saharan African countries. In the context of the Paris Agreement, only a few sub-Saharan African countries pledged to contribute to mitigation in an unconditional way. Most countries in the region are looking for significant amounts of climate finance and appear willing to substantially increase their mitigation ambition only if they receive such funding (AfDB CIF, 2015). In short, international energy and climate priorities are not aligned with those of sub-Saharan Africa's governments. This can, again, be understood considering that sub-Saharan Africa is the world's region that has historically contributed the least to global warming[6]. However, even if sub-Saharan Africa didn't contribute to the problem, it will be its first victim. The International Panel on Climate Change (IPCC) has identified Africa as the region at greatest risk from climate change (IPCC, 2013).

Sub-Saharan Africa is therefore trapped into an energy and climate paradox that could seriously hinder its economic growth and social development. There is no silver bullet to resolve this issue, and efforts are required at both sub-Saharan African and international levels.

4 http://www.undp.org/content/undp/en/home/sustainable-development-goals.html.

5 See for example International Renewable Energy Agency (2012), The Economist (2015), World Economic Forum (2016).

6 The then-President of the African Development Bank, Donald Kaberuka, once expressed this concept in a rather straightforward way: *"It is hypocritical for western governments who have funded their industrialisation using fossil fuels, providing their citizens with enough power, to say to African countries, 'You cannot develop dams, you cannot develop coal, just rely on these very expensive renewables.' To every single African country, from South Africa to the north, the biggest impediment to economic growth is energy, and we don't have this kind of luxury of making this kind of choice."* (*Bloomberg*, 2015).

Box 1: Hydropower: a feasible and sustainable solution for sub-Saharan Africa?

Hydropower is the world's main source of renewable energy, accounting for almost a fifth of global electricity. With its major river basins (Congo, Nile, Senegal, Niger, Zambesi, Volta, Orange), sub-Saharan Africa is endowed with huge hydropower potential. The IEA (2014) estimates this potential at 280GW.

So far, less than 10 percent of this potential has been tapped. More than half of the remaining potential is in central and east Africa, particularly Cameroon, Congo, the Democratic Republic of the Congo, Ethiopia and Mozambique, but there are also significant opportunities in southern Africa (Angola, Madagascar, Mozambique) and west Africa (Guinea, Nigeria and Senegal).

The Grand Inga Dam, a proposed hydropower dam complex on the Congo River at Inga Falls in the Democratic Republic of the Congo, is representative of efforts to develop hydropower in sub-Saharan Africa. This project, first envisaged by the Belgians in the 1950s, could have a capacity of 44GW – a potential game-changer for the overall sub-Saharan African electricity scenario. Under the dictatorship of Mobutu Sésé Seko (1965-1997), the first two phases of the complex (Inga 1 and Inga 2) were constructed, providing a combined capacity of 1.7GW, which still represents a large share of the country's total installed capacity (2.5GW). The Democratic Republic of the Congo has sought to further advance the Grand Inga Dam project. However, the project has systematically been delayed. Most recently, the government fast-tracked the advancement of the complex's third dam (Inga 3, with a projected capacity of 4.8GW). In 2014, the World Bank approved a grant of $73 million for the technical preparation of the project. However, it suspended this grant in 2016, as a result of a *"different strategic direction"* taken by the government (World Bank, 2016). The choppy development of the Grand Inga Dam project is an illustration of how difficult it is to advance large hydropower projects in sub-Saharan Africa.

From an economic perspective, these projects require large sums of upfront capital and often need power purchase agreements to be in place to raise the necessary financing. Low levels of regional interconnection mean that there are limited opportunities to export large volumes of electricity, while domestic markets can be too small to justify the investment.

From a sustainability perspective, very careful environmental and social planning is required, as hydropower dams might require large areas of land to be flooded, potentially displacing communities and reducing the flow of water available for other uses downstream, such as agriculture. Furthermore, climate risks should also be evaluated and integrated into the planning and design of hydropower projects (Agence Française de Développement and World Bank, 2015).

In sum, hydropower could have great potential to close sub-Saharan Africa's electricity access gap, but it should be developed in a socially and environmentally responsible way. Good governance remains the fundamental prerequisite to obtain the bilateral and multilateral funding needed to develop such large infrastructure projects. Finally, regional cooperation involving inter-state agreements can make large projects viable by aggregating demand to the level necessary to make a viable commercial case for investment. Inter-state agreements also offer opportunities to share the output and benefits among countries to address their electricity supply deficits and support economic development.

4 Sub-Saharan African countries should take the lead

Responding to sub-Saharan Africa's electrification challenge requires comprehensive action, targeting both on-grid and off-grid solutions.

First, sub-Saharan Africa's on-grid electricity generation, transmission and distribution infrastructure should be substantially enhanced and expanded. The current infrastructure is either insufficient or unreliable, with unavailability running at about 540 hours per year on average (IEA, 2014). Several factors are behind this, such as drought affecting hydropower capacity, poor maintenance causing power plants to fall into disrepair, lack of reliable fuel supply and insufficient transmission and distribution capacity. As a result, blackouts and brownouts are the norm in all sub-Saharan African countries. This clearly represents a major barrier to sub-Saharan African economic and social development. In order to meet future electricity demand growth, sub-Saharan Africa's on-grid electricity infrastructure has to be reinforced, modernised and expanded. This has to happen at national level and regional level. Developing sub-Saharan Africa's four regional power pools (Southern Africa, Western Africa, Central Africa and Eastern Africa) (Kambanda, 2013) will be key to the full exploitation of sub-Saharan Africa's vast untapped potential for both large-scale hydropower and gas (IEA, 2012).

In parallel with on-grid solutions, alternative solutions such as off-grid systems, mini-grid systems and back-up generators represent an increasingly important element of electricity generation in sub-Saharan Africa. Diesel-fuelled back-up generators are a traditional part of sub-Saharan Africa's electricity landscape, but use of new off-grid and mini-grid systems based on solar photovoltaic, small hydropower and small wind is rapidly expanding across the continent. These solutions are very important because they represent the most viable means of access to electricity for the large rural population that is distant from the grid (IEA, 2015).

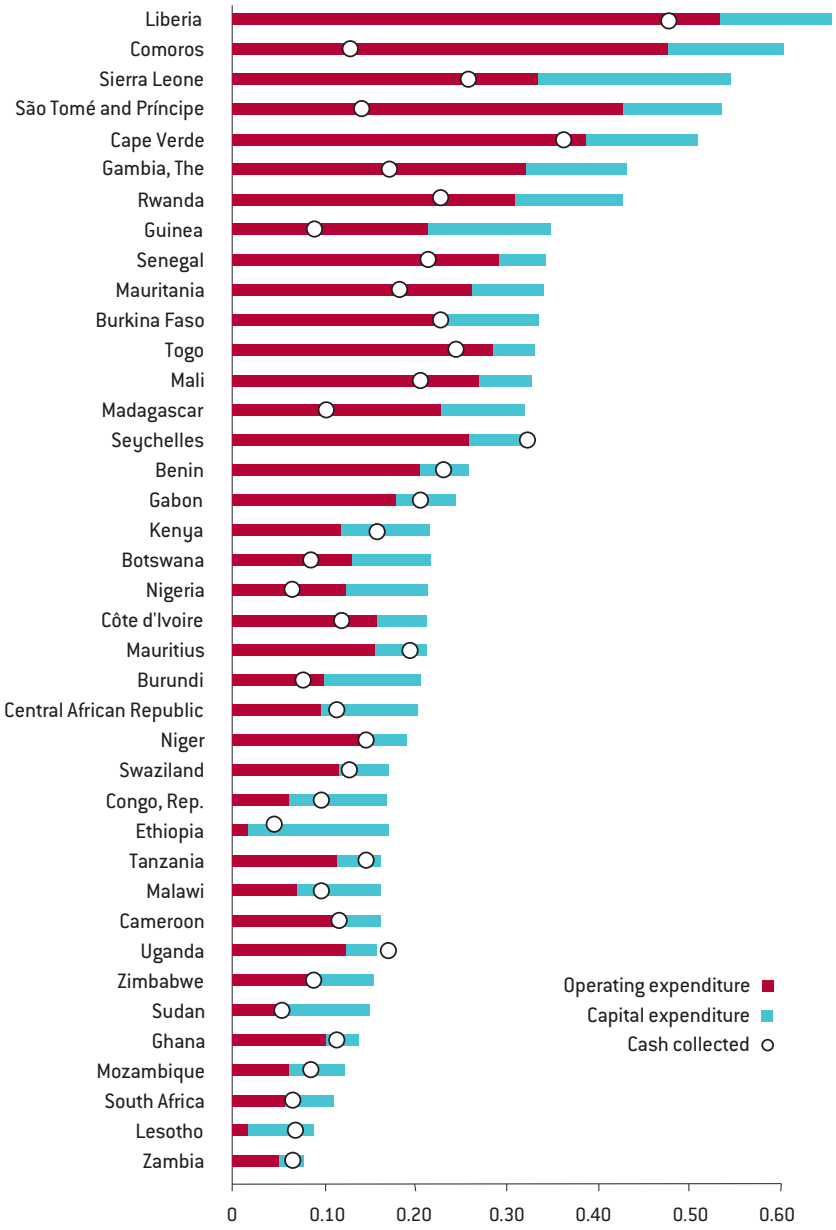
Sub-Saharan African countries should lead their own energy transformations. They have the resources, but this potential can only be unleashed by reforming the governance of their energy sectors. In particular, electricity utilities (which are generally state-owned) and energy subsidies should be structurally reformed across sub-Saharan Africa.

Reforming electricity utilities

Sub-Saharan Africa's electricity utilities have failed to develop flexible energy systems to provide firms with a reliable power supply and people with access to electricity. This is mainly the result of governments often viewing electricity utilities as opportunities for political patronage and vehicles for corruption. Changing this situation would be a fundamental prerequisite to unleash the sub-Saharan African energy transformation.

Sub-Saharan African electricity utilities are currently simply not financially sustainable. The seminal study by Trimble *et al* (2016) showed that across sub-Saharan Africa only the utilities in the Seychelles and Uganda fully cover their operational and capital expenditures (Figure 3). All other sub-Saharan African utilities run in quasi-fiscal deficit (ie defined as the difference between the actual revenue collected and the revenue required to fully recover the operating costs of production and capital depreciation), and thus need to be subsidised by the state.

Figure 3: Sub-Saharan African utilities: electric supply costs compared to cash collected, 2014 (US$ per kWh billed)



Source: Trimble *et al* (2016).

Reform is the only way to reduce these deficits and make utilities financially viable. To reach operational efficiency, utilities should reduce transmission, distribution and bill collection losses while tackling overstaffing. Utilities then need to increase tariffs, starting with their large- and medium-sized customers, for whom affordability is not as significant a challenge as for small-consumption households (Kojima and Trimble, 2016). Finally, the introduction of innovative solutions, such as prepaid meters, could improve overall revenue collection.

Finally, in order to reform electricity utilities and ensure implementation, sub-Saharan African countries should create robust and independent regulatory bodies with the authority to hold electricity utilities to account.

Reforming energy subsidies

Sub-Saharan African countries spend about US$ 25 billion each year in energy subsidies (IMF, 2015). This substantial amount of budgetary resource is mainly used to subsidise inefficient and wasteful electricity utilities and, in certain cases, to subsidise old forms of energy, such as kerosene.

Redirecting these resources into productive energy investments would be a vital step in reshaping sub-Saharan Africa's energy systems. There are two main reasons why energy subsidies should be reformed.

First, energy subsidies are inequitable. Being universal rather than targeted schemes, energy subsidies in sub-Saharan Africa mostly benefit higher-income groups, which consume the most. Electricity subsidies are particularly regressive because connection to the electricity grid is highly skewed toward higher-income groups.

Second, energy subsidies are profoundly detrimental for the development of energy systems. Subsidies create disincentives for maintenance or investment in the energy sector, perpetuating energy shortages and low levels of access.

Therefore, energy subsidies should be reformed across sub-Saharan Africa, to allow for better use of budgetary resources for pro-poor and development spending and to facilitate the expansion of electricity output. As shown by experiences elsewhere (IMF, 2013), reforming energy subsides is challenging, but possible.

5 International support is the key to rural electrification

Putting the governance of the sub-Saharan African energy sector in order is the starting point for expanding the region's energy systems. Without such reforms, international energy companies and investors would have no incentive to enter sub-Saharan African energy markets. For this reason, sub-Saharan African governments should be the first movers.

However, the support of the international community will be necessary to ensure progress with the sub-Saharan African energy transition, particularly in terms of off-grid rural electrification.

The investment needed to expand sub-Saharan Africa's electricity systems in a way that will ensure access to electricity for all by 2030 is huge and can only be satisfied by a joint effort from sub-Saharan African countries and international players. Enerdata (2017) estimates that from 2015 to 2030, sub-Saharan Africa will need around $500 billion in investment just to scale-up electricity generation. An equal amount of investment will be needed to scale-up electricity transmission and distribution lines. About $1 trillion by 2030 (or about $70 billion per year) will thus be needed to expand sub-Saharan Africa's electricity sector in order to ensure universal access to electricity by 2030.

Over the last decade China has become a key source of financing for energy projects in sub-Saharan Africa. According to the IEA (2016b), Chinese companies (90 percent of which are state-owned) were responsible for 30 percent of new electrical capacity in sub-Saharan Africa between 2010 and 2015 – with a total investment of around $13 billion.

Chinese contractors have built or are contracted to build 17GW of electrical generation capacity in sub-Saharan Africa between 2010 and 2020, equivalent to 10 percent of existing installed capacity in sub-Saharan Africa. These projects are geographically widespread across sub-Saharan Africa, taking place in at least 37 countries out of 54. In terms of capacity

size, Chinese contractors primarily focus on large projects[7]. In terms of type of capacity, they primarily focus on traditional forms of energy such as hydropower (49 percent of projects 2010-20), coal (20 percent) and gas (19 percent), while involvement in modern renewables remains marginal (7 percent).

This focus on traditional energy sources reflects a wider reality: expanding sub-Saharan Africa's on-grid electricity systems is easier than expanding off-grid electrification. Investing in on-grid, utility-scale, projects is clearly easier for energy companies and investors, as high densities of electricity demand guarantee more stable revenue streams. Should sound reforms of electricity utilities and energy subsidies be put in place, there should be no major problem in the future to ensure the bankability of the expansion of on-grid electricity infrastructure in sub-Saharan Africa.

It will be far more problematic to ensure the development of the small-grid and off-grid solutions that are needed to bring electricity to the three-fifths of the sub-Saharan African population that live in rural areas, including areas that are unlikely to be reached by the national grid, because of either geographical constraints and/or the lack of business cases for grid expansion.

With the declining costs and better performance of small-scale hydro installations, solar PV and wind turbines, and with declining costs and technological improvements in electricity storage and control systems, small-grid and off-grid renewable energy systems could become game-changers for rural electrification in sub-Saharan Africa – in a decentralised and modular manner. However, these innovative energy solutions face two major barriers.

First, they are characterised by low operating expenses and by high up-front capital investment expenditure. This is a major barrier to investment, because in an environment like sub-Saharan Africa, country, regulatory and commercial risks substantially increase the expectations investors have of returns, and thus any project's cost of capital. This discourages capital-intensive energy options and encourages less capital-intensive, conventional energy technologies.

Second, innovative energy solutions are characterised by high transaction costs. For instance, the transaction cost per kWh of electricity produced by a hydropower plant will be lower than the sum of the costs of the hundreds of transactions required for comparable capacity from solar PV or wind power.

In this context, reforming the governance of sub-Saharan Africa's energy markets will not be sufficient to attract international investors into small-grid and off-grid energy solutions in rural areas. International support will be necessary to crowd-in private investors, most notably via public-private partnerships.

6 Power Africa: the US experience

Under the presidency of Barack Obama, energy development in sub-Saharan Africa was a US priority. In 2013, President Obama launched 'Power Africa'[8], an initiative based on the recognition that the level of funding needed to electrify sub-Saharan Africa far outstrips what any government or donor can do alone. The aim of the initiative was to add 10GW of new electricity capacity and 20 million new electricity connections for households within five years across six selected sub-Saharan African countries[9], which committed to making the necessary reforms to develop their energy sectors. This form of conditionality is particularly important

7 The average size of projects completed, under construction or planned is 188MW.

8 All information on 'Power Africa' here presented was retrieved from Power Africa (2016) and from the website of the initiative: https://www.usaid.gov/powerafrica/.

9 Ethiopia, Ghana, Kenya, Liberia, Nigeria and Tanzania.

because it aims to stimulate domestic reforms, avoiding rent-seeking behaviour.

Power Africa is a public-private partnership, involving 12 US government agencies, African governments, more than 100 private sector partners (including energy companies, investment banks, equity funds, institutional investors), and other multilateral partners such as the African Development Bank and the World Bank.

The involvement of 12 different government agencies – such as the US Department of State, the Overseas Private Investment Corporation, the US Agency for International Development, the US Trade and Development Agency, the US Department of Energy and the US Department of Commerce – underlines the need for a multidimensional effort – including foreign policy, energy and trade elements – to tackle sub-Saharan Africa's unique energy challenge.

Power Africa works on two levels: i) Preliminary on-the-ground support: in-country advisors identify the technical, financial and political solutions needed to facilitate faster access to electricity for local communities, cities, or regional power pools; ii) Financial support: a tool-kit of grants, loans and other financing is make available to the private sector de-risk investments, which would otherwise not be bankable.

In 2014, President Obama raised the Power Africa targets threefold to 30GW of electricity capacity and 60 million new domestic electricity connections by 2030. This was done in line with an extension of the duration of the programme from five to 15 years (eg 2016-30). Obama also launched a new programme within Power Africa, focused on unlocking investment for off-grid and mini-grid energy solutions in rural areas: the Beyond the Grid programme[10].

The Power Africa initiative was strengthened in 2015 by the adoption of the US Electrify Africa Act of 2015. This established a comprehensive US policy to promote access to electricity for at least 50 million people in Africa, and to encourage installation of at least 20 GW of electrical capacity by 2020 – in line with the Power Africa targets for 2030.

Congress unanimously supported the bill. The main reason for the Republican Party's strong support for the bill was explained by Republican Congressman Ed Royce during the House debate of 1 February 2016:

"Why do we want to help increase energy access to the [African] continent? Well, to create jobs and to improve lives in both Africa and America. It is no secret that Africa has great potential as a trading partner and could help create jobs here in the US […]. However, the US is not alone in its interest in enhancing trade with Africa. We have competition. Just last month, the People's Republic of China pledged $60 billion in financial support to the continent. If the US wants to tap into this potential consumer base, we need to be aggressively building partnerships on the continent, which is what this bill does"[11].

After President Trump's election, Power Africa has started to emphasise this 'American opportunity' aspect, in particular that planned transactions have the potential to generate $6 billion in US exports and to support more than 36,000 Americans jobs by 2030 (Power Africa, 2017). This 'American opportunity' aspect might be the key to guaranteeing the continuity of the initiative under the Trump Administration.

Power Africa claims, at time of writing, to have 430 ongoing projects, for a total electricity capacity of 33GW (eg half the 2030 target)[12]. However, such numbers should be treated carefully because tracked transactions include projects at various stages of development, and not necessarily projects being implemented.

Power Africa shows the importance of coordinating the existing efforts of donors, partner governments and the private sector to bridge the market imperfections that hold back investors from jumping into sub-Saharan Africa's electricity sector.

This point also responds to one of the policy recommendations formulated by the Africa Progress Panel (2015), according to which sub-Saharan Africa's energy needs have been

10 https://www.usaid.gov/powerafrica/beyondthegrid.

11 U.S. Congress (2016), p. H398.

12 https://www.usaid.gov/powerafrica.

poorly served by the traditional, fragmented and labyrinthine system of international funding for energy and climate projects. This because modest funding has been transferred through overly bureaucratic delivery structures that combine high transaction costs with low impact, resulting in most finance being earmarked for small-scale projects rather than sizeable programmes.

Europe should learn from the experience of Power Africa, put its Africa's electrification initiatives into order and coordinate the ongoing European efforts in the field in a consistent manner.

7 Europe needs its own one-stop-shop to support electrification in sub-Saharan Africa

The European Union also has the aim of contributing to the development of sub-Saharan Africa's energy markets and to improved electricity access across sub-Saharan Africa, but Europe operates through a myriad of initiatives. These are promoted separately by the European Commission, the European Investment Bank (EIB) and individual EU countries either via national development banks or national development agencies (Table 3).

Table 3: Selected European initiatives for improving energy and electricity access in Africa

Name of the initiative	Responsible institution	Aim or activities
The European Development Fund	European Commission	Funding cooperation activities and promotion of regional cooperation and integration
The EU External Investment Plan	European Commission	Mobilising investments, stepping-up technical assistance and improving business environment in Africa and the Neighbourhood
The Africa Renewable Energy Initiative	European Commission	Helping African countries leapfrog to renewable energy
The Africa Investment Facility	European Commission	Fostering investment in sustainable infrastructure
The Electrification Financing Initiative	European Commission	Unlocking and leveraging investment in modern electricity solutions in Africa
The Global Energy Efficiency and Renewable Energy Fund	Commission and EIB	Catalysing private sector capital for clean energy projects in developing countries
The EU-Africa Infrastructure Trust Fund (AITF)	EU-AITF Secretariat (hosted by the EIB)	Support for infrastructure projects in sub-Saharan Africa, namely in the field of energy via loans and grants
The Investment Facility	EIB	Promotion of the development of the private sector, notably in infrastructure

The Africa-EU Energy Partnership	EU Energy Initiative Partnership (hosted by the German Development Agency, GIZ)	Dialogue facilitation to promote sustainable energy development
Iniziativa Italia–Africa	Italian Ministry of Foreign Affairs	Dialogue facilitation to promote sustainable development, with a particular focus on energy
Energising development (EnDev) – programme for energy access	German Development Agency (GIZ)	Development of energy markets to foster the diffusion of renewable energies and efficiency
Loan provided to PTA Bank	Germany's development bank (KfW)	Loan provided on favourable terms to the Eastern and Southern African Trade and Development Bank (PTA Bank) to advance renewables and efficiency projects
Proparco	France's development agency (AFD)	Promote private investment in developing countries in general and Africa in particular to boost growth, promote sustainable development
The French Facility for Global Environment	France's development agency (AFD)	Co-finance development projects with high environmental component, such as renewable energy

Source: Bruegel.

In this labyrinthine network of initiatives, understanding who is doing what is challenging even from an EU perspective. Imagine how it looks from a sub-Saharan African perspective, when other international counterparts, such as China or the US, present themselves in a far more integrated way.

Europe's current fragmented system favours overlaps, inefficiencies and overall higher transaction costs. European taxpayers' money would be far better spent if channelled through a single facility, ensuring consistency of policies, elimination of overlaps, transaction costs economies and, therefore, overall higher efficiency and impact. Europe needs a one-stop-shop to make the best of its current efforts to support sub-Saharan African electrification. This can be done in three steps.

8 Coordinating Europe's support

Step 1: Create the 'EU Electrify Africa Hotspot' by coordinating European Commission and EIB programmes

The first step in coordinating Europe's support programmes for electrification in sub-Saharan Africa should be taken by the EU institutions. The European Commission and the EIB should progressively channel existing and prospective programmes related to electrification in sub-Saharan Africa via a clearing house – that might be named the 'EU Electrify Africa Hotspot'. In the past, a number of different programmes have proliferated in this field, often without taking into consideration potential complementarities and overlaps with existing EU

initiatives. There is no reason why this situation should be perpetuated. Instead of creating additional initiatives (as most recently done with the launch of the EU External Investment Plan), the EU should first rationalise its current activities in the field. This would allow a more efficient use of European taxpayers' money, and also enable greater impact in sub-Saharan African countries, because of the greater scale and visibility.

Step 2: Attract EU country national programmes into the 'EU Electrify Africa Hotspot'

Once the programmes of EU institutions are being coordinated through the 'EU Electrify Africa Hotspot', it will be important to attract EU countries' national programmes on a voluntarily basis. EU countries should be able to see clear added value from the channelling of their funds through a joint scheme, for two main reasons:

1. No single EU country has the capability by itself to have a significant impact on the electrification of sub-Saharan Africa. Considering the size of the investments being made in sub-Saharan African electricity sectors by China and the US, Europe could only be significant by acting together.
2. Acting in sub-Saharan African electricity sectors through a joint European scheme could allow EU countries to reduce their own transaction costs, by exploiting synergies with other participants in the scheme.

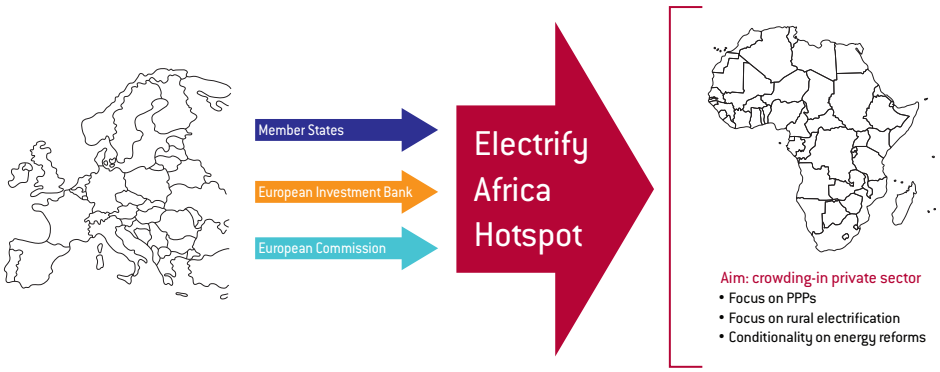
Of course, acting together via the 'EU Electrify Africa Hotspot' should not prevent any EU country from doing less or more, on the basis of its own political and economic preferences and priorities. The 'EU Electrify Africa Hotspot' should be seen, at this stage, as an opportunity to increase the visibility and impact of established bilateral initiatives, over which EU countries will continue to maintain ownership.

Step 3: Fully leveraging the potential of the 'EU Electrify Africa Hotspot'

The potential of the 'EU Electrify Africa Hotspot' would be fully realised as the various participants in the scheme start to work on joint projects – in other words, moving from a clearing house to a pooling of financial resources. As shown by Power Africa, once large-scale blended finance is available, larger private investments can be mobilised and energy sector reforms can be stimulated.

By creating public-private partnerships aimed at crowding-in private sector investment into the sub-Saharan African electricity sector – and most notably into mini- and off-grid solutions for rural electrification – EU institutions and member countries could together stimulate energy sector reforms such as reform of electricity utilities and energy subsidies that would, in turn, further attract private investment. It is this virtuous circle that the 'EU Electrify Africa Hotspot' should ultimately seek to create (Figure 4).

Figure 4: From a fragmented system to the 'EU Electrify Africa Hotspot'



Source: Bruegel.

9 Conclusions

Electrification represents one of sub-Saharan Africa's major barriers to socio-economic development. Responding to this challenge requires the joint action of sub-Saharan African countries and the international community. Sub-Saharan African countries should reform the governance of their energy sectors. Without this, international private investment will never materialise. Meanwhile, the international community has an important role to play in supporting electrification in sub-Saharan Africa. This role is particularly vital for the three-fifth of the sub-Saharan African population living in rural areas. Over the last decade, China has substantially scaled-up its investments in sub-Saharan Africa's electricity sector, and the US has put in place a comprehensive initiative aimed at scaling-up electrification across sub-Saharan Africa. However, Europe has created a myriad of fragmented initiatives, limiting overall efficiency and leverage. Europe should make the best of its resources to support electrification in sub-Saharan Africa, and to do so it should better coordinate its existing programmes. This is the only way Europe can make a significant contribution to sub-Saharan Africa's electrification challenge, in terms of crowding-in private investment and in terms of stimulating energy sector reforms in sub-Saharan African countries. Coordinating European programmes for electrification in sub-Saharan Africa though an 'EU Electrify Africa Hotspot' could represent a pragmatic solution to move ahead.

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