

Energy and Power Generation in Africa

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Abstract

The thrust of this paper hinge on energy and power generation in Africa. Energy and power generation in Africa are derived from fossil fuels such as petroleum oil, gas, and coal. Another important form of energy is drawn from hydro-electric power. The generation of power from these sources are largely controlled by Western and American multinational companies. These companies though adhering to the terms of business in the nations they find themselves, it is discovered that so much financial capital flight is experienced in African states. This is so because African nations lack the adequate technology of this age, managerial abilities that would enable them to explore and exploit their God given resources. However, the methodology used in the work is interdisciplinary approach. The findings are that there are a lot of fossil learning energy such as petroleum oil, natural gas and coal in abundant in African nations. These are found in countries such as Nigeria, Algeria Angola, Egypt, Sudan, Gabon, Equatorial Guinea, The Republic of Congo, Libya, Republic of South Africa. New oil wells are also be in a discovered and drilled in countries such as Ghana, Uganda, Kenya Mozambique etc. In the area of hydro-electric, Africa has the highest potential in the world. The combination of fossil fuels and hydro-electric is driving the African economies and provided jobs for youths and by extension added value to peoples lives. It concludes that energy and its generation is the heart-beat of every nation. Every nation needs energy. The issue of fossil fuel energy and its generation is business which affects the world, life would be meaningless without fossil fuel and its generation. Energy generation whether of fossil or water is the foundation for industrialization, science and technology. That the 21st century is driven by the fossil fuels, water, solar, wind and nuclear and to a lesser extent coal, and would remain so for a long time.

Introduction

Energy is the heart-beat of every nation. It makes the nation that has it to command respect among other nations. Energy especially oil is one of the most important commodities in the international economy. Energy such as oil, uranium has influenced civilizations in many climes positively. Energy is the key to wealth creation, and power in which the international economy propels. The convenient production of goods and services, movement of people and goods, the power to disseminate information, the cheap and easy development of agriculture and by extension large scale industries are all anchored on the availability and supply of energy to provide heat and power. For centuries, like other climes Africa had used energy and it is still using energy in various forms for human and industrial development. Indeed, since the 19th century technological development power generation and energy utilization have increased geometrically than before. The advanced technology has enable both the vertical and horizontal exploration and exploitation the stored energy of the earth by burning its fossil fuels for electricity and other forms of heat or power for the utilization of man. In Africa and indeed globally, the demand for energy from fuels such as petroleum oil, coal, uranium is so great that politics of nations are almost tied to these commodities and by

extension energy. Africa has not been left out in the energy and power generation 'contest' in the global discourse.

Indeed, the thrust of this paper is to look at the energy and power generation in Africa and the impact it has created on African peoples since the 1960s. However, it would be important to look at some concepts for proper clarification as used in the context of this write up.

Conceptualizing Energy

Apart from the physical science that defines energy basically on the chemical valiancy and capacity, it is difficult to really say what energy is but sources may be given. However, Mayhew sees energy as the physical capacity for doing work. He added that nearly all our energy derives from the sun, and technical progress has reflected more and more sophisticated uses of energy, from wind and water, through fossil fuels, to nuclear power (Mayhew, 2009). Goldstein & Pevehouse (2008) see energy as the fossil commercial fuels that power the world's industrial economies made up of oil with a highest percentage, coal and natural gas. And that other forms consumed as electricity comes from hydroelectric dams or nuclear plants.

Trewartha, Robinson and Hammond (1967) see energy as power of heat generated from fossil sources such as coal, petroleum and natural gas required for the large number interaction for physical and chemical phenomenon. Apart from the fossil fuel energy, nuclear source from uranium is yet another power which is beyond the experimental state that is widely used for industrial development and solving economic problems.

Indeed, energy is the derivation of power through the application of force (heat) from fossil fuel commodities such as coal, oil, natural gas, solar, nuclear, wind capable of generating force for the production of goods and services commercially or privately within an economy.

Historical Development of Energy – Power Generation in Africa

Basically, energy and power generation in Africa dated back many centuries before the European conquest. Before the European conquest and by extension the introduction of the 19th century modern technology in industries and services, there were industries in Africa – those industries worked on include metal, soap boiling, blacksmithing etc. It is believed that these industries were energy powered; that commodities or products such as iron could not have evolved without the use of heat. In this connection, energy and its generation had been wonderfully used in Africa many centuries before this age. However, peoples who were noted for their early craftsmanship in the use of energy to produce iron were the Wolof of Senegambia, the Susu, the Kano Hausa, the Yoruba and Awka blacksmiths of Eastern Nigeria. These, however, represent a few illustrations from Africa (Stride and Ifeka, 1973). The main source of energy was derived from firewood and coal in certain regions. That was the Scenario until the later part of the 19th and 20th centuries.

Indeed, by 20th century with the linking of Africa to the international economy and the introduction of Western technology to the conquered lands, the new wave of the use of energy and power generation emerged in Africa. The energy for consideration here are the fossil fuels (coal, crude oil and gas). The other aspect of energy consumed as electricity comes from water (hydroelectric dams or nuclear plants).

Coal:

Coal is a fossil, a source of power generation and an irreplaceable source of energy. During the days of steam engine it became the dominant source of power and most manufacturing industries were located on coalfields. Recently, coal is more often used in an indirect way to generate electricity because crude oil has become the commanding height in power generation in modern industrial establishments. Coal is regarded in the modern context as the power source of the past. The coal-mining industry is currently ailing in most countries partly because competition from petroleum and hydro-electricity both of which are much cleaner and more readily transportable sources of energy (Trewartha, Robinson, Hammond, 1967; Udo, 1982).

However, power generation is the function of multinational or national governments. It is capital intensive and therefore in large scale power generation individual capacities may be cumbersome. Hence, modern running and power generation industry in Africa took its root in South Africa. The Anglo-American Corporation of South Africa, which to a large extent a South African owned company became the first company noted for power generation. It was responsible and thus managed the Wankie Coalfield in Zimbabwe among others. Africa unlike other parts of the world such as Russia is relatively poor in coal resources. However, the most extensive known reserves occur in Zimbabwe which is also the largest producer. Zimbabwe has several coalfields but production is concentrated around the Wankie coalfield which started production since 1903. The Wankie has a reserved estimated to be over 800 million tonnes and it is considered to be the largest in Africa. The average production is about 3.5 tonnes each year, and its quality is fine enough for cooking. Again, of the 3.5 tonnes produced, about 1 million tonnes are exported to Botswana, Zambia, Malawi, Mozambique and Zaire (Udo, 1982).

Nigeria is the second largest producer of coal in Africa. The mining of coal started in Nigeria in 1915 at the Enugu coalfield which has a reserved of about 72 million tonnes. Nigerian coal is of low-quality sub-bituminous coal. Other deposits are found in the Middle Belt States of Kwara, Benue and Plateau, but are still largely untapped except for a small mine opened in 1968 as a result of the civil war when Enugu field then was closed down. In spite of the large quantity of coal in Nigeria, it is not attractive to the economy, it lost its market since Nigerian Railways, formerly its main consumer, used diesel as alternative fuel to power her engines (Udo, 1982). Other countries with the capacity for coal production include Democratic Republic of Congo, Mozambique. In the Democratic Republic of Congo, the production is centred around the Katanga province with production capacity of about 500,000 tonnes a year. The 500,000 capacity produced is consumed locally in the copper mines and the railways. DRC is said to have a coal reserved of about 50 million tonnes. Another producer of the commodity is Mozambique with a production of about 250,000 million tonnes (Udo, 1982).

Petroleum Oil

Crude petroleum and natural gas are fossils, like coal and are regarded as irreplaceable sources of energy. On the other hand, natural gas is made up largely of methane and is associated with other hydro-carbon gases, it is often found in the wells as crude petroleum or it may occur by itself. Crude petroleum is seen as the power source of the present, and like coal are sources of energy and are used for generating electricity, but today crude petroleum and natural gas, hydroelectric power have largely displaced coal as the main source of power. Petroleum and indeed fossil fuel is the driving force of the world economy and it is in high demand in all economies and has come to be known as the liquid gold. With the value attached to this highly respected source of energy African countries like countries in other climes began to search for it. Thus by 1980

commercial production was restricted to only three countries – Nigeria, Gabon and Angola, although commercial quantities were said to have been found in Ghana and Senegal (Udo, 1982; Gbadamosi, Kupolokun, Oluleye, 2007; Schmidt, 2010). Petroleum products is in high demand and a major component of modern economic activity that almost every country now has at least one oil refinery which depends on imported oil or derived within the nation.

Meanwhile, as at today African states have increasingly a major player in petroleum oil production in the world. There are still prospects for the liquid gold, as no nation and by extension Africa do not want to be left out. The top ten oil producing countries in Africa as in 2013 are Nigeria, Algeria, Angola, Libya, Egypt, Sudan, Equatorial Guinea, the Republic of Congo, Gabon and South Africa.

However, Nigeria is currently the largest producer and exporter of crude oil in Africa. She is currently exporting about 2.2 million barrels per day and makes her the sixth exporting nation in the world. Algeria is the second oil producing state in Africa producing about 2.1 billion barrels a day and has an oil reserved holding of about 12.2 billion barrels in the year 2010. Angola in the order produces 1.9 million, Libya 1.7 million a day exporting about 1.2 of the total. Egypt produces about 680,000 barrels per day, while Sudan produces about 487,000 barrels a day; Equatorial Guinea 346,000 barrels; the Republic of Congo turned in about 274,400 barrels a day. Gabon produces about 241,700 barrels while South Africa turns in about 191,000 barrels. South Africa is the richest Africa country. She is currently importing oil to make up for her expanding industrial capacity thus have not reached a capacity to export any oil. With her industrial and domestic needs, she requires about five hundred and seventy six thousand barrels per day to run her economy. The deficit is imported from other countries in which Nigeria is one (Crude oil in Africa: Retrieved February 2, 2015, Schmidt, 2010). Other newly oil producing countries of Africa are Ghana, Cameroon, Kenya, Tanzania, Uganda, Ivory Coast Mozambique, Chad, Democratic Republic of Congo (Schmidt, 2010).

Natural Gas Energy

Natural gas as earlier discussed exist *pari parsu* with crude petroleum, but this is not to say that it cannot exist in itself. Nigeria is a gas producing nation just as other oil producing states of Africa. Nigeria ranks among the world's highest gas producing and gas flaring countries with the nation's flared gas constituting about 20 per cent of the world's total. Nigeria is the 7th country in the world with the largest gas reserved. Russia is the country that flares the highest quantity of gas in the world and closely followed by Nigeria. However, in spite of the ratio of gas flared, Nigeria still have about 181,900 tcf, she produces 1,879 bcf per year of which it uses only, 1080 bcf per year. It is estimated that about 800 bcf being wasted per year, and that the quantity is capable of supplying gas for power generation and other gas utilizing projects to the entire sub-Saharan Africa throughout the year. The major challenge lies on how to optionally use and monetize the wasted resource, as well as meet its zero gas flaring target (Gbadamosi, Kupolokun and Oluleye, 2007; Schmidt, 2010). Other African states with gas capacity for production are Kenya, Tanzania, South Africa, Uganda among others (Schmidt, 2010).

Hydro-Electric Power

For many years, water energy has been used by man in the manufacturing of goods and services. It is dated back to ancient times – ancient Egypt, Mesopotamia etc and was used for grinding corn and for working iron bellows and looms for spinning and weaving. During the Industrial Revolution and by extension the discovery and use of the steam engine and steam turbine, the old – fashioned water wheel gradually disappeared.

The opening in the 1882 of the first hydro-electric power plant in the United States of America brought water power back for utilization in the economies. To very many people hydro-electricity is seen as a source of power of the future, that petroleum as the source of power for the present will finish and that coal had already completed its role in the far past. However, the great advantage that hydro-electricity has over coal, petroleum and natural gas is that it is inexhaustible since rivers are permanent features of the landscape. Conversely, in areas where the volume of water in rivers fluctuates seasonally (water regime) or is insufficient, it is possible to store it in reservoirs by building dams to contain the flow. Dams are also built to ensure an adequate 'head' or vertically height to generate the required power (Udo, 1982; Uwechuwe, 1991).

Indeed, in Africa, the issue of dam construction is not a problem. What would have constituted a challenge to dam construction is finance and by extension technical know-how. In technical terms African rivers are sufficiently greased by availability of enormous rapids and cataracts – a condition for aiding the flow of water “upstream to downstream” – a veritable indices for dam construction and regulation of water. Africa appears to have the largest potential of dam construction in rivers globally. Meanwhile, recent estimates of the world potential in hydro-electric power suggest that Africa has about 200 million kw or 40 per cent of the world total. However, owing to the high cost of harnessing water power, the installed capacity of hydro-electric plants in Africa before 1960 was about 1.5 million kw, which was less than 1 per cent of the world today. The situation has dramatically changed today since independence partly because most countries are richer than what they were before 1960; there is equally much improvement in technology even though such technology drives is from outside. Besides, increase in the quantity of kilowatts is as a result of discoveries of coal mines, production of crude oil and building of hydro-electric power stations or dams (Udo, 1982; Uwechue, 1991).

Meanwhile, almost all the major rivers of Africa have dams or electric power stations built. And by far Central Africa has the greatest hydro-electric potential in Africa. Democratic Republic of Congo alone has a potential of 500 billion kw – hr annually, or about 12 per cent of the estimated world potential, leaving the rest of Africa with 25 per cent of the world total potential or an annual output of over 1,040 billion kw – hr. There are over thirty hydro-electric power plants in the Democratic Republic of Congo alone. However, it is necessary to see and confirm the availability of hydro-dams in Africa – Aswan, Kainji, Inga, Le Marinel Dam, Edea Dam, Cambam Dan, Kadue Dam, Kariba Dam, Akosombo Dam, Owen Falls Dam and Caboru Bassa Dam on the lower Zambesi is currently the largest hydro-electric power station in Africa (Udo, 1982).

Significance of Energy and Power Generation on African Economies

Petroleum and natural gas are not only important energy sources, but the large variety of special fuels available from these minerals – as lubricants, aviation, automobiles etc. has enabled man to reduce dramatically the significance of distance since the first well as drilled in 1880s in Russia and USA. The importance of petroleum and gas as energy resources is further increased by the fact that both can be transported easily, in or out of pipes, and their energy equivalent is by far greater than that of coal. Petroleum and gas have the advantage in cleanliness, compactness, and convenience, and the fact that new machines are continually being devised for using the products which can be derived from them, have made these resources critical item in the inventories of modern and technologies nations (Trewartha, Robinson, Hammond, 1967).

Petroleum and natural gas are fossil fuels in the driving of national economies. For instance Tanzania is using natural gas found off its coast to provide half of its energy

needs and drive the growing East African economy. Nigeria's natural gas is the engine room for the driving of her economy – gas provided is the major compass in power gas industries such as Afam, Geregu etc. The Volta power station has an initial capacity of 589,000kw and an eventual capacity of 883,000kw. The growing industrial complex of Accra-Tema depends on power supply from this giant station which also sells electricity to Togo and Benin (Udo, 1978; Schmidt, 2010;).

Indeed, petroleum and gas industries have provided jobs to millions of Africans (both skilled and unskilled) in different sectors. Although it is difficult to provide the number of persons in all the economies of Africa that have been affected positively in job scenes, but what is important is the fact that national economies are brazenly affected. In the process has aided and by extension uplifted the standard of living of many Africans. For instance, most countries in Africa are mono-cultural export nations such as Nigeria, Libya, Angola and budgets and wages of these nations are tight to the apron string of oil economy. That usually explains the fact that if there is fluctuation in the prices in the world market it directly affects these economies.

Energy as put forwarded in our earlier discussion hold the key to modern civilization. Amen, (1996) sees oil as an important commodity in terms of the international political economy, and concluded that the 20th century to a large extent was “the oil century”. He regarded the era as the oil century, in that it was the period in which the “Great Powers” struggled with each other for the demand of this commodity for their industrial and domestic need. What gave rise to such struggle among the economic super powers was as a result of rising technological advances and the need for national security and modern strategy, and it was the 20th century were the two forces met and by extension pushed up the oil prices of the political economy of energy.

Before 1973, fossil fuel oil did not command respect in the international economy, and African oil producers did not have much to show in terms of wealth – infrastructure, capital accumulation and even to mention raising the standard of living of the people of Africa. However, the Middle East crisis of 1973 in which the US supported Israel in the Yom kippor War with Egypt ignited the conflict which caused the Arab states of the Organization of Petroleum Exporting Countries (OPEC) to ban exports of oil to the United States and her allies-Israel was to African advantage. The prices of oil rose astronomically and African states were blessed. According to Amen (1996)

... as some nations such as USA, and Britain were groaning under the burden of price increases of gasoline oil and restructuring their economic structures to shoulder the burden, others such as Nigeria, Angola were busy building their economies to their advantage. The cumulative tension caused by the price increase is often referred to as the OPEC oil shocks of 1973. It was really shocking because before 1973, the prices of oil at the international market swung between \$2.90 and \$3.00. The shock pushed the price from \$2.90 per barrel to \$11.65, a jump of over 400 per cent.

In monetary terms, the amount of money derived from the sales of oil in Nigeria for instance from 1970 to date runs into trillions US dollars. It is this oil money that has single handedly built the New Capital city of Abuja, built modern airports such as Nnamdi Azikwe Airport in Lagos; transform Lagos into a Mega city, built and main Tin can Island Port, Calabar Port, etc. The wind-fall from oil is responsible for the building of some Universities and Polytechnics in Nigeria such as Universities of Jos, Calabar, Benin, Bayero; Calabar Polytechnic, Afikpo etc. However, this is not peculiar to Nigeria, countries such as Angola, Algeria, Egypt, Gabon have been positively affected.

Libya is an African nation that oil has changed over the years. Libya is a semi desert with very harsh climatic conditions. It has no appropriate technology of her own that perhaps can transform her economy. Yet she is the second richest country in Africa and fifteenth richest in the world. This position is placed on her as a result of oil energy. How was Libya before the discovery of oil? Libya was a poor country, depended on foreign aid for her development. There was no food security as agriculture was practiced in the oases, the living conditions of the people were near servitude. The discovery of oil in 1959 altered Libyan condition. Today extensive development works are found dotting in her cities and towns. Such projects are housing, industries, good roads, electricity, water supply, telecommunication and agriculture (AKpan, 2013).

Oil energy is also significant in Africa because it provides political energy, elevates the nations and acts as an economic weapon in pursuit of foreign policies. For instance, because of oil wealth, late Mummar Ghadafi of Libya emerged as one of the world's most outspoken personalities of the 20th century. He was able to direct the Arab states to see the need for unity against what they termed common foe-Israel: Also Nigeria had used her petroleum economy to win independence for Zimbabwe that had been under the British tutelage even when most states in Africa had their independence. Nigeria as a regional power came to focus in West African sub-region through the wealth brought by petroleum oil (Bakarambem, 2000).

Basically, and to be more specific, some of the now oil producing states of Africa had no voice in global interactions, but today oil energy has increased the international significance of oil producing states of Africa, and notable one is Nigeria on one hand, on the other hand oil energy has provided a resource with which Africa as a region could fight to assert its own independence and chart its own destiny. Oil energy has made some African states the custodian of underground natural resources, with enormous wealth and power – Nigeria, Libya and even Gabon. It provided the nucleus for the complete restructuring of national income, social, and political life. It finances military expenditures, built super structures for entertainment and economic revolution in respected countries (Spodek, 1998).

Challenges and Prospects of Power Generation in Africa in the 21st Century

The oil and energy challenges on Africa are the fact that this sector of African economies are controlled by foreign multinational companies of the Western Europe and North America. These multinational energy companies have the technologies, managerial abilities and other means in which oil and gas are explored and exploited. It means that though they are here solely on business and by the terms dictated to them by oil and gas producing nations of Africa, what is known is that much of the profit made by these companies are being repatriated home to develop the already saturated developed economies – this is to our disadvantage. African nations do not have the capacity to manage the oil and gas sector so as to derive the much expected economies of scale for the development of African economies.

Moreover, the oil challenge especially the recent volatile nature of oil in the international market as the prices of oil is tumbling in every passing day has affected the budgets of many African states that are mainly mono-cultural in nature. Apart from South Africa Ghana all other oil producing countries of Africa are heavily depended on crude oil for their development. In this connection, the recent price fall in international market (though global) would affect the planning of many of these states for a long time. The thinking is should these African states continue to depend on fossil fuel for their development strands – which may be punctured by the oil producing countries of the South. It should be remembered that, it was increased in prices and to a large extent

embargo by organization of Petroleum Exporting Countries (OPEC) that the major oil importing states formed an alternative organization to counter the high prices – International Energy Agency (IEA). The main function of IEA is to coordinate the energy policies of major industrialized countries through maintenance of oil stock piles in case of a shortage on world markets to at all times try to keep world oil prices low and stable. In another development because of the fluctuation in oil prices and to cushion the repeat of the 1973 oil shocks, the developed economies who are the main consumers of the African oil are now working assiduously through research and development to find an alternative to fossil fuel for their energy needs. However, apart from the Middle East, Africa appears to have the largest percentage of crude oil especially with the discoveries of new oil wells in East and Central Africa. In this connection, government in these advanced economies has ploughed in much in terms of human and financial capabilities to realise their dreams. This has paid off in the development of biofuel technology and the discovery of shale oil by the United States of America. In addition to that, the recent grumbling and fall in the price of crude oil in international market since June 2014 may be regarded as “developed nations conspiracy against oil producing developing nations”. This is so because developed nations do not depend on only crude oil for their energy needs, they also can manage their economies from variety of sources. Why it may be termed conspiracy is that, developed nations are the main consumers of crude oil from Africa, and when they can no longer buy as before the African economic is going into economies coma and would thus spell hardship to these depended economies. Already, the slip in the oil prices has drum into Nigerians the need for upward devaluation of the Naira to meet with realities in the international economy. That is truly the fate of other African economies.

In another corollary, the issue of alternative to fossil fuel has been invoked even before the 1973 oil shocks. The developed countries have come out with varied alternatives to replace fossil fuel so as to reduce their expenditure on fuel imports. This action has led to the improvement on the use of wind, water, solar, nuclear energy and of recent biofuel. However, all of these are limited and perhaps conform to regions and at specific times. Indeed, fossil fuel for now is the energy of the period and it is the singular matter that is driving the world economy and may remain so for a very long time. Fossil fuel is the central matter, the epicentre in which the foundation of the world economy is laid – in telecommunication, manufacturing industries, air transport, land and water transport, budget of some nations are all tied to the aprong – string of this commodity.

For now, in spite of the fluctuation in oil prices in the international market owing to conspiracy by the develop world, there are more oil and gas wells emerging in African continent. The reality of African mono-cultural economy is no longer an issue or a point to bemoan but one to turn to maximum advantage with which to build all the other sectors. Oil and gas industry offers African producers three solid opportunities to grow the economy. The crude we have traded for more than fifty years in some countries, and less than fifteen in some still offer strong bulwark for African economies. We must as a continent continue to refine, export in crude form and build private capacity for the future. However, with our growing enterprise in the oil and gas sector, much of the development of which will be coming from the private sector as almost every state is capitalist driven, much attention would be given to the development of other minerals sectors. This continent has what it takes to be great when we develop our youths and maintain both human and environment security.

Indeed, the era of coal had come and gone, though a little for reckoning. Coal is still producing power for cottage industries and provide employment to large number of work – force in Africa. It is understood that the oil will finish one day, but it is the

commanding height among national economies in Africa and indeed globally. Although new oil wells are springing up, it is known they will dry up – the energy of the moment. The energy of the future – hydro-electric power is constant in as much as there is water in river valleys and waters are descending from rapids and cataracts there is greater hope for more dams. Africa holds the largest percentage of hydro-power potentials in the world. Every state in Africa has the potential to generate energy from hydro-power for her needs. This Africa has a future even beyond the 21st century.

Summary and Conclusion

Energy whether it is derived from oil, coal, hydro-electric power, solar, wind or even nuclear is the heart-beat of every nation. It makes any nation that has it in abundant to command respect among nations. Energy especially oil is one of the most important commodities in the international economy, the epicentre or pendulum in which economies of nations swing. The use of energy for something worth-while is not strange to man, man had been generating energy for manufacturing even in the remote past. In Africa and indeed globally, the demand for energy and its generation from commodities such as petroleum oil, coal, uranium is so great that politics of nations are almost tied to these commodities and by extension energy. Today, Africa has not been left out in the energy and power generation in the global discourse.

Energy generation in Africa dated back many centuries before the European conquest. This is accepted as a fact because in the past African states were able and still able to produce energy or heat demanded commodities and traded with neighbours. Such heat or power demanded commodities include blacksmithing, soap boiling, metal making, among other things.

However, today power generation in Africa come from many sources. The most important ones are crude oil, coal, hydro-electric power. The lesser components of power generation are from wind, solar, and nuclear energy. Petroleum oil, coal natural gas are all fossil fuels obtained in the belly of the earth, while water or hydro-electric is obtained through damming of rivers. Solar or wind are equally obtained on the surface of the earth, and is of abundance in tropical Africa.

Indeed, energy and power generation are pillars to the development of national economies not only in Africa but globally. Energy and gas are very useful in many industries such as aviation, automobiles, manufacturing, seaports and even in cottage industries among others. Petroleum and gas industries have provided employment to the teeming youths in various sectors of national economies throughout Africa. In this connection assist in adding value to life. Oil energy is also significance in Africa because it provides political energy, elevates the nations and act as economic weapon in pursuit of foreign policies. Energy oil has given voice to many oil producing states of Africa than they did during the early independence era.

As a way of conclusion, the issue of fossil fuel energy and its generation is business which affects the entire world and not only African states. Fossil energy and hydro-electric are the main energy are the main energy that drive the world economy now. There are other forms of energy compensating fossil and hydro-electric such as solar, wind and nuclear. In Africa and indeed the world, today life would be meaningless without fossil fuel and its generation. Energy generation whether of fossil content or water are the foundation for industrialization, science and technology, services and to a large extent added value to human civilization. The 21st century is driven by the fossil, water, solar, wind, nuclear and to a lesser extent coal, and would remain so for a long time.

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