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Research Article

"Plug In, Adapt and Change"; Ghana's Readiness in Modern Energy Trends

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Abstract

The Covid-19 pandemic and the Ukraine-Russian are important global happenings that are affecting all Development of every country is significantly dependent on energy. This means the level of development of a country is in direct relation with the energy consumed. Developed countries tend to consume more energy than developing countries. According to International Energy outlook report 2021, Africa still lags other regions in energy consumption per capita. These are coupled with weak energy infrastructures, low industrial growth, and high poverty rates. ADB group reported that over 640 million Africans have no access to energy, the lowest in the world. Africa's energy potential is expansive if investment is jeered towards enormous energy resources on the continent. These notwithstanding, there are good projections of growth on the continent. EIA projects an economic growth of 5.0% per annum on average through 2040 on the continent. According to UN-DESA, the world's 10 fastest growing cities in the world between 2018 and 2035 will all be in Africa

ARTICLE

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According to UN-DESA, the world's 10 fastest growing cities in the world between 2018 and 2035 will all be in Africa. This growth on the continent is complemented by energy growth as well. There is more to be done. With implementable policies geared towards energy goals, the continent can achieve universal energy access by 2030 with focus on fully utilizing the continent's energy potential especially with renewable energy potential. Ghana's economy continues to expand rapidly.

New York Times in 2018 projected Ghana as one of the fastest growing economies with a growth projection of 8.3% to 8.9%. This growth was driven by the industrial sector. The target growth according to world bank is 7.4% with the industry leading the growth. The country was positioned to achieve massive economic growth through modernization (digitalization) of every sector of the economy. The government initiation of the E-Transforms programs backed by World Bank and other international agencies as a major boost in the country's development. Although these predictions have greatly been decelerated by the pandemic and currently the Ukrainian war, the Government of Ghana has assured of certain measures to sustain and grow the economy. This can greatly be achieved if the energy sector is well equipped and modernized to meet the growing demand of energy to complement economic growth.

The country currently has installed generation capacity of 5,134 MW with over 83% access of electricity nationwide. Rural energy access is around 50% with over 1.2 million household without access to electricity. The Energy Sector Transformation Initiative Project is funded by World Bank to strengthen the energy sector capacity.

Energy is being transformed all over the world, and we are all witnessing global changes both in the principles of consumption and in the production of energy resources. Is Ghana transforming her energy sector to meet and compete in the ever-increasing global energy transformation? I walk my dear readers through some of these modern trends and the position of Ghana in adapting the new trends in today's world.

Digitalization (Internet of Things) According to the forecast of the International Data Corporation (IDC), by 2020, the Internet of things will cover 50 billion devices. It is not only about household appliances, smartphones, and cars. The Internet of things is also being integrated into production capacities in various sectors of the economy: today the words "digital substation" or "digital double of a plant" are already a reality. Every modern industrial enterprise has the goal of universal digital integration.

Digitalization of the electricity supply in Ghana is very important in the sense that it saves cost of energy, eliminate transmission and distribution losses of electricity, monitor thefts and tampering with meters among other things.

Transmission losses account for 3.9 percent and distribution and commercial losses by the Electricity Company of Ghana account for as much as 16.2 percent of the gross electricity supply in the country. With the digital transformation of the energy sector rapidly growing globally, there is the need for Ghana to take advantage of the fast-growing transformation to help deliver efficient, affordable, and reliable electricity in the country.

Institutional players should collaborate to advance the growth of renewable energy integration. Also, there should be huge investment in modern technologies like smart grids, automated metering, and advanced optimization control systems to foster the growth

of energy in Ghana and increase efficiency in the sector. This will also greatly reduce the cost of electricity by consumers.

Decarbonization (Carbon footprint reduction) The growth rate of investments in renewable energy which is been driven by decarbonization is increasing rapidly. The push toward decarbonization is fueling the expansion of renewable energy sources and more efficient energy usage. Innovation and technology are leading to the development of novel new business models, such as virtual power plants (VPPs), demand response, distributed generation, digital substations, and microgrids; and digitalization is giving customers more control over their energy consumption, which allows them to save money and improves energy efficiency. Ghana needs to plug in this innovation growth in the energy sector.

With this, strategies being adopted include, in addition to the reduction of direct greenhouse gas emissions, a resilient portfolio of hydrocarbons in which natural gas plays a central role, the development of green businesses, and the commitment to research and development of innovative solutions to support all the activities. All these things are aimed at achieving the goal of lowering the planet's overall greenhouse gas emissions.

Adoption of Electric Vehicles If, just a few years ago, electric cars were thought of as a fringe

phenomenon, unable to sway the approach that the world's largest automobile manufacturers took toward their production schedule, then now, electric cars represent a novel and possibly the only true plan for future growth. The use of electric vehicles has recently become trendy especially in Europe. Ghana is yet to adopt the use of electric vehicles.

The rising cost of fuel is giving rise of alternatives hence higher demand for electric vehicles. All of this indicates that the nature of the load on the energy systems will shift significantly. The addition of a new customer necessitates the development of a suitable charging infrastructure and the maintenance of enough demand for electricity. All of this means that the nature of the load on the energy systems will change significantly.
This pattern will give a powerful push to the development of energy, loading up the generating capacity that is already in place.

An entirely new market has emerged in Western nations as a direct result of the relatively widespread availability of technologies for the generation of electricity locally. Way forward
Electricity production with modern technologies have spawned a new market in the world. These systems are modernized power systems, combining production, transmission, and distribution.

Arguably every country is expanding their energy infrastructure. The modernization of energy sector in Ghana has a success story although the sector is hindered by current economic and policy realities. There should be policy shift on modernizing energy usage in Ghana to reduce energy poverty and expand energy infrastructure.

Ghana needs to plug to the modern trend of technological adaptation. There should be an expansion on the research development in the modern technology and policy awareness for the people to understand these trends for the advantages.
Most consumers of energy are not interested in how electricity is produced, their focus is on price and reducing carbon footprint and these modern technologies are aiding in price reduction of energy usage and reduction of emission.
Energy architects, building engineers, developers, inspectors, and technocrats must collaborate with policy makers and the higher institution to make this a reality and create capacity and expertise in the Ghanaian energy sector.

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