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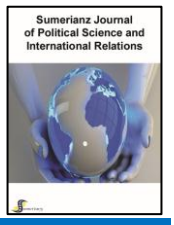

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Energy and Power: Connecting Africa Improving Security Financing Projects and Insuring Competitiveness

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Abstract

The paper dwells on the issues of energy and power on the continent of Africa, it examines the critical process of how the continent can be connected with electricity, provide financial banking from financiers for the improvement of energy security and competitiveness. Using the secondary descriptive methodology, findings show that the sub-sahara Africa is still backward and far from continental connectivity. The paper concludes that Africa has enough resources to liquidate into connecting Africa with power and enough energy to convert into electricity. One obstacle that affects power accessibility, connectivity and distribution is absolute corruption, where leaders siphon money meant for national development through self-contracting and embezzlement of public fund. The paper recommends that African governments must declare power a continental emergency, which must be dealt with, financed and supported in all ramifications, to ensure boost in health sector, trade, investment, industry and other many ways that need power support. African governments must also attract huge investments in energy and power sector, with consideration in easing tariff and taxes on power related firms and investments, in order to make energy and power cheaper for the continent.

Keywords: Energy; Power; Connecting; Continent; Security; Competitiveness.

1. Introduction

The issue of energy and power is one that has become indispensable for the survival of mankind in the contemporary international order. This affects the human live in a variegated areas spanning from education, health, agriculture, industry and many more areas human lives depend on. Energy and power protects against spread of diseases, provide know-how and boost industrial capacity of human nations. Many continents such as Europe, North America, Australia and Asia among others, have significantly improved the level of power generation, transmission and distribution for the well-being of their population. The lagging continent on this issue is Africa, where more than half of the population lives in darkness. Today, over 640 million Africans have no access to electricity, corresponding to an electricity access rate for African countries at just over 40 percent, the lowest in the world. Per capita consumption of energy in sub-Saharan Africa (excluding South Africa) is 180 kWh, compared to 13,000 kWh per capita in the United States and 6,500 kWh in Europe (African Development Bank Group, 2019).

Access to energy is crucial not only for the attainment of health and education outcomes, but also for reducing the cost of doing business and for unlocking economic potential and creating jobs. Insufficient energy access manifests itself in hundreds of thousands of deaths annually due to the use of wood-burning stoves for cooking; handicaps the operations of hospitals and emergency services; compromises educational attainment; and drives up the cost of doing business. Energy access for all is therefore one of the key drivers of inclusive growth as it creates opportunities for women, youths, children both in urban and rural areas.

Africa's energy potential, especially renewable energy, is enormous, yet only a fraction of it is being currently employed. Hydropower provides around a fifth of current capacity but not even a tenth of its total potential is being utilized. Similarly, the technical potential of solar, biomass, wind and geothermal energy is significant. While renewable energy will be prioritized by the Bank, fossil fuels will remain an important part of the overall energy mix, as is the case with several developed economies, with the Bank financing state of the art technology to minimize emissions.

There are institutions that try to make sure that Africa get completely connected with power, such as the united nations, the united states, other donor institutions and African bodies in general, but this is a mirage, a mere hopeless expectation as the donor nations and institutions are not always willing to provide Africa with power just like that without a string attached. The United States for example would not provide Africa with power through its program of power Africa just like that without exploring African energy and other potential resources.

There is also a self-killing action by the African governments, where endemic corruption has continued to obstruct all efforts for providing stable electricity in the continent. This goes with the lingering problem of lack of adequate technicians and technical knowledge that could drive the continent to a greater height in terms of energy and power generation, transmission and distribution. African leaders have squandered what should have made Africa

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an energy and power exporting continent in a normal circumstance, but lack of accountability and leadership crisis have contributed immensely in making Africa remains a dark continent in the 21st century.

1.1. Conceptual Clarification

Energy: The concept of energy as used in this work reflects its potential meaning as used in physics as described by Harper (2007). It is the "quantitative property that must be transferred to an object in order to perform work on, or to heat the object." Energy here refers to the quantitative property used in providing electricity in different ways from different sources.

Power: Power as used in this work refers to Electric power as produced by electric generators, or unleashed by electric batteries. It is also used in this work to mean the electric power which according to Smith (2001) provides a "low entropy form of energy and can be carried long distances and converted into other forms of energy such as motion, light or heat with high energy efficiency."

Power Generation: Power generation is the process of getting power from its original source before it is being produced for transmission and distribution. The production power is usually done by the electric power plants as generated by electro-mechanical generators. These generators are moved by heat engines usually fuelled nuclear fission or combustion.

Power Transmission: Power transmission is the process of transmitting power voltage or current using transformers to control loss of current. It is through transmission that power is being channeled to different routes and stored before reaching final consumer.

Power Distribution: Power distribution is the transfer of power through the transmission networks to the final consumers. This, as used in this paper, is in line with what Short (2014) highlighted as "distribution substations connect to the transmission system and lower the transmission voltage to medium voltage ranging between 2 kV and 35 kV with the use of transformers," to the final or end users.

Watts: Watt as used in this paper represents a unit or an amount of electricity consumable by the end users. It is pertinent to note that some devices require only a few Watts to operate, and other devices require larger amounts. The power consumption of small devices is usually measured in Watts.

Kilowatts: Kilowatt is also an amount of electricity used by larger devices and measured as kW, which means a kilowatt is equal to 1,000 Watts. Electricity generation capacity is often measured in multiples of kilowatts, such as megawatts (MW) and Gigawatts (GW). One MW is 1,000 kW (or 1,000,000 Watts), and one GW is 1,000 MW (or 1,000,000,000 Watts).

Kilowatt hour: This is a unit of energy that is according to Thompson and Taylor (2008) is equal to 3.6 megajoules. If energy is transmitted or used at a constant rate (power) over a period of time, the total energy in kilowatt hours is equal to the power in kilowatts multiplied by the time in hours. The kilowatt hour is commonly used as a billing unit for energy delivered to consumers by electric utilities Thompson and Taylor (2008).

2. Literature Review

Blimpo *et al.* (2018), have emphasized on the nature of demand and supply as they affect the issue of power connectivity in Africa. They argued that there is high demand than supply of power on the continent and this has created supply deficit. They argued that:

The share of households that live near the electric grid but that are not connected is high, with a median uptake of only 57 percent for 20 countries for which comparable Living Standards Measurement Study (LSMS) data are available. This low uptake is a critical reason for the access deficit. Uptake rates vary across countries; they are high in a few countries such as Cameroon, Gabon, Nigeria, and South Africa, and very low in other countries including Liberia, Malawi, Niger, Sierra Leone, and Uganda.

Apart from the issue of demand and supply, there is this issue of variation or imbalance within countries in sub-sahara Africa in terms of uptake rates. Blimpo *et al.* (2018), believe that only the central region of Uganda and the capital city, Kampala constitutes an uptake rate exceeding 50 percent. In comparison with Kenya, "a study conducted in 150 communities in western Kenya" shows that uptake rate is very low. Some of the reasons that result in the low uptake rate within Africa as well as within individual countries in Africa according to Blimpo *et al.* (2018) are called few barriers. These barriers are as follows:

a) Connection charges and the process of getting connected: this shows that connection charges are relatively high while considering the income of the African population. This is also attached to three variables that are evident in about 10 countries in Africa: (1) the connection requirement and process are often standard and not designed to alleviate the constraints that the poor face; (2) the process entails long waiting times, often exceeding 10 weeks; and (3) although the cost of connection is often thought of as fixed, there are significant variations across households within the same country when wiring and transaction costs are considered. The variation tends to be regressive, thus exacerbating affordability for the poor Blimpo *et al.* (2018).

b) The level of income matters for uptake, income flow and predictability are tied to households' willingness to connect to electricity services. A recurring payment of even a small amount can constitute a major problem for households that generate their income on an irregular basis. Prepaid meters can play a crucial role in circumventing this constraint. Flexible mechanisms for bill payment, mirroring income fluctuations, could further address this issue.

c) Electricity connection via conventional AC (alternating current) supply requires minimum building standards that many existing houses do not meet. There are technologies such as ready boards that make it

possible to connect even substandard houses. Coordination between regulators in the housing and electricity sectors can help ensure that the requirements for building permits conform to the standards required for electrical connection. In the submission of the World Bank (2017), there is a policy inertia that Africa should have considered long ago to deal with electricity deficit on the continent. Some of the policy issues are:

d) Recognize that electrification is a long-term investment and a necessary input for economic transformation. Plans to increase access should not be evaluated based only on short-term benefits. African countries have underinvested in electricity, which negatively affect how urbanization unfolds. Hence, it is important to find ways to finance the upfront costs of electrification that may not yield short-term results. In this regard, electrification may be viewed as a time-consistent way to save or invest natural resource proceeds for future generations.
e) Address demand constraints at all stages of the electrification process. Addressing demand constraints is essential to raising uptake. Households in Africa often cannot afford connection fees and consumption tariffs because of lack of adequate and regular income. Households face other demand constraints such as inadequate housing quality and costs associated with internal wiring—in addition to the inability to afford appliances that need electricity. Some middle- and high-income households are on reduced tariffs even though they could afford to pay more, while those sharing a connection are not benefiting from lifeline tariffs. Also, well-off households and firms might be willing to pay more if reliability were improved.
f) Target and promote productive use so that electrification will raise household income, enhance household ability to pay, help the financial viability of utilities through higher consumption, and feed back into public finances through taxes for reinvestment. This goal will, however, require reliability and the provision of complementary factors.
g) Prioritize reliability, whenever access is provided, because reliability will be crucial if electricity provision is going to pay for itself. Access rates alone should not be the sole measure of progress because universal access may not deliver its full promise if quality and reliability continue to be poor, with a significant strain on economies in Africa and the livelihood of their people.
h) Coordinate with other sectors to take advantage of complementarities and the provision of appropriate inputs to productive economic activities. For example, coordinating with development initiatives (road infrastructure investment, access to finance, skills development, public service delivery, for instance) could help prioritize where to provide electricity and thereby amplify its economic impact.
i) Take advantage of recent technological advances in off-grid solutions to strategically promote productive uses especially in rural areas. This objective can be achieved through the adoption of cost-effective solar solutions that can provide sufficient capacity and reliability to support income-generating activities such as off-season farming, value-added agro-processing, and promoting other small businesses (for example, hairdressers, eating establishments, tailors, and others).

In the submission of International Energy Agency (2014), Electric power consumption in Africa is extremely low compared with other developing regions. The 483 kilowatt hours (kWh) per person consumed in Africa in 2014 is not much more than the amount of electricity needed to power a 50-watt lightbulb continuously for a year (IEA 2014). If African countries were to connect all households quickly, the average level of consumption would remain low because most cannot afford electrical appliances such as air conditioners, refrigerators, and water heaters. Given the prevalence of subsidies, the financial situation of the region's utilities will worsen, threatening their sustainability. It is therefore imperative that as the region makes progress toward universal electricity access, utilization also rises.

Trimble and Perez (2016) posited that, currently, the unit cost of electricity to consumers in many countries in Africa is more than double the cost in high-income nations such as the United States (US$0.12/kWh) and far higher than in many emerging markets such as India (US$0.08/kWh). In some countries, such as Liberia, the cost of electricity per kilowatt hour is four times than in the United States. In many African countries, it would cost more than 10 percent of per capita GDP to power a refrigerator for a year, a far larger share of most households' income, considering income inequality

According to East (2019), climate change is contributing to Africa's energy and power's insecurity. It provided a highlight that when Kenya announced its first sales of crude oil, "Zimbabwe raised electricity prices threefold in the face of a biting shortage." When Tanzania, Rwanda and Burundi signed agreements for the construction of 83MW hydropower plant, Nigeria also signed agreement with "Siemens for the delivery of more than 25,000MW, a third of which is expected on the national grid by 2021." When the government of South Africa spent $4.2 billion to rescue power utility Eskom, Zambia had to take the drastic step to shut down the Kariba Dam so that more power could be generated in Mozambique and resold to Lusaka in the face of a biting drought (East, 2019).

The East African East (2019) has also provided a framework through which Africa can deal with issue of power connectivity. These factors are: (i) Getting power to the remotest of places now called the last mile is the greatest poser for governments (ii) Power remains unaffordable to a majority of the population whose access is also limited by irregular distribution of transmission lines. Power should be made affordable and reliable (iii) only 40 per cent of Africa's billion-plus population has access to electricity and its distribution is skewed in favor of urban areas. There is the need to balance such inequality and make it possible for the urban dwellers to afford distribution.

2.1. Theoretical Framework

The theoretical approach adopted in this paper is the human security theory. The theory explains security not necessarily conceptualized to mean national security which has become an obsolete concept, but states and nations

must focus on human security in general. Humanity is a collective practical and general phrase which encompasses human existence and survival through self-help. Self-help here does not envisage selfish interest, but a collective one for the survival of human race. Human security theory is all encompassing as it deals with all areas of human survival it sees education, health, sustenance, energy and power, climate and environmental protection, human rights, personal and community security, political security, food security and security from any form of fear.

Some of the popular contributors to the human security theory are G. King, C. Murray, Caroline Thomas and Roland Paris among others. In the argument of King and Murray (2001), human security envisages "one's expectation of years of life without experiencing the state of generalized poverty." Thomas (2001) opines that human security constitutes "a condition of existence which entails basic material needs, human dignity…meaningful participation in the life of the community...and democracy from the local to the global." Paris (2001) sees human security from the environmental and economic viewpoints, and free from civil wars and ethnic conflicts.

The relevance of the human security theory to this study is that, energy and power are essential needs that humanity cannot develop and fully feel secured without. The issue of education, agriculture, health, transportation, communication, industry trade and other important societal activities cannot be done without power. The human security theory therefore, sees connecting people with power as an essential aspect of not only human security, but human survival.

3. Results and Discussion

In an attempt to power Africa with electric connectivity, there is the need to consider some major essentials. These essentials are: providing smaller connections from the individual countries and regions, secondly, connecting these smaller networks to the major network from the main grids. In doing so, the issue of security must be considered, as who securitize the power infrastructure and who finances and maintain the projects? These are all considerable factors. Shepherd (2016), is optimistic that

Micro-grids will also play a key role in connecting main power grids on the continent from Southern Africa's Power Pool to those of West, Central and East Africa. The scramble for intercontinental connectivity is driving investment opportunities in transmission and distribution networks.

There is always hope especially when a series of steps are taken, this can help power utilities recover the cost of supplying electricity and make it affordable for the poor at the same time. For that to happen, utilities must minimize technical and commercial power system losses due to activities such as meter tampering. It is possible for Sub-Saharan Africa's poor to get access to affordable electricity and for the utilities that supply power to be profitable at the same time. For Africa's power sector to work for utilities, steps have to be taken to minimize losses related to transmission and distribution of electricity, ensure customers pay their electricity bills, and raise tariffs appropriately. Accurate metering of individual households and sharply targeted cross-subsidies are essential to expand household access to electricity.

The population of Africa is projected to quadruple to reach 4 billion people by 2100 and Africa mostly relies on hydro-electric power with over dependence on dams. Global warming is affecting the water levels and some places are experiencing droughts, this will affect power supply. All the 910 million of sub-sahara Africa consume less electricity than the 4.8 million people of Alabama. More than half of Africans have no access to electricity. But this is changing with renewable energy. This is changing against hydro-coal, nuclear and traditional power source. Research has shown that there are 500 million megawatts of potential solar and wind energy to be harnessed in Africa, which is 3,700 times Africa current total electricity consumption. This can make Africa a solar and clean energy exporting super power: it can export to Europe, Middle East, India, Asia the Americas.

3.1. Improving Power Security

Power security deals with the existent threat of energy scarcity and especially as it relates with energy sources as either affected by global rising population or as a result of climate change. Great powers of the world have already started re-strategizing on how maintain energy security within their enclaves. The united states for example needs more national energy security now than ever, having to be in a crisis with Iran, Venezuela being an oil rich country is also on the brink, but still under the control of Maduru, signifies that, the U.S. cannot amicably get oil from either Venezuela nor Iran. This has made the United States to retire to Africa in the quest for national energy security. It has been established that in recent nuclear power development, out of the 62 nuclear power programs, 20 belong to China. China also explores Africa's uranium for its national energy security and being the largest world population (Asif and Muneer, 2007; Frynas and Paulo, 2007).

One major source of energy security as noted above is the ever increasing world population. It is also evident that one in three Africans does not have access to electricity; all the 910 million of sub-sahara Africa consume less electricity than the 4.8 million people of Alabama and population of Africa is projected to quadruple to reach 4 billion people by 2100. This suggests that, if nothing is done to change this, there will be more Africans without power by 2030 than there are now. Within the global system, for example, energy consumption increased from 76 million barrel per day (b/d) in 2000, to 86 million barrel per day (b/d) in 2008. World oil consumption is also projected to rise from 92 million barrel per day (b/d) in 2020, to 103 million barrel in 2030 (Asif and Muneer, 2007).

Africa just like other great powers' needs power security to protect its mineral resources and provide security on such resources and for the future of the continent. African population is rising higher than any other continent's and is faced with the challenge of connecting its regional power grids from major sources of power to securitize its population, businesses, health, education, administration and many other systems that require power to survive (Bradshaw, 2009).

Table-1. Table Showing Average Power Outage in some Selected Countries of Africa

Electricity access %	**Avg outage hours/year**	
Angola	32	760
Cameroon	56.8	790
Côte d'Ivoire	61.9	230
DR Congo	13.5	830
Ethiopia	27.2	570
Ghana	78.3	790
Kenya	36	420
Mozambique	21.9	80
Niger	15	1,400
Nigeria	56.4	4,600
Senegal	61	130
South Africa	86	50
Tanzania	18.9	670
Zambia	27.9	180
Zimbabwe	32.3	280

Source: Aleh and Jewell (2011), the three perspectives on energy security: intellectual history, disciplinary roots and the potential for integration. Current opinion in environmental sustainability. 3(4), 202-212.

The table shows an average power outage in some countries of the sub-sahara Africa, where and how Africans mostly suffer from power outage. This shows that most of the great powers of sub-sahara Africa suffer most in this regards, countries like Nigeria, Ghana, Kenya, Congo, Angola and Tanzania have more power outage annually. This calls for the urgent need to connect Africa with power due to the rising nature of population and changing world. The notion of energy security is usually dealt with in three different major perspectives. This idea was developed by Aleh and Jewell in 2011. They argued that the three dimension of energy security deals with (1) the sovereignty perspective (2) the robust perspective, and (3) the resilience perspective.

Just as mentioned earlier, states within the international system try to provide national energy security due to some foresight on either rivalry with oil producing states, supplies to military for security operations and the tendency for oil and gas scarcity and lack or absence of political rapprochement among states within the world system. The battle over some Indonesian oil fields, the Middle East, Caucasus and Romania in the times of the World War II, envisioned the relevance of military to oil supplies. This was not only closed to the military even after the post war era but encapsulated the industrial states that have discovered the significance of oil to their industrial survival. This was later extended to food production, healthcare, manufacturing, electricity generation and many more other areas of human need (Aleh and Jewell, 2011).

When oil was explored from dependent territories or former European colonies, with liberation of most of these colonies, it meant that these new states would have to be selling crude for national income and financing of national projects for development. This is also another factor that contributes to the quest for energy security not only for the advance capitalist societies, but also for the developing states of Africa and other parts of the world. The need became imminent in 1973, when the Arab states seized selling their oil to the United States, Netherlands and other European states due to their perpetual supports for Israel against the Arabs (Aleh and Jewell, 2011).

Table-2. three perspectives on energy security

SOVEREIGNTY	**ROBUSTNESS**	**RESILIENCE**
War-time oil supplies and the 1970's oil crisis International actions by malevolent agents control over energy systems	Large accidents, electricity blackouts, concerns about resource scarcity. Predictable natural and technical factors, upgrading infrastructure and switching to more abundant resources	Liberalization of energy systems Diverse and partially unpredictable factors Increasing the ability to withstand and recover from various disruptions
Preventing disruptive actions security studies, international relations, political science	Engineering, natural science	Economics, complex system analysis

Source: Aleh and Jewell (2011)

The above describes the nature of energy security using the three perspectives which focuses on the supply of oil during conflict, who owns and control the oil under the political science discipline dealing with sovereignty; the issue of oil scarcity, accidents and predictions on what happens next; dealing with the remedy on how to address the various disruptions that affect energy and power.

3.2. Financing Projects

Table-3. Electricity Consumption in Africa

Region	share
South Africa	45%
North Africa	31%
Others	24%

Source: Stephen and Waeni (2003)

The above table shows the indispensability of power connectivity in the rest of sub-sahara Africa for the low level of power generation and consumption. The table shows South Africa on the top of power generation and accessibility, followed by north Africa, where the rest of Africa accounts for just 24% of power consumption. This indicates that, there is the need for more financing of power projects especially in other parts of the sub-sahara, excluding South Africa.

Financing power projects emanate from different institutions, some of governance such as states, non-governmental institutions and private enterprises. Some of the financiers of power projects in Africa include the World Bank, the United Nations, the United States, China, Africa Development Bank and African Governments (Power Africa, 2018).

The Bank (African Development Bank Group) has launched a New Deal on Energy for Africa, which is built on five inter-related and mutually reinforcing principles: (i) raising aspirations to solve Africa's energy challenges; ii) establishing a Transformative Partnership on Energy for Africa; (iii) mobilizing domestic and international capital for innovative financing in Africa's energy sector; (iv) supporting African governments in strengthening energy policy, regulation and sector governance; and (v) increasing African Development Bank's investments in energy and climate financing.

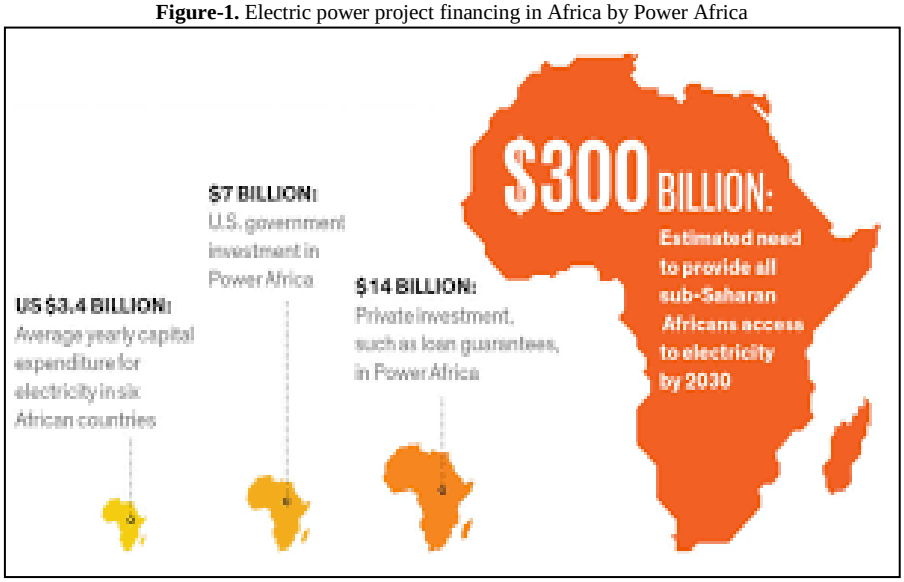
The Bank's energy strategy, central to implementing the New Deal, focuses on seven areas, which are: (i) setting up an enabling policy environment, (ii) transforming utility companies for success, (iii) dramatically increasing the number of bankable energy projects, (iv) increasing the funding pool to deliver new projects, (v) supporting 'bottom of the pyramid' energy access programs, particularly for women, (vi) accelerating major regional projects to drive integration and (vii) rolling out waves of country-wide energy 'transformations'. The Bank will implement these priorities through a series of flagship programs such as: IPP procurement, power utility transformation, an early stage project support facility and related catalytic programs, mobile payment initiatives, and a regional project acceleration program (Power Africa, 2018).

The goal of this priority area is to help the continent achieve universal electricity access by 2025 with a strong focus on encouraging clean and renewable energy solutions. This will require providing 160 GW of new capacity, 130 million new on-grid connections, 75 million new off-grid connections and providing 150 million households with access to clean cooking solutions. To achieve these goals it is estimated that the investment needed will range between US $60 billion and US $90 billion per year. The Bank will invest US $12 billion of its own resources in the energy sector over the next five years (Power Africa, 2018).

The Africa development bank has pledged to allocate about $3 billion USD over the next five years in order to advance investment in the energy sector of Africa. Other roles that the ADB is to play to this involve leveraging four times investment in the energy sector, investment loans, reforms, advisory and guarantees by committing the said $3 billion USD in the six priority countries of Africa. The United States in its bid to invest in energy and power in Africa, it consolidates efforts through African Development Fund (ADF) as a concessional window. The ADF is said to have contributed $1.4 billion out the Bank's $ 1.6 billion over the last five years in the six priority areas of energy investment in Africa (Klare and Volman, 2006).

Other institutional and state collaborative effort energy investment in Africa is the "Sustainable Energy Fund for Africa" (SEFA). It is said to be a joint or collaborative framework between the African Development Bank and the government of Denmark, investing about $56 Million USD in both small and medium scale renewable energy generation and energy efficiency projects. It is also notable that SEFA is a multi-donor platform dealing with financial institution and states in supporting the accessibility of not only energy, but sustainable energy in Africa. In 2013, USAID provided $5 million pledge to SEFA as an initial multi-year commitment to the fund (Lee and Shalmon, 2008).

Figure-1. Electric power project financing in Africa by Power Africa

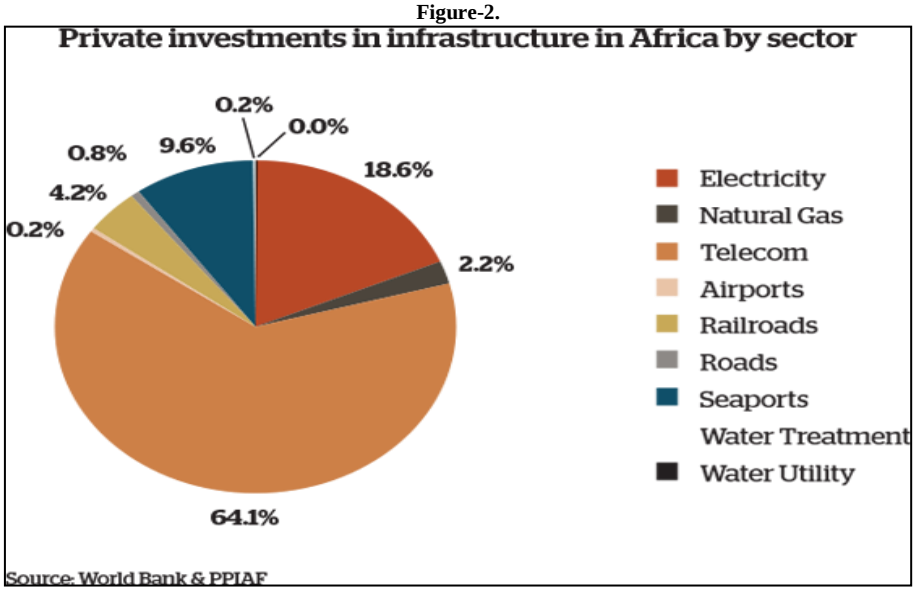


Source: (Power Africa, 2018) project.

It can be seen from the above figure that, the sub-sahara Africa need about $300 billion USD to have stable power at least by 2030. The United States has contributed $7 billion USD to this project and $3.4 billion average yearly capital expenditure for electricity in six African countries. There is also about $14 billion USD in private investment especially as it relates to the power Africa program, which is also under the United States effort.

The United Nations is one of the major global institutions that by pledge and words has made it part of its sustainable development agenda for developing nations to improve not only in energy but in clean and renewable energy generation, transmission and consumption. The UN wished to commit hundreds of billion dollars for Africa's clean energy by 2020, but it has so far raised just 10 billion USD. This is caused by lack of commitment by the advanced nations to aid Africa truly to achieve this goal of sustainable renewable energy. It must also be blamed on African leaders, who instead, embezzle African treasuries for their personal gains against the interest of all (Soares de Oliveira, 2018)

Figure-2.



It can be seen from the above figure that, private institutions' investment in electricity projects is 18.6%, which shows investment in telecommunication about 64.1%. The gap between the two sectors is wide and telecommunication cannot work for Africa without power. This shows that the priority for Africa is mostly electricity, because this trend would rather make telecommunication workability very expensive as investors have to rely on power generators and fuel independently provided, which automatically adds to the cost of provision of services, where the final consumer suffers.

While discussing any form of investment in Africa, the Chinese are not left behind, if they are not at the fore-front, they should be in the middle but surely not the last. China has injected $13 billion in the African Power sector between 2010 and 2015, accounting for 30% of the new productive capacity (Davies, 2010). The private sector investment in electricity has increased to $20 billion USD from the previous $14billion USD before 2015. Donor agencies and multilateral agencies have contributed about $11.5 billion USD in power financing on the African continent. This shows that, there is the need for more power projects financing in Africa to meet up with the 2030 $30 billion USD need for sub-sahara Africa (Downs, 2007).

Table-4. Capita Investment in Power in Africa from 2004-2012

Energy in Africa[3]						
	Capita	**Prim. energy**	**Production**	**Export**	**Electricity**	**CO_2-emission**
	Million	**TWh**	**TWh**	**TWh**	**TWh**	**Mt**
2004	872	6,815	11,944	5,059	477	814
2007	958	7,315	13,130	5,675	554	882
2008	984	7,618	13,502	5,664	562	890
2009	1,009	7,827	13,177	5,257	566	928
2012	1,045				619	968
Change 2004-09	15.7%	14.8%	10.3%	3.9%	18.7%	14.0%
Mtoe = 11.63 TWh, Prim. energy includes energy losses						

Source: IEA Key World Energy Statistics 2013, Archived 2013-

It can be seen from the above table that, financing energy and power projects has been very low, not until 2012 that there was more spending on electricity in Africa. This was also due to the rising population of the continent, rising needs from different sectors such as health, administration, industry, education and trade among others.

3.3. Insuring Competitiveness

In order to ensure competitiveness in Africa's power sector, there is the need for government regulation of the sector. Government regulation of the power sector must appear to be objectively carried out to ensure efficiency, accessibility and cost reduction for investors to compete in project financing.

For competition to hold in the Africa's power market there has to be autonomy and independence of the power regulator given the responsibility to deal with the issue of power. Such independence would guarantee absence of subjective interference either by government officials or private individuals. To have competitive power market in Africa there must be free space for doing business, where the governments and regional blocs must pool their resources together to ensure security of lives and property. Terrorist activities that have recently bedeviled the continent especially the sub-sahara must be dealt with in the horns of Africa, western, central and northern Africa. Minor inter-communal, inter-tribal and religious conflicts abate.

Apart from government regulation, autonomy of regulators and securitizing the continent, infrastructure is fundamental paraphernalia for business competitiveness and project execution. With sufficient infrastructure put in place, competitors would compete in investing their capital and resources in the sector. Poor infrastructure results in lack of attraction to invest, where Africa is currently suffering from infrastructure deficit and lack of attraction for investors due to the factors mentioned above.

4. Conclusion

The issue of power connectivity in Africa has been a major problem that affects all sectors of the society and makes the continent industrially moribund. Africa has enough resources to liquidate into connecting Africa with power and enough energy to convert into electricity. One obstacle that affects power accessibility, connectivity and distribution is absolute corruption, where leaders siphon money meant for national development through self-contracting and embezzlement of public fund.

Recommendations

In order to have stable power and energy utilization in Africa, which would produce connectivity, introduce new investors and insure competitiveness, the following recommendations are considerable:

The people and governments of Africa must stop ethnic, tribal and religious politics which remain the determinants of political leadership in the continent, and resolve to select leaders that are ready to provide political utility to the electorates,

African states must fight poverty and create employment opportunities, to lift a significant population of the continent out of poverty, where people can no longer vandalize power installations, and provide the ability to pay for their electric bills,

Employment opportunities is in the long run to engage Africans, provide further opportunities to attend higher level of education and curtail the level of terrorist activities, extremism and in insurgency, which is a panacea to destroying power transmission and distributions networks,

African governments must declare power a continental emergency, which must be dealt with, financed and supported in all ramifications, to ensure boost in health sector, trade, investment, industry al other many ways that need power support,

African governments must attract huge investments in energy and power sector, with consideration in easing tariff and taxes on power related firms and investments, in order to make energy and power cheaper for the continent,

African power pools must engage all sub-regional stakeholders, from policy makers to investors in constant dialogue on how to as a matter of urgency deal with the issues of power connectivity, security, investment and accessibility.

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