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Energy Poverty in Africa: Causes and the Way Forward, a Case of Ghana

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ABSTRACT

This paper examines the multifaceted issue of energy poverty in Africa, with a specific focus on Ghana. It defines energy poverty as the lack of access to sufficient, affordable, clean, and reliable energy for basic human and economic development. The study examines the causes of energy poverty, which include high costs of modern energy sources, low-income levels, cultural beliefs, and inefficient energy infrastructure. It also highlights the widespread reliance on traditional biomass fuels and the adverse health, environmental, and socio-economic impacts that result. The analysis reveals the deep interlinkages between energy access and development, showing how energy poverty impedes health outcomes, education, economic productivity, and gender equality. Various strategies are reviewed to tackle energy poverty, including public and private financing, investment in distributed renewable energy technologies, and comprehensive policy frameworks. Ultimately, the paper calls for integrated development planning that treats energy access as a foundational pillar of socio-economic progress in Ghana and across sub-Saharan Africa.

Keywords: Energy Poverty, Ghana's Energy Sector, Africa

INTRODUCTION

Energy plays a significant role in the development of every economy; it constitutes a major input for the production of goods and services, which are essential elements used to satisfy the needs and wants of individuals within an economy. Given the significant contributions of energy to economic development, energy systems have become crucial to the sustainable development of a particular economy. It must be put on the point that the form of energy used has implications for education, health, income-earning ability, and economic welfare. In modern times, energy sources such as liquefied petroleum gas (LPG) and electricity, as well as clean cooking utensils such as stoves that do not pollute the environment, help to improve the health status of people. This is particularly important since the health of people promotes socio-economic development. On the other hand, individual households that use dirty fuels for cooking expose themselves to health hazards (Adjei-Mantey & Takcuchi, 2021).

Despite the enormous contributions of energy to development, access to sufficient and affordable sources of energy remains a challenge, as there is an unequal distribution. Insufficient energy makes it difficult to develop various sectors of the economy, such as residential, commercial, transportation, and industrial, relative to the energy sector. This invariably keeps the country in a vicious cycle of poverty, as they cannot afford energy that would help them escape poverty. It must also be stated that access to energy is one fundamental

need of human beings, so a clean environment is also important. Notwithstanding this assertion, however, the reduction of energy poverty has a direct link with addressing environmental constraints. For instance, the use of fossil fuel subsidies aimed at reducing energy poverty can produce air pollution, which negatively affects climate change (Tackling Energy Poverty, 2019). In effect, addressing the constraints of air and climate change by phasing out the use of pollutants such as coal and adopting cleaner energy sources, such as renewable energy, often leads to a rise in the utility bills of consumers, particularly low-income earners, and this also increases energy poverty. The question now is how a country can reduce energy poverty while at the same time providing solutions to environmental constraints. This question is fundamental to this write-up. Most successful nations, such as China, have developed effective mechanisms to address these constraints. China has installed solar panels on top of the roofs of low-income households, and this has additionally provided annual income and invariably solved the constraints of income poverty and energy poverty as well. Also, China has withdrawn a substantial amount of subsidies on fossil fuels and has invested such an amount of money in heating from coal to gas or electricity. These measures have increased modern energy access and also significantly reduced negative environmental impacts. This article will delve into the case of Africa, primarily focusing on the Ghanaian economy. Specifically, the general perspective on energy poverty, energy poverty in African and Ghanaian contexts, the causes of energy poverty, and the improvement measures for energy poverty (Tackling Energy Poverty, 2019).

This research employs a qualitative, literature-based methodology, relying on extensive secondary data sources, including government publications, reports from international organizations (e.g., WHO, IEA, World Bank), academic articles, and case studies. The study employs a case study approach, focusing on Ghana, to contextualize the broader African energy poverty challenge. Through thematic content analysis, the research synthesizes data on causes, impacts, and policy responses related to energy poverty. It further draws on cross-country comparisons and past empirical findings to identify effective intervention strategies and policy gaps. The approach enables a comprehensive and nuanced understanding of energy poverty's dynamics and the formulation of context-specific recommendations.

THE CONCEPT OF ENERGY POVERTY

According to Birol (2007), research has revealed that there are three main constraints that the global energy sector faces, including climate change, energy supply security, and energy poverty; however, the concepts of climate change and energy supply security have extensively been researched, but the concept of energy poverty has seen very little research. This becomes a crucial avenue for exploring the concept of energy poverty, its causes, and the way forward, particularly in the Ghanaian economy. The concept of energy poverty establishes the relationship between access to energy (consumption) and economic growth. Energy is a major driver of activities in a particular country, ranging from transportation to healthcare, education, mining, electricity production, and the provision of services, among other activities. With these in mind, ensuring efficient energy access and sustainable, reasonably priced energy all significantly impact a country's economic activity.

Energy poverty involves increasing energy access to a large number of households while simultaneously reducing greenhouse gas emissions and providing energy services at just and reasonable prices. Addressing energy poverty involves making significant changes to the

environment. This requires building specialists, architects, sociologists, and others who are well-versed in household arrangements. It also requires changes in behavior and usage that cut across the preparation of food, collection and drying of fuels, gender practices, and the reduction of exposure to smoke. This typically involves behavioral science and other social sciences (Tackling Energy Poverty, 2019).

In defining the concept of energy poverty, proponents in the field of energy have considered numerous definitions from different perspectives; however, one central thread that exists among the various definitions is access and equity. Sovacool and Drupady (2012) defined energy poverty as the "lack of access to electricity and reliance on solid biomass fuels for cooking and heating."This definition is limited to one specific energy source, which is electrical energy, and does not consider other energy forms such as light, mechanical energy, and gravitational energy. Notwithstanding this, however, Reddy (2000) shared an important definition of energy poverty as "an absence of sufficient choice in accessing adequate, affordable, reliable, high-quality, safe, and environmentally benign energy services to support economic and human development."This definition is rather extensive and covers all forms of energy and its measuring indicators. Moreover, Bouzarovski (2017) also holds a different opinion; he defined energy poverty as "the inability to purchase affordable warmth."The last and simple definition is given by Adusah-Poku and Adjei-Mantey (2020), who explain energy poverty as the lack of access to modern energy sources. His definition is particularly centered on modern-day energy sources and also focused on accessibility, as indicated by other proponents. To sum it all up, being energy-poor is directly linked to a number of factors, including sufficiency, accessibility, affordability and reliability, safety, and quality of the energy sources available. In general, access to energy is proposed to offer many benefits: providing access to basic services, including street lighting and schools, enhancing welfare, delivering better health systems and environmental outcomes, and all these affects economic development positively (Morrissey, 2017).

It is important to state that in these contemporary times, forms of energy are fundamental since they have more impact and implications for alleviating poverty (Cabraal, Barnes, & Agarwal, 2005). The International Energy Agency (2017) indicated that in the global context, approximately 1.1 billion people lack access to electricity, with most numbers from developing countries and sub-Saharan Africa constituting 558 million of the totals. In effect, the population in sub-Saharan Africa depends much on biomass as their primary source of energy. This affects them so much since they do not have access to most economic activities or, they are simply denied most economic functions and this also creates health and environmental constraints for the population (Pradeep, Alois, & Lugmayr, 2016).

What, then, are the indicators for measuring energy poverty is of importance in this section. The status of energy poverty in households is mostly established based on certain parameters with indicators for establishing a deprivation cutoff. Households that do not attain the threshold for deprivation are regarded as energy-poor. Wang et al. (2015) classified measures for assessing energy poverty into three main groups: the availability of energy services, the quality of energy services, and energy demand satisfaction for human survival and development. Moreover, the consumption expenditure of households, the dwelling size of households, particularly those of low-income households, and awareness and education all affect energy poverty.

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ENERGY POVERTY IN THE AFRICAN CONTEXT

The importance of energy cannot be overestimated; energy helps build economies. For example, we use energy in schools, hospitals, offices, etc. However, in the case of Africa, there seems to be a significant proportion of the population without energy access, particularly electricity. It is thus important to consider increasing electricity access on a much larger scale to enable households in sub-Saharan Africa (SSA) to achieve the same living standard as those in developed nations. Considering the progress of technology in parts of the globe, the significant drop in the cost of renewable energy can help deliver electricity at a cheaper cost. In previous years, the extensive global electricity access was primarily driven by coal plants, but is it not prudent for any country to invest heavily in coal considering the advancement of modern renewable energy sources? Africa has been considered to be the best location to harness solar energy and is indicating that a cleaner path of energy is promising. Between 2014 and 2019, 20 million of the African population, for the first time, got access to electricity, with much of the demand at the time met by the installation of increasingly competitive solar and hydropower.

It must be emphasized that in spite of technological advancement, the world at large is not on the right path to guarantee energy access by 2030. This can be attributed to the COVID-19 pandemic; without proper measures, it is possible that this will develop into a permanent negative trend. Last year, SSA recorded a high number of people without electricity. Various restrictions resulting from the pandemic made it impossible to extend access to places without electricity. This has really affected African governments to invest in cleaner energy and has invariably pushed many of the African population back into severe poverty since they cannot afford basic access to electricity services (Timmermans & Birol, 2021).

One significant challenge in installing solar and other renewable forms of energy is the initial cost of installation. Solar and wind energy plants are advantageous because of the free energy supplies of sun and wind in as much as they keep running. However, in developing nations, the upfront cost of establishing mini-grid home solar systems, particularly in rural communities, is large, considering the level of finances of the people in those communities.

The statistics of energy poverty in SSA stand at approximately 905 million people living without clean fuels for cooking, whereas 578 million people live without electricity (International Energy Agency [IEA], 2020). Also, it is estimated that 792 million of the populaces cook with conventional biomass on unimproved cookstoves. While much effort is spent in reducing the number of people without electricity access, it is expected that the number of people using unimproved cooking equipment will increase to 823 million in 2030 (Morrissey, 2017). These contribute to the high energy poverty levels in so many SSA. According to Nussbaumer et al. (2013), data on countries such as Malawi and Madagascar show that energy poverty is as high as 98 percent and 97 percent, respectively. The high rate of energy poverty has dire consequences on the health, livelihood, and socioeconomic well-being of the populace within a particular country (Biermann, 2016). For health and wellbeing, in particular, the World Health Organization (2016a) states that exposure to air pollution from solid fuel used for cooking leads to 4.3 million premature deaths yearly, out of which 60 percent occur in women and children in SSA. Moreover, the collection of firewood, as well as cooking through inefficient stoves, has a considerable effect on their time use, leading to the perpetuation of gender-related differences in outcomes of labor markets and education (World Health Organization, 2016b).

Although low purchasing power holds back households' pathway out of energy poverty and its harmful impact on the citizenry, Adusah-Poku and Takeuchi (2019) posited that households must be eager to spend on modern fuel as they more and more become available. Since incomes are low in third-world countries, policy options that can improve a household's energy transition process and decrease energy poverty in a sustainable manner need to be discovered. One such policy option is financial inclusion, which has been established as being capable of decreasing poverty and improving household welfare in general (Bukhari & Koomson, 2020). However, its impact on energy poverty is yet to be given empirical consideration at the household level.

In as much as sub-Saharan Africa needs to address its energy poverty challenge, Africa faces the challenge of the use of fossil fuels in generating electricity. Fossil fuels are vulnerable to major differences in prices that have impacts on the viability of electricity production in the economy. Burning fossil fuels in plants exposes people to significant health risks due to the release of dangerous smoke. Also, the use of fossil fuels affects climate change negatively, which also affects food security, leads to a rise in the sea level, and intensifies drought and flood events (Boko et al., 2007; Goodes, 2011). Though Africa has a limited role in driving climate change, it does not mean that the populace should shoulder the burden of addressing it, particularly not when considering the high level of impoverishment due to energy poverty. The vulnerability of Africa to climate change does not guarantee an incentive to seek to reduce its greenhouse gas releases where possible.

While it is a great task in addressing energy poverty and reducing greenhouse gas releases, prices reduction in several energy technologies are creating new opportunities for attaining access to energy in Africa. To this effect, the policy discussion on the best way to prioritize energy investments is rapidly changing. Most players now call for a total overhaul of the conventional focus on investing in centralized power generation and increasing the grid. Rather, they call for a focus on distributed renewable energy technologies, which are considered to be cheaper, faster to deploy, and do not depend on the slow and technical power utilities that have poorly served African countries in the past.

Additionally, such sources of energy are considered to alleviate the local emissions from large and centralized fossil fuel-burning energy stations, which presently impose a major cost in terms of health on surrounding communities. Other players, however, do not support this assertion, indicating that a distributed strategy is not capable of supplying energy in the quantities expected. Evaluating the advantages of these assertions is challenging to the technical features of energy technology, the fast-changing prices of renewable components, and the difficult economics and financial questions that control the energy sector.

ENERGY POVERTY IN GHANAIAN CONTEXT

Investigating energy poverty in Ghana is very important, considering the high level of energy poverty and its negative effects on livelihood, health, climate change, and the country at large. As can be envisaged in most SSA nations, a small proportion of the population of Ghana has access to reasonably priced, clean, and modern sources of energy (Ghana Statistical Service [GSS], 2014. In the year 2012/2013, the proportion of energy-poor Ghanaians constituted approximately 82.5 percent. There are more energy-poor Ghanaians in the rural areas compared to the urban areas, whereas only 22 percent of Ghanaians have access to clean fuels

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(Adusah-Poku & Takeuchi, 2019). It is worth noting that in 2016, air pollution resulting from dirty energy sources constituted approximately 203.8 percent per 100,000 population, suggesting that close to 55,000 Ghanaians lost their lives as a result of exposure to air pollution (World Health Organisation, 2016b). This thus makes the study on energy poverty very significant.

In Ghana, studies on the concept of energy poverty are focused on electricity access. Adu et al. (2018) investigated the socio-economic impact of electrification on rural households in Ghana, with its outcome indicating a positive relationship between rural electrification and welfare. The choice of household energy has been studied in Ghana with the use of probit models indicating that drift in incomes and socio-economic features of households leads to a transition to cleaner use of energy. Notwithstanding this, however, the change is swift in richer urban households than in rural households (Karimu et al., 2016). Moreover, in assessing the effect of household use of energy on the environment, the association between energy poverty and climate change in Ghana has also been investigated and it reveals that Ghana is an energy poverty trap. To this effect, to mitigate the environmental effect of energy poverty most effectively, it is encouraged to use efficient cooking and lighting technology (Quartey, 2014). A study conducted by Yeboah et al. (2020) evaluated the impact of socioeconomic features on energy poverty in Ghana. The study found that the demographic indicators, particularly the location of the household and the educational qualification of the head of a household, are the main indicators of a household's propensity to be in energy poverty. In an attempt to measure energy poverty in Ghana, the study concluded that demographic and economic indicators, location, educational qualification of the head of a household, and the welfare issues of a household are very significant.

It must be emphasized that due to the relevance of energy in modern times, the lack of access to energy sources must be of prime importance to policymakers, particularly in third-world countries where many households do not have access to modern energy sources. Whereas energy poverty has as much impact on economic development as poverty, it would be unbelievable to presume that one essentially implies the other. Though the choice of energy literature has indicated the association between selecting LPG and income (Karimu et al., 2016), studies have also indicated that rich households continue to be energy-poor in most areas. This suggests that some households may be energy-poor without necessarily being poor.

Based on the assertion stated above, it thus becomes important to make a proper discussion on energy poverty to incite the relevant policy actions that will alleviate energy poverty as well. This is also important so that countries across the world do not take an interest in alleviating poverty while remaining energy-poor. Notwithstanding this, however, this may not necessarily be realized on the assumption that the same policy measures used to end poverty are used to end energy poverty. Thus, it becomes particularly important to establish whether or not households that are classified as poor are also energy-poor. This also becomes particularly important for developing countries that pursue sustainable development to properly target policy measures within the challenge of scarce resources to attain the best policy impact. It is worth noting that Ghana has attempted to tackle energy poverty through the Rural LPG Promotion Programme, which is targeted at rural households and involves the distribution of LPG cylinders and gas stoves at a free cost. Adusah-Poku & Takeuchi (2019) noted that the proportion of energy-poor households in Ghana stood at 82.5 percent in 2013, which was high

despite its decline from 88.4 percent in 2006. Comparing the achievement in poverty reduction from 52.6 percent in 1991 to 21.4 percent in 2012, it can be stated that Ghana has not been able to achieve energy poverty.

CAUSES OF ENERGY POVERTY

Despite the government's efforts to provide subsidies for energy, most of the populace still does not have access to energy. For instance, most people cannot afford the initial cost of electricity. In effect, it can be stated that the high cost of modern energy deters people from accessing it despite the availability of subsidies. In Africa, the cost of electricity has been rising despite the increased electricity capacity generation. The high cost of electricity leads to a decrease in the consumption of electricity in most households (Otuki, 2018). It must be pointed out clearly that many households cannot afford the cost of energy and thus resort to the use of conventional energy and solid fuel, including firewood, charcoal, and biomass. Most people living in rural communities are afraid to adopt modern, clean energy such as LPG due to safety considerations and also may not afford to continue refilling cylinders (Hollada et al., 2017).

According to Kojima (2017), households in most developing countries do not switch to LPG automatically when they have improved incomes. Also, oftentimes, households practice energy staking, which involves the use of LPG or electricity in cooking light meals such as tea, dung for simmering, and firewood for cooking meals that take a longer time to cook. This is to say that such households adopt two or more energy sources for cooking mainly to save costs due to their low levels of income. Thus, the level of income determines the choice of cooking fuels. Cleaner fuels are used by wealthy families, while conventional fuels are used by families with lower economic status (Wu et al., 2012). To sum it all, the failure to adopt clean energy constitutes energy poverty.

There are options available for the use of conventional energy, including biogas and solar energy, but due to cost constraints, most households resort to the use of conventional energy sources (KNBS, 2013). Moreover, another factor that influences people's choice of conventional energy source is shared by Malonza & Fedha (2015) that it could be due to the perceived disadvantages of biogas and solar energy, which are small and may not be appropriate for cooking some staple foods. Also, the adoption of biogas is characterized by the high cost of initial investment; for instance, the cost of a family-size floating drum plant in the majority of African countries is approximately 1,667 US dollars, which is not affordable to most households, and hence, they continue to adopt conventional energy sources.

It can also be stated that the preference for conventional energy sources is attributed to cultural beliefs. Some households believe that food cooked using biomass-burning stoves is tastier than that cooking food using LPG stoves, while some believe that collecting firewood is regarded as important normal chores that enhance social interaction. A typical example can be cited in Kenya, where some people believe that it is good to prepare some traditional meals or food using LPG due to taste preferences.

Petrova & Greiner (2017) established and categorized energy poverty causes into three: prices of energy, a fall in the incomes of households, and living in energy-inefficient homes. Firstly, energy prices surge translates into a higher cost of energy for consumers, whether directly through utility bills or indirectly through a constant rise in the cost of goods and services

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(Guibourgé-Czetwertyński, 2021). In most SSA countries, consumers pay as much as 20 to 50 cents per Kilowatt hour against the world average of close to 10 cents (Indrawati, 2015). Again, poor households cannot afford to pay the high cost of energy because of their low-income levels. To put it in another perspective, poor people are less likely to have access to power, and they are also more likely to remain poor if they are not connected to energy. Lastly, living in an energy-inefficient home is also a measure of energy poverty. Literally, an energy-inefficient home is a home that is not energy-efficient.

IMPACT OF ENERGY POVERTY

According to Morrissey (2017), energy-poor families suffer from several impacts, including a rise in premature death resulting from indoor pollution and forgone gains in productivity and lower quality lives. Energy-poor families have to spend a greater percentage of their incomes relative to meeting their basic human needs. Also, such people spend more time engaging in energy-intensive activities, which is quite lower in the case of wealthy families since wealthy families have access to modern energy sources. Notwithstanding the impact of individual households, energy poverty also affects economic development at large. If individuals are unable to light their homes after sunset, activities, including house chores, studying, and small business activities definitely must come to a halt when the sun goes down. In much the same way, if people cannot warm or cool their homes, they would be uncomfortable at a certain point in time with risk to the old and young in particular. Additionally, when the populace who live in energy poverty gain access to fuel, they mostly risk harm sign significantly. For instance, the burning of conventional biomass in households is estimated to cause 600,000 deaths yearly in sub-Saharan Africa alone (Africa Progress Panel, 2015). It is good to state that until the current trend on energy poverty changes, it is predicted that deaths from pollution resulting from the use of conventional energy sources will increase proportionately to deaths caused by HIV, AIDS, and tuberculosis by the year 2030. More so, the use of kerosene for cooking and lighting is considered to cause respiratory problems and also cause the risk of poisoning and fires.

On top of these complexities, spending much time in the collection of firewood and cooking on unimproved stoves put additional constraints on energy-poor households. The losses in Africa resulting from cooking and collecting firewood are predicted to be 36.9 million dollars yearly if the amount of unpaid labor is factored in. The impact is greater, particularly in women and girls who are mostly engaged in house chores (Lambe et al., 2015). According to (Karimli et al., n.d.), these impacts are within the context in which women and girls bear unequal burdens of unpaid work within the household. Lastly, a lack of energy access compromises the effectiveness of social services, including clinics and schools, and restricts economic opportunities by holding back productivity and economic development (Modi et al., 2006).

Given the negative impacts of energy poverty, providing energy to families in a safe and sufficient amount is considered to produce varied positive outcomes. The first of it all is improvement in health status. A reduction in burning biomass and kerosene in homes will undoubtedly reduce the exposure of families to dangerous pollutants. More so, access to clean energy is expected to prevent the sexual harassment and assault that particularly women and girls are subjected to while collecting firewood. Also, access to electricity enables improvement to the cold chain, which is believed to be very important for vaccination, and access to electrified clinics is expected to enhance health outcomes.

Secondly, access to clean energy leads to an increase in household income. Families that acquire modern forms of energy are expected to gain significant savings from using more efficient fuels. Access to adequate lighting gives households more productive hours, comprising increased study hours for students. Also, access to modern energy enhances pumped irrigation, which invariably contributes to increased farm income and enhances the diversification of income since households engage in the processing of farm produce and embark on light manufacturing.

More so, the use of clean energy is said to improve environmental outcomes. The reduction in the demand for biofuels will reduce pressure on forests (Lewis & Pattanayak, 2012), with positive impacts on forest services, which include the mitigation of climate change.

Lastly, the use of clean and modern forms of energy improves the quality of life of households. Addressing the challenge of relying on firewood has the tendency to reduce drudgery experienced by women and girls who are primarily engaged in the collection of firewood. Greater access to entertainment services that require electricity will improve the well-being of individuals.

IMPROVEMENT MEASURES FOR ENERGY POVERTY

In the bid to improve in energy access, it becomes essential to consider some strategies or improvement measures.

Public and Private Financing

Firstly, focusing on financing is a critical consideration. Financing presents a key challenge in solving energy poverty, particularly in SSA. Depending solely on public finance is very minimal to solve the enormous cost of energy poverty; that is why public finance must be supported by finance from donors and other non-governmental institutions. More so, opportunities that increase public finance must be perused by decreasing wasteful and regressive expenditures and solving illicit financial flows. The use of public and private or donor finance must aim at reducing tax, tariffs, and import costs on renewable energy elements. Also, it is good to undertake resource assessment, subsidize basic electricity allowance and connection fees, and create and support institutions that are focused on enhancing learning new technology (Morrissey, 2017).

It is good to emphasize that to help enhance investment in technologies that increase energy access, it will be very crucial to develop policies that reduce the risk for private investors, including the transparency of grid expansion plans and the creation of institutes in training suitable technicians. Also, there is a need to enhance financial inclusion and increase access to credit for both prospective customers and entrepreneurs (Morrissey, 2017).

Address Uncertainty Around Grid Expansion

Several debates concerning the advantages of centralized, on-grid strategies vis-a-vis distributed energy technologies for addressing energy poverty are overstated. Both strategies need to be adopted simultaneously. Electricity will best be introduced to most rural families through distributed technologies; however, this is likely a temporary solution. The ultimate goal should be the expansion of the grid, which will attain the lowest cost of electricity for any household and enable high rates of penetration of renewable energy (Morrissey, 2017).

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As a result, it is important to ensure the transparency of plans for grid rollouts and that the government adheres to such plans. This sort of confidence will be good for the private sector to consider investing in distributed energy technology. Considering the fact that plans for the rollout of grid can include time scales of 25 years (Eberhard et al., 2008), staying the course on policies made will include resisting intense political pressure to change those plans link some communities. To this effect, an effective way of planning the grid rollout is based on the least cost (Morrissey, 2017).

Providing Support to The Whole Distributed Energy Supply Chain

To alleviate energy poverty, it becomes important not to focus on implementing policies that address challenges in terms of the cost of generation, storage, and distribution of energy. However, attention must be focused on the supply chain entirely. This includes establishing institutions that will train technicians, installers, construction employees, economists, and engineers (Modi et al., 2006). This demand ensuring the availability of parts for servicing and replacement, reasonability of prices, assessing resources, and establishing institutions to finance entrepreneurs and consumers. Failure to satisfy these conditions is likely that projects will prove to be unsustainable (Terrapon-Pfaff et al., 2014), and the subsidies on initial capital costs will be exhausted as projects fail or are abandoned.

Since technologies for distributed renewable energy are new, it becomes important for the state to play a significant role in overcoming first-generation technology challenges. Activities include the provision of data and the promotion of learning about the creation of successful supply chains and feasible business models (Bhattacharyya & Palit, 2016).

Placing Electricity Access Within the Broader Framework of Development

Simply providing individual households with electricity is not likely to drive significant development outcomes. To this effect, while the improvement of electricity access is very significant in development, it must be perceived within the larger context of development and should be focused on providing other infrastructures such as roads, market, sanitary facilities and other services such as education, health and policing

CONCLUSION

Energy is vital in the development of every economy. This is because it affects all facets of an economy including transport, health, education and industry, agriculture and the provision of services, among others. Energy is proposed to offer many benefits; providing access to basic services including street lighting and schools, enhancing welfare, delivering better health systems and environmental outcomes and all these affects economic development positively. It thus suggests that energy must be made available at all times at reasonable prices to support economic activities. Also, energy must be of good quality and must satisfy the consumer. Notwithstanding the enormous contributions to energy, however, not all people are privileged to use modern forms of energy. This brings the concept of energy poverty. In assessing energy poverty, the following indicators are used; sufficiency, accessibility, affordability and reliability, safety and quality of the energy sources available. Particularly in most African countries, the issue of affordability of energy sources has fundamentally been a challenge. Most people in SSA countries cannot afford modern forms of energy such as LPG and solar panels; this is due to the high cost of energy. Some people, though can afford modern energy are not willing to do so due to their cultural believes. Others too practice energy staking where households adopt two or

more energy sources for cooking mainly to save cost due to their low levels of income. This article has examined thoroughly the concept of energy poverty from different angles. Based on this, the causes of energy poverty, energy poverty in African and Ghanaian contexts and improvement measures to energy poverty have all been dealt with appropriately.

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