HIGH-LEVEL POLITICAL FORUM ON SUSTAINABLE DEVELOPMENT

POLICY BRIEF #18

ACHIEVING SDG7 IN AFRICA

Developed by:

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This document is a part of a series of Policy Briefs being developed to support SDG7 review at the UN High-Level Political Forum to be held in July 2018. The objective is to inform intergovernmental discussions by providing substantive inputs on SDG7 and its interlinkages with other SDGs prepared through inclusive multi-stakeholder consultation processes. The development of these Policy Briefs is coordinated under the auspices of the Ad Hoc Informal Multi-stakeholder Technical Group of Advisors on SDG7.

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KEY MESSAGES

- Megatrends of population growth, rapid urbanization and industrialization will lead to dramatic increases in energy demand in Africa to 2030.
- While countries in North Africa have attained near universal access to electricity and clean cooking, and a few other countries (notably Ethiopia, Gabon, Ghana and Kenya) are making good progress towards achieving universal access by 2030, the rest of the continent is very unlikely to achieve the Sustainable Development Goal No. 7 (SDG7) with existing policies and commitments, which puts at high risk the attainment of the other SDGs.
- The rate of access to electricity has surpassed the rate of population growth in Africa since 2013, with the number of people lacking access to electricity decreasing from 620 million in 2013 to 590 million in 2016. The number of people without access to clean cooking continues to increase and reached 780 million in 2016. Biomass thus has, and will continue to have a key role in the energy transformation agenda in Africa.
- Based on current policies and commitments - including those in nationally determined contributions to climate action, sub-Saharan Africa will have roughly the same number of people without access to electricity in 2030 as they were in 2016 and the number of people without access to clean cooking will reach 820 million by 2030.
- The capacity of renewable electricity exceeded 38 GW in 2016 (with about 23% share of total electricity capacity), driven mainly by developments in wind, solar PV, geothermal and large hydropower in South Africa, Morocco, Ethiopia and Kenya, among others.
- The rate of energy intensity remains high (6.0 MJ/USD in 2014) but with huge opportunities for energy efficiency actions and improvement in industry, cities, buildings, transport and power generation.
- Hydropower has a big role in Africa's electricity mix – with many African countries planning investments in small and large hydropower systems now and in the long terms. Yet, climate change and variability could render those investments stranded owing to underperformance. It is thus important to ensure that climate resilience if fully integrated into the planning and implementation of energy infrastructure and investments.
- Political will, coherent policies and an enabling environment for transformative investments - particularly from the private sector – to reach the approximate US$50 billion per year needed to ensure energy access for all by 2030 in Africa. This is particularly so for decentralized electrification programmes as well as investments to strengthen transmission networks, including cross-border interconnections to accelerated access to electricity.
- There is a severe lack of capacity for energy systems and investment planning on the continent.

Priority Actions over the Next Four Years

- Put in place coherent policies and the enabling environment to leverage limited public resources to mobilize from the private sector (including from domestic resources) the huge investments needed to ensure clean and affordable energy for all in Africa by 2030.
- Address data gaps and reliability (especially on biomass) to inform investment planning and outlook. Countries should be assisted to develop the capacity to collect and analyse biomass data, as well as to harmonise the data-collection methodology across the continent. Efforts should equally focus on strengthening existing data collection systems. As an example, data collection systems for ministry/institutions involved in agriculture can easily widen their focus to include agro-waste, and include biomass data in general.
- Countries should take the lead, with support from development partners, develop their human and institutional capacities for energy planning and management, as well as engagement with the private sector.
- Promote sharing of good practice and experiences, including business models and instruments to attract investment, with greater emphasis on off-grid systems.

Priority Actions to 2030

- There are multitude of programmes at continental, regional and national levels that aim to increase energy access and these involve multiple actors from public and private sectors. It is important that these initiatives be actively monitored for cross learnings and impact tracking.
- The low-income countries in general, and rural areas across Africa in particular, pose the greatest challenge in energy access. These countries should be assisted in developing resource mobilisation strategies for rural "energisation", through for example, pro-poor PPPs (or 5Ps) that will not only improve energy access, but also address rural development (job creation, skill development, etc.).
- Future of energy systems in Africa lie on the continent's vast renewable energy resources that remain largely untapped. The reason for the limited use of modern renewables in Africa are mainly high cost of technologies and lack of investments. Therefore, local renewable energy investments need to be devised, as well as assisting African project developers (technical and financial) to play a role.
- Energy efficiency has a huge role to play. Energy efficiency in cities, industries, buildings, lighting, industries transportation, etc. There is a need to aggressively promote energy efficiency across all sectors. This would lead to more

power being available for access. Moreover, energy efficiency planning should be systematically prioritised across all sectors. This would avoid the continent being locked-in technologies that are inefficient for next decades.

- The weak power transmission and distribution infrastructure in most countries makes the case of mini-grids and decentralised power systems a unique winning opportunity for Africa.
- Strategies for local content enhancement across the full renewable energy value chain
- Comprehensive bioenergy polices and strategies for the transition to modern renewables
- Accelerated efforts for investments to encourage innovation in energy services and promote collaborative research and development at the regional level.

ACHIEVING SDG 7 IN AFRICA

Africa represents 54 countries, of which 25 were defined as the Least Developed Countries, or LDC as of May 2017, based on similar low per capita, human asset and economic vulnerability criteria. These countries have very large rural populations, often unserved by modern energy services and relying on solid biomass. According to UNCTAD data (2017), the rural population without access to electricity stood at 89 per cent in 2014.

It is only 12 years before the milestone 2030, and based on current developments, universal access to clean affordable energy will not be achieved by a significant number of African countries. This is despite the numerous programmes at continental, regional and national levels aimed at increasing access to modern energy. For Africa, a longer-term target has to be maintained over and above the 2030 vision.

Current status

Most analyses (e.g. UNCTAD 2017, ECA 2017a and IEA 2017) acknowledge the progress made in many African countries since 1990 in increasing access to modern energy. However, due to a combination of population growth, low annual electrification rates and low generation capability, most of the continent's population will continue to be denied access to modern energy services.

Energy access

Africa is lagging behind compared to global performance in terms of electricity access. In 1990, the continent presented the lowest rate of electrification of 29.6 per cent compared with 72.8 per cent globally.

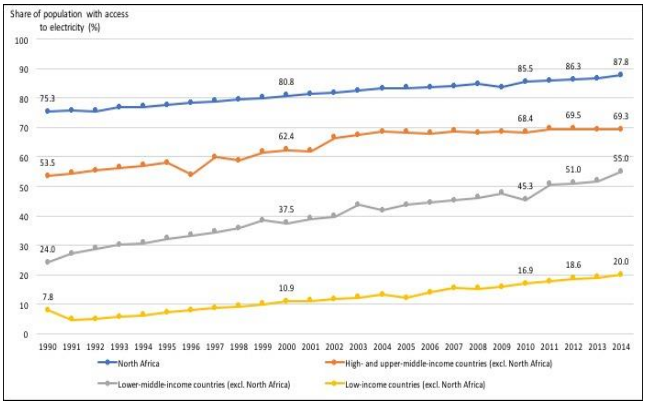

Figure 1: Share of population with access to electricity, by sub-region, 1990-2014. Source: World Bank Statistics

The electrification rate only increased by 12.9 per cent to 42.5 per cent in 20 years from 1990 to 2010, providing electricity to 12.8 million people each year from 186 million to 444 million. However, the total population during the same period increased annually by 20.65 million. In the 2010- 2012, the rate increased to 45.1 percent, and the number of people electrified each year doubled to 25 million, while the total population grew by 27.5 million per year. In 2012-2014, the rate continued to grow, reaching 46.9 percent, while the global average was 85.6 percent (ECA 2017).

Similar to electrification, Africa is the worst performing region in terms of access to clean fuels and technologies (CFTs). In the baseline period 2000-2010, the share of the population using CFTs barely increased from 24.4 per cent to 25.6 per cent, representing a yearly increase of just 6.9 million new users. However, the population in the same period increased annually by 23 million. In 2010-2012 period, the share remained almost flat, at 25.7 per cent, as there were only 7.5 million new users of CFTs per year, while the total population increased at a more rapid pace, with the addition of 27.5 million people per year. The pace of adoption remained almost stagnant, at 0.1 percentage point during the period 2012-2014. The share reached 25.8 percent, with 8 million new users yearly, against additional 29 million people to population per year. To reach universal access by 2030, the rate of adoption of CFTs needs to increase dramatically.

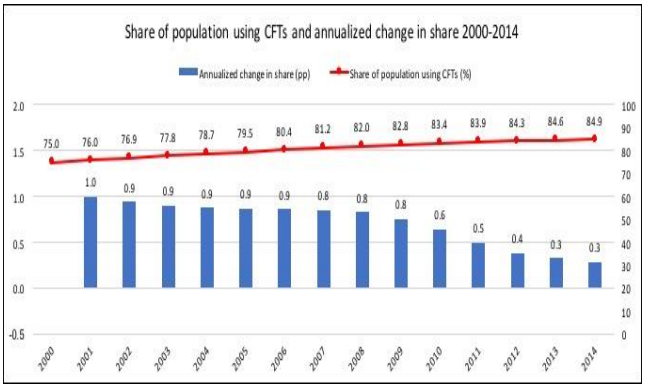

Figure 2: Share of population using clean cooking, 2000-2014. Source: WHO Statistics

Energy efficiency

Africa reported a comparatively high rate of energy intensity in 2014, of 6.0 MJ/USD (PPP 2011), compared to the global average of 5.5 MJ/USD. In the baseline period 1990-2010, energy intensity in the region decreased from 7.9 MJ/USD in 1993 to 6.2 MJ/USD, at -0.2 per cent CAGR between 1990 and 2000 (Figure 3). Improvements in energy intensity was -1.7 per cent in the period 2000-2010, driven by GDP growth that coincided with a global surge in commodity prices, particularly for oil. Energy intensity declined in the period 2010-2012 by -0.4 percentage point, mainly on the back of a dip in oil prices in 2009, but it accelerated again to -1.2 per cent in the period 2012-2014, as GDP returned to higher levels when the oil prices recovered briefly until 2015 (Institute for 21st Century Energy, 2013).

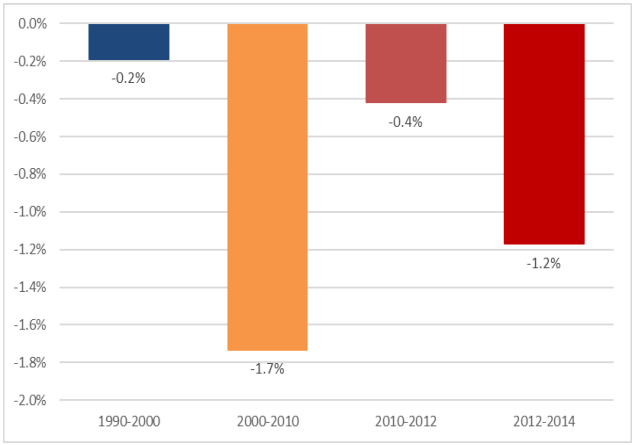

Figure 3: Energy intensity and annual change in intensity in the African region, 1990-2014. Source: IEA and UN Statistics

Energy intensity changes have varied by economic sector. Energy intensity in the industrial sector returned to a negative CAGR in the periods 2010-2012 and 2012-2014, after trending higher during the period 2000-2010. It reported the lowest energy intensity in the agricultural sector, at 0.5 MJ/USD, in 2014, however, it never exceeded 0.76MJ/USD from 1990 to 2014. Following two decades of declining trends, energy intensity in the services sector shot up in the periods 2010-2012 and 2012-2014, which can be attributed to improved infrastructure for information and communications technology. The residential sector had slight changes in energy intensity, which may be a combination of poor capture of energy consumption and GDP data, and a general shift to more efficient CFTs.

Renewable energy

The share of renewable energy in total energy consumption in Africa was the highest in the world in 2014, at 57 per cent, driven by traditional biomass consumption. The region also recorded the highest share in total energy consumption in the world, at 48.9 per cent, in 2014. The share of renewable energy in the total energy consumption in Africa decreased slightly from 60.2 per cent in 1990 to 57.5 per cent in 2010, and 56.5 per cent in 2012: it peaked at 62.4 per cent in 1994.

Most renewable energy in Africa is derived from biomass. According to IEA (2017), about 780 million people in SSA rely on solid biomass for cooking, and this number has grown by 50 per cent since 2000. The penetration of modern renewables is modest, save for large hydropower plants.

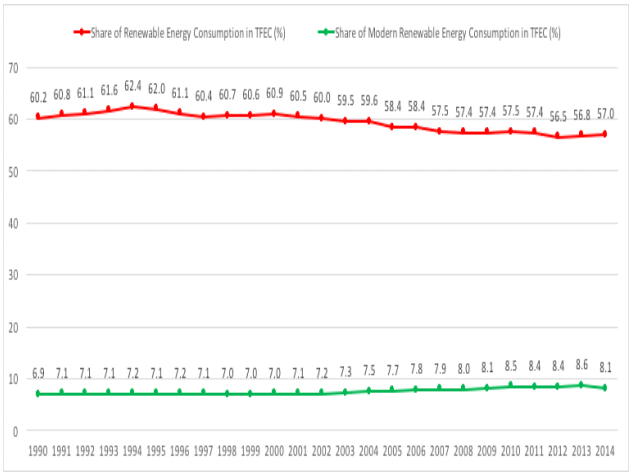

Figure 4: Total renewable energy and modern renewable energy share in Africa, 1990-2014. Source: IEA and UN Statistics

Are we on track to achieving SDG 7 in Africa?

In just over 12 years, it may not be possible for most of the continent to achieve all the SDG 7 targets, especially universal access and energy efficiency targets, given the low base in which most countries started. Indeed, several African countries, most notably in North Africa are currently having universal access to electricity.

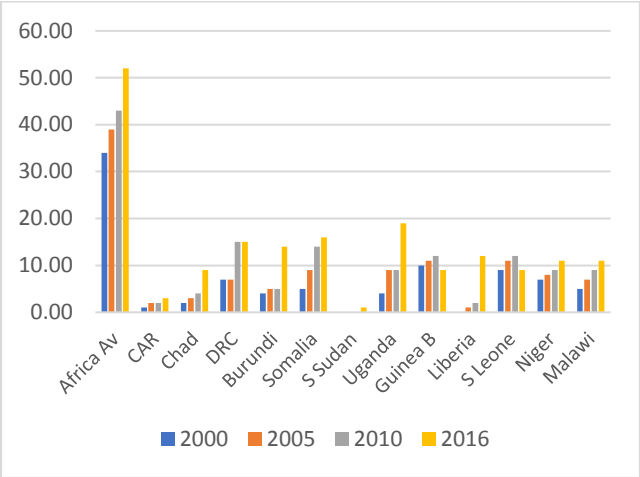

Table 1: African countries with less than 20 per cent electricity access in 2016. Source: IEA (2017)

The greatest challenge is access to CFTs, and it is clear that this target will not be reached by a majority of African countries, save for North African countries, where the share of population without access to CFTs is less than 3 per cent. In SSA, only Mauritius and Seychelles have almost universal access to CFTs followed by South Africa at over 80 per cent (IEA, 2017).

Key challenges

Low power generation capacity

The installed electricity generation capacity in SSA is 122 gigawatts – South Africa alone generates 45 gigawatts. It is made of mainly fossil fuels (coal and petroleum and gas). Renewable energy, mainly large-scale hydropower makes up a quarter (IEA 2017). In most cases, the generation is very inefficient. Some of the generations assets are so old but have not been replaced or repaired in ages.

Cost of rural electrification

Many countries in Africa have rural electrification programmes – including rural electrification agencies and sometimes dedicated funds – to accelerate electrification in rural areas where the majority of the population lives and lacks electricity access. All Southern African countries have such rural electrification agencies or units except Seychelles and Mauritius that are already fully electrified. Botswana that registered the fastest rate of electrification has such well-managed rural electrification scheme which is supported by a well-managed economy.

Limited grid coverage inhibits further growth in rural electrification in particular, as electrification programmes have largely been based on grid electricity distribution. For the majority of countries in Africa, between 80 to 95 per cent of the unserved communities are targeted to receive electricity supply through grid extension (World Bank 2010). There is growing realization about the huge cost implications of grid connections, as the mechanism for rural electrification. The investment required to extend grid coverage in rural areas is significant, and the gap with current investment levels is wide. Off-grid technology options – mini-grids and individual systems – are increasingly being considered as cheaper supply options for small consumers residing far from the grid network.

Also, rural electrification is viewed more as a social service. As such, the demand in rural areas is in most cases suppressed. Eventually most rural electrification initiatives end up being rural lighting projects. There is need to shift towards rural energisation. This entails stimulating productive uses of electricity like agro-processing in parallel to grid extension

Financing gap

There is a huge financing gap that will be required to meet universal access globally. In Africa, excluding North Africa, where 200 million households of the over 600 million households without access reside, the World Bank estimated a financing gap of US$280 billion to meet universal access by 2030.

The cost of electrification is highest in Africa compared to other regions and generally unaffordable. In addition, rural consumers' low electricity demand often does not justify the costs of the grid extension.

There are some important global initiatives that attempt to plug the finance gap, particularly for off-grid applications. These include "Lighting Africa" and "Power Africa" that are registering positive impacts in enabling access to electricity in a number of African LDCs.

Instability, social unrest and unreliable power supply

Economic recession and political civil strife in some countries often reverse the gains in energy access, as electricity supply infrastructure and services become neglected. As economies fail to perform, the electrification rate fell below population growth rates. This was demonstrated in Benin, Zimbabwe, Angola, Republic of Congo in the 2012-2014 period.

A growing number of countries suffer from power reliability issues, due to insufficient electricity supply, resulting in high rates of unplanned outages and load shedding. As a result, many consumers opt for other sources of energy, such as diesel generators, despite being connected to the grid and when they do so may not be captured in the electrification access.

Costs of adapting to clean cooking

Special initiatives (such as the Global Alliance for Clean Cookstoves – GACC) and LPG promotion are often the main drivers behind improvements in access to CFTs. The GACC has been disseminating clean cook stoves in 19 partner countries in Africa and four focus countries since 2010.

To address the unaffordability issue of LPG, countries such as Senegal, Ghana, Cape Verde and Kenya have introduced small sizes of gas cylinders and in some cases subsidies to improve affordability of low-income households. Nonetheless, more effort is required to improve gas uptake. LPG supply infrastructure is also constrained by limited refineries and distribution channels on the continent.

The transition to CFTs often requires a transformation of mindsets and cultural practices. The overdependence on "traditional" biomass (such as charcoal, fuel wood and cow dung) has resulted in a lock-in of households into existing infrastructure and practices.

Biomass data gap

Biomass represents a significant share of energy use in SSA. However, the current and potential contribution of biomass to the energy mix is not clear, because current data does not adequately assess bioenergy consumption at the household, commercial or institutional level. The lack of reliable data, analysis and dissemination hinders efforts to raise awareness of the importance of bioenergy; and identify solutions to manage bioenergy production and use in a sustainable way.

Current use of biomass is the driving force behind negative environmental and human health impacts. Therefore, there is an urgent need to develop and implement effective methodologies for gathering, archiving and disseminating data on bioenergy production and use specific to the SSA context.

Capacity and skills gap

There is realization that capacity and skills such as setting renewable energy and energy efficiency targets, conducting energy planning, renewable energy resource and grid capacity assessments, conducting energy efficiency audits and even determining cost reflective tariffs are limited on the continent, but are required to meet the SDG 7 as well as assessing the progress and impacts.

How to fill the gap to achieve SDG 7 in Africa

Accelerating current efforts remains the realistic way in which Africa can at least achieve a near universal access to clean affordable energy. The Agenda 2063 is the strategic framework for the socio-economic transformation of the continent over the next 50 years. It seeks to accelerate the implementation of past and existing continental initiatives for growth and sustainable development. It also supports regional and national energy initiatives, such as the Programme for infrastructure Development in Africa (PIDA), the African Renewable Energy Initiative (AREI), AfDB's "High Fives" (that include energy), etc. These initiatives will increase energy connections in Africa, particularly in countries with little energy investments.

However, there remains challenges or bottlenecks that prevent most of Africa in achieving universal access to affordable energy. In the short term, the following needs to happen:

- All African countries should be assisted to enable the environment for investment in energy as well as drawing up robust action plans to facilitate these investments.
- Increase or enhance capacity of all Africa countries on biomass data collection for proper planning purposes, as well as understanding opportunities and limitations of biomass resources.
- African utilities are the engine for energy service delivery and are often hamstrung by lack of capacity to implement energy plans. A capacity building programme need to be devised to improve energy utilities, at national and local levels.
- There is an acute need to mobilise private sector investments as scale in the energy space. On one hand, private sector need capacity to develop bankable projects. On the other hand, public institutions need capacity to engage the private sector investors.
- Looking in the medium term (up to 2030) and beyond, more strategic interventions need to be embarked up, such as:
- Monitoring the many programmes at continental, regional and national levels that aim to increase energy access for cross learnings and impact tracking.
- Assisting LDCs in developing resource mobilisation strategies for rural "energisation", through pro-poor PPPs.
- Devising future of energy systems that take advantage of Africa's vast renewable energy resources. This include dedicated investment instruments for renewable energy technologies, such as decentralised systems for rural energisation.
- Prioritizing energy efficiency in all economic sectors as a mechanism for making more power available and improve access.
- Lastly, special focus should be on mini-grids and decentralised power systems, as it is not possible to extend grid to most of Africa, particularly in remote rural villages.

Interlinkages with other Sustainable Development Goals

The importance of energy access is not confined solely to SDG 7.1: it is also crucial to the achievement of many of the other SDGs, including those concerned with economic growth, gender

equality, poverty reduction and improvements in health. The following SDGs have particular nexus to access to affordable clean energy.

Low-carbon development (SDG 13)

Renewable energy has a critical role to play in powering Africa's industries, as well as in creating industries along the low carbon development path – often referred to as "green growth". More importantly, prices for renewable technologies, especially solar and wind-power, are falling at an extraordinary rate to the point that they are competitive with fossil fuels. There are good signs about the growing green investments in Africa. Ethiopia, Ghana, Kenya, Nigeria, South Africa, and others are developing very large renewable energy based power-generation plants.

There have been noted increases in solar home systems. About 5 per cent of households in Africa use some form of solar lighting, compared with 1 per cent in 2009 (Africa Progress Panel 2015). The potentials of hydro, solar, wind and geothermal present huge supply side market opportunities for low carbon technology development and transfer.

Role of energy industrialization (SDG 9)

Industrial development remains a viable solution for African countries to reduce dependence on commodities, while achieving prosperity for their citizens. Africa has failed to scale up industrial activities, and most economies across the continent are entrenched at very low rungs of regional and global value chains. Among the critical threats to the continent's industrialization process, energy infrastructure bottlenecks occupy a dominant position. Overcoming the energy infrastructure gaps remains vital if Africa is to unlock its economic potential through industrial development.

Industries should shift from consumers of electricity to prosumers i.e. where they also focus on generation their own power. Industries like timber, sugar, etc., can make use of their organic waste for generation. They already have the financial capital and technical know-how. Equally mining industries can embrace solar thermal heating and cooling applications. This will enhance links to SDG 9.

Gender and health (SDG 5 and SDG 3)

There are strong linkages between gender-based constraints and structural transformation (UNCTAD, 2017). The gender-based roles at household level, especially in rural areas presuppose that women should carry work that rural societies expect them to, such as fetching water and firewood, cooking, nurturing children and general upkeep of the households. Access to modern energy could contribute to gender equity, particularly leading to an inclusive development. Therefore, mainstreaming gender in energy development is important because of the following reasons (GGCA, 2012):

- Women and girl children are primarily responsible for collecting fuel and water at the community level, as well as participating in informal economic activities, such as small-scale agriculture, food catering, etc. These rely mostly on traditional biomass as the main energy source.
- It is often the responsibility of women to collect firewood, often travelling long distance of up to three hours per day. They are vulnerable to dangers (such as snake bites, assault, etc.) as well as health problems from carrying large bundles of wood on their heads.
- Women and girl children are responsible for cooking in many African households. Often, these women use inefficient "traditional" stoves or open fires in poorly ventilated buildings. This exposes them and infants to serious indoor and outdoor pollution. According to WHO, around 2.8 million people die prematurely each year because of smoky environments.
- There is evidence that women-headed businesses are discriminated against when it comes to access to grid electricity.
- The energy sector is male-dominated, which often results in energy-blind energy plans and policies. projects and policies.

Policy implications

Creating investment climate

Energy provision in African is perceived as a public good, and the public sector (i.e. various government institutions) funds and implements most energy programmes, with little private sector finance and participation. There are significant shifts. The PIDA energy projects show significant private sector participation. Through policy reforms in most African countries, there have been a proliferation of PPPs in the energy sector, particularly in the power sector. Kenya is one good example. The involvement of the private sector was instrumental in increasing electricity from 18 per cent in 2010 to 65 per cent in 2016. The increase of the modern renewable energy share in the South African energy space was as the result of policy reforms that facilitate private sector participation.

Most Africa's rural areas are without access to modern energy and it has been demonstrated a different model of energy investment is needed. In the past investing in renewable energy technologies that are deployed in rural areas was seen as risky owing to regulatory and policy uncertainties, as well as impoverished market. However, recently there has been an emergence of global initiatives that aims at increasing access to modern decentralised, modular systems for the rural market.

A number of countries are creating good environment for rural-based energy, but these reforms are still nascent and need to be accelerated. Still the renewable energy space is still dominated

by international firms/finance in partnership with public institutions. There is little participation by the local project developers or IPPs because the latter often do not have access to credit, as is the case with their international counterparts.

In this scenario, international firms are crowding out local firms in supplying renewable energy options, as in the case in South Africa, Zambia and a host of other African countries. In a recent Zambian 100MW bid, only one out of the 11 firms that qualified were African – and this company came from South Africa (McDaid 2016). It is important that the formations of special credit facilities at national levels that will assist local projects developers. The Ugandan Energy Credit Capitalization Company (UECCC), which is supported by the German development bank (KfW), is offering advisory services, and funding for renewable projects in the country.

Decentralised energy systems

The more than 80 per cent of people living without electricity are in rural areas. Current policies and actions of energy access in most African countries are biased towards urban areas. The successes of the renewable energy bidding in South Africa is mainly because these solar and wind projects are connected to, or feed the national grid.

Connecting grid to most rural areas, especially the sparsely populated areas, many kilometres from the centres, would not be economically viable. Africa needs to accelerate in decentralised technologies (viz. solar lanterns and pico-solar devises, stand-alone systems and mini-grids). A number of African countries are deploying solar home systems in their rural electrification programmes and these are mainly supported by development partners. However, in spite of providing alternative power, these systems' impact on improving livelihoods is limited. They are still costly and only provide minimal power, as well as not suited for higher valued added stages of production (UNCTAD, 2017).

Capacitating energy service providers

Skills development, both soft and hard, should be at the centre of energy projects' implementation. This ensures sustainability and localisation of technologies and practices. Special funds should be set up for strategic programmes aimed at improving the capacity of energy service providers in the both the public and private arena at national and local levels. This is an area that has been identified as a serious impediment in rolling out energy interventions on the continent. There are institutions that have mandate to build this capacity. The examples are the AU's African Renewable Energy Commission (AFREC) and the UN's African Institute for Economic Development and Planning (IDEP) at continental level.

There are also newly established centres of excellence that regional levels, such as West Africa's Centre for Renewable Energy and Energy Efficiency (ECREEE), Southern Africa's Centre for Renewable Energy and Energy Efficiency (SACREEE), North Africa Regional Centre for Renewable Energy and Energy Efficiency (RCREEE) and East Africa's Centre for Renewable Energy and Energy Efficiency (EACREEE).

However, without dedicated financial support, these African institutions cannot play a meaningful role in building much-needed capacity in African countries.

Regional cooperation and harmonisation

Develop strategy for the continent to engage emerging global partners like China and India. Fact is that these emerging countries are investing potentially more money in Africa than the rest combined, yet most countries do not have a strategy around this? In some cases, some of the projects may not be based on the best available technologies or do not advance the strategic development trajectory interests of these countries. One way would be to engage these countries in establishing capital subsidisation funds and technology transfer schemes for energy access technologies.

Engendering energy policy-making process

Over two-thirds African households cook with solid fuels, and women and girls comprise the majority of those that prepare household meals, as well as collecting firewood on the daily basis. Therefore, this makes universal access to affordable clean energy in Africa a gender issue, which should be tackled by addressing gender constraints faced by women within the energy sector and or energy value chain.

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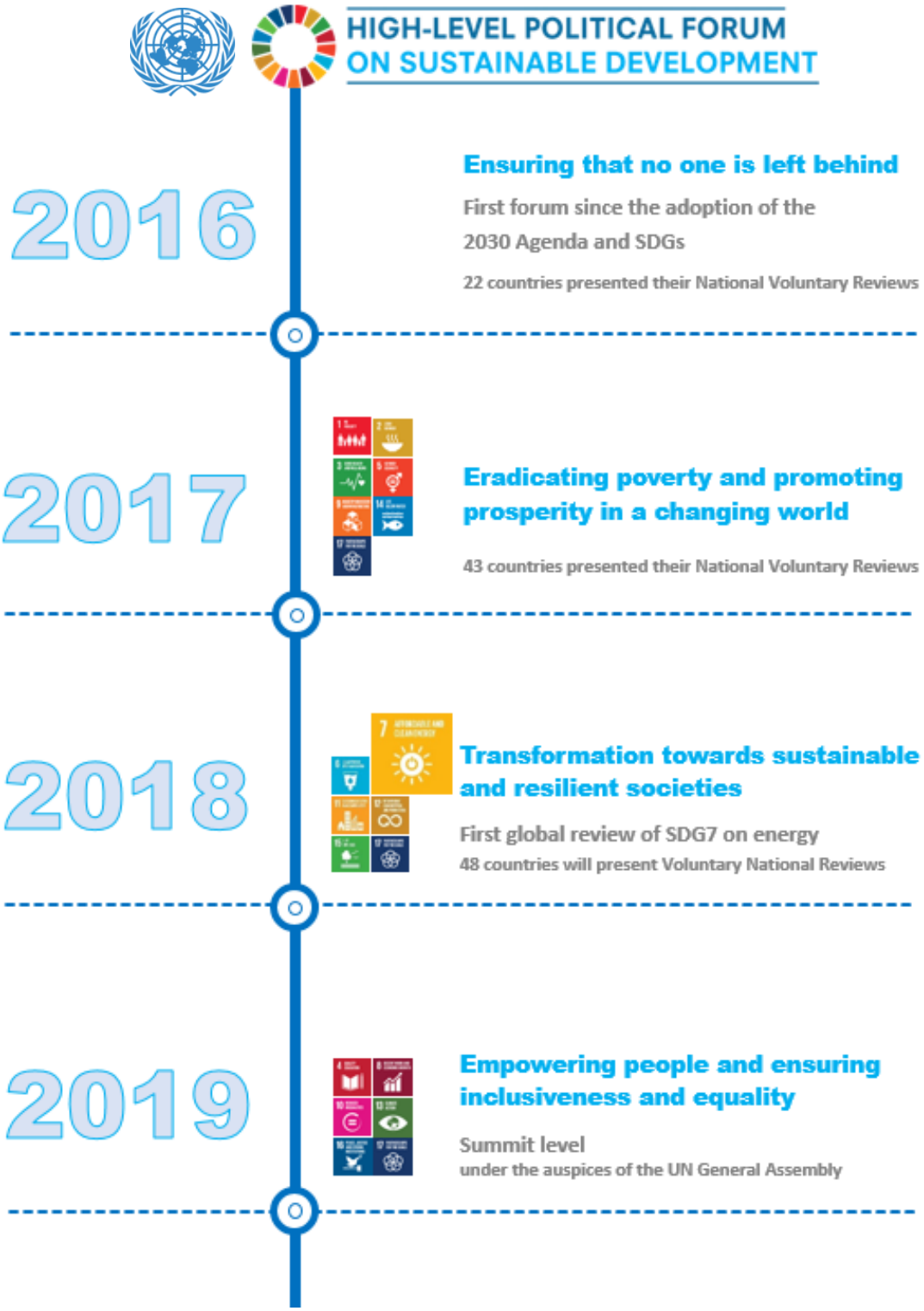

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