ENERGY BEYOND OIL IN AFRICA

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ABSTRACT

The paper examines the energy production from oil in Africa. It discovers that oil is the commanding height and central in driving African economies. Oil has made Africa relevant in international relations. Nations have fallen on each other or rather politics of must Nations especially Africa is pitted on oil. But the question that raises the 'blood pressure' of African states is that one day the oil will finish. Then what would be the fate of the economies of Africa that is sustained by oil? The answer lies on the fact that coal was the source of power of the past, oil is the source of power of the moment while hydro-electric power, solar, wind, nuclear, geothermal, biofuel among others are sources of energy for the future. There is still hope and Africa has a bright future in the energy supply and consumption. With modern scientific discoveries, whichever way Africa would not be wanting in energy pendulum of the world political economy. The paper concludes that other sources of energy would sustain Africa when petroleum oil dries up. Materials for this work are from the secondary sources, and interdisciplinary approach was adopted using analytical methodology.

INTRODUCTION

Energy is central to the development of economies. Energy such as oil, gas, coal, hydro-electric power to a large extent has impacted positively on civilization since the beginning of the 20th century. Adequate and productive energy utilization is a key to wealth creation, and power in which international and national economies propel. The convenient production of goods, movement of peoples, the power to disseminate information, the cheap and easy development of agriculture and by extension large and small scale industries are all anchored on the availability and supply of energy to provide power. Africa for many centuries was and still is a player in the provision and utilization of energy both as a source of heat for homes or the supply of power for craftsmanship. To support the fact that Africa was not left out in energy supply and utilization, Africans in Meroe Kingdom, the Nok culture had known how to make and use iron without any external influence. Iron manufacturing was and still is energy burning adventure. The Yoruba and Awka people had great blacksmiths who use energy generated from coal in their industries. The Bida people of Central Nigeria used energy in their Brass work for centuries (Stride and Ifeka, 1973).

However, towards the middle of the 20th century the use of energy through many sources altered and improved the value of man than before. It means that the advanced technology of the 20th century has enabled both the vertical and horizontal exploration and exploitation of stored energy of the earth by burning its fossil, fuels for electricity and other forms of heat or power to add value to man's civilization. In Africa and indeed in the International system, the demand for energy from fuels such as petroleum oil, coal, gas, become so great and had several times brought nations to coalition. Indeed, the main idea of this paper is to look at energy now and beyond it. According to Reuben K. Udo (1982) in his book, "the Human

Geography of Tropical Africa" sees or regards hydro-electricity as the source of power of the future, petroleum as the power source of the present and coal as the source of power of the past.

Conceptualizing Energy

Hussain (2004) sees energy as fossil fuels-coal, oil, and natural gas – supply about eighty-five per cent of the primary energy consumption globally. Oil is used primarily for transportation fuels, but also for power production, for heat and as a feedstock for chemicals. Coal supplies about fifty-four per cent of the electricity in the USA. Renewable energy offers alternatives to both traditional fossil fuels and nuclear power. Biomass, solar, wind, turbine, geothermal, hydroelectricity, and hydrogen energy sources are among the many energy sources considered.

Ogbole (2004) conceptualizes energy as both renewable and non-renewable resources. The renewable resources are thus include sun, wind, running water, waves, tides and geothermal energy. Non-renewable include fossil fuels (coal, crude oil, natural gas), the nuclear fuel/uranium and thorium), and a variety of non fuel minerals both metallic and non-metallic. 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 or heat generated from fossil sources such as coal, petroleum and natural gas required for the large number interactions 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 or solar, nuclear, wind capable of generating force for the production of goods and services commercially or privately within an economy.

Historical Application of Energy in Africa

Energy usage had been part of African culture many centuries before the Arab conquest. However, before the European conquest and by extension the introduction of modern industry in the 19th century, there were basic industries in Africa that were heat relevant. Such industries include metal, soap boiling, blacksmithing, iron work etc. It is believed that all these industries were highly energy driven. In this connection, energy powered industries were scattered throughout Africa. Indeed, wood was the predominant source of fuel, and even today at least half the world's people still rely or depend largely on fuel wood for cooking and heating (Stride and Ifeka, 1973, Ogbole, 2004).

Indeed, by 19th century, Africa was dramatically linked to international economy through conquest. This is not to say that Africa was isolated from the rest of the world, even before the 15th century Trans-Atlantic Slave Trade African economies were exposed to the west with negative rewards. Even at that energy was used. Again, in Africa the development of oil exploration is traced back to late 1868 when petroleum oil was seen flooding on a tunnel dug for sulphur exploitation in Egypt. In 1909, a large quantity of oil had been discovered but was not exploited. It was later in the 1950s that exploitation of oil for power or heat comes to prominence. Countries in the 1950s that explored oil were Nigeria, Libya, Angola, Sudan, Egypt. Today other countries that have joined the league of African oil nations include South

Africa, Equatorial Guinea, Algeria, Chad, Ghana, Uganda, Ivory Coast, Kenya, The Republic of Congo, Gabon among others (Akpan, 2013; Eke, 2005, Schmidt, 2010).

Oil Exploitation in Africa since the 1950s

Africa is one of the world's largest producers of crude oil after the Middle East. Oil exploitation in Africa started in large quantities in 1950s. Oil is one of the most distinguished commodities in international trade. It is often agreed that African oil is largely untapped especially as the new oil wells are being exploited in Uganda, Kenya, Ghana, Ivory Coast among others. It is also being held that the continent holds some of the biggest reserves of oil, gas in the world.

However, millions of barrels of oil have been exploited, used locally and trade globally. It is believed that oil and gas will dry up as time goes on. It is against this background that the paper is addressing. Also it is necessary to look at the quantity of oil being drilled in Africa. But it is difficult to really say the quantity of reserves in the continent. There is that conjecture as to the quantity of oil left untapped, these is not certain and perhaps as new oil wells are coming up yearly in Africa states.

Top Ten Oil producing countries in Africa 2013

Africa is on top of oil business and this is shown on the top ten oil producing states as per barrels per day either for local consumption or international exchange relations. The top ten countries are Nigeria, Algeria, Libya, Egypt, Sudan, Equatorial Guinea, the Republic of Congo, Gabon and South Africa. Indeed, Nigeria is Africa's biggest oil producing nation with about 2.2 million barrels a day. This makes her the sixth world exporter of oil. Algeria comes second in Africa producing about 2.1 million barrels per day. In that order Angola produces about 1.9 million everyday and placing her as the seventh oil exporter in the world. Libya produces about 1.7 million barrels a day and exporting about 1.2 of the total. Egypt comes in that order, and produces 680, 000 barrels per day. Sudan is the sixth biggest oil producer in Africa: producing about 487,000 barrels a day. Equatorial Guinea is now the seventh biggest producer of oil in Africa with 346,000 barrels per day. The Republic of Congo closely followed Equatorial Guinea, making her eight biggest with 274,000 barrels per day. Gabon is the ninth biggest oil economy in Africa, producing about 241,700 barrels per day. The Republic of South Africa is the top ten producing nation in Africa, producing 191,000 barrels of oil a day. The Republic South African is the second biggest economy after Nigeria. The country is looking into more prospects of oil as she imports large quantities to cater for her economic expansion (Crude Oil; Retrieved 2, February 2015).

Indeed, of recent a number of countries in Africa have joined the league of oil producing nations in Africa – for internal use and for exchange relations. These countries include Kenya, Tanzania, Ghana, Ivory Coast, Uganda, Mozambique among others (Schmidt, 2010).

The question is, with all these barrels of oil being exploited daily what would be the fate of these countries in the years ahead? It may not be in the next ten or twenty years, but certainly the oil will dry up or may not be relevant as it is today in the international business. Then after that is the basic question. Oil reserve is not contestable, but what is known is that it will dry up or less important as technology is advancing. For instance coal was the engine room of industrial Revolution of the 19th century but today has lost the clamour and relevance, although it is heavily being used in China and Russia. In spite of the heavy reliance on coal

by China and Russia or perhaps other few countries does not make coal the energy of the moment. The energy of the moment is the petroleum oil, it is highly sort for and no nation can do without it in the present international business and connection. Countries developed or developing are falling on each other because of it.

The Role 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 (Schmidt, 2010; Udo, 1978).

Indeed, petroleum and gas industries have provided jobs to millions of Africans (both skilled and unskilled) in different sectors of the economy. 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).

Africa beyond Petroleum Oil Energy

Petroleum oil is the major driving force of African and indeed global economy. It is the pendulum in which economies swing. Oil is the energy of the moment. In spite of all the clamour, and more wells being discovered, gradually it will dry up and how would African economies fair, this is one of the biggest question? The answer lies on the fact that Africa will fare well and compete with other economies through the use or application of hydro-electricity seen as the source of power of the future. Besides, other untapped sources of energy such as wind, solar, nuclear and by extension return to the use of the power of the past-coal.

However, since the United States opened in 1882 of the first hydro-electric power plant, the use of water in the generation of electricity and or power become currency and have added value to the new civilization. Although before 1882, the use of water power had been and dated to the ancient times when it was used for grinding corn and for working iron bellows and looms for spinning and weaving, the machinery used to be sited by the river bank. Hydro-electric power is the source power of the future, and has an advantage over coal and oil energy because petroleum and natural gas are exhaustible while rivers are permanent features of landscape. Furthermore, in areas where the volumes of rivers fluctuate owing to seasons, it is possible to store it in reservoirs by building dams to contain the flow. Equally, dams are also built to ensure an adequate 'head' or vertical height to generate the required power (Udo, 1982)

Hydro-electric power is a source of power to be reckoned with in the international economy. Because of its contribution to modern civilization, it has been rated as the source of power for the future. In this connection, 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's total, and the concentration is on the tropical Africa being placed at 37 per cent. Indeed, one of the characteristics of African rivers especially within the tropics is the possession of cataracts and rapids. The numerous rapids and waterfalls which interrupt the course of most tropical African rivers usually occur at the head of the youth sections of the valleys, creating room for waterfalls – a condition for the construction of dams for hydro-electricity generation for power energy. Nearly all the African rivers especially those in the tropics have these features and the potentials of building hydro-power stations across these rivers are in nearly all rivers (Udo, 1982; Uwechue, 1991).

Meanwhile, it is important to look at hydro-electric potentials in Africa for the future. Central Africa has by far the greatest hydro-electric potential in Africa. The 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 about 25 per cent of the world's total potential or an annual output of over 1,040 billion Kw-hr. The scenario has to be shown because the heavy and steady rainfall in the Congo Basin and the fact the Congo River descends more than 240 metres in series of thirty-two falls and cataracts within a distance of 352 kilometers are responsible for this high potential water power. The installed capacity of hydro-electric power in Congo in 1971 was however only 3.4 billion Kw-hr, most of the power being

consumed by the Katanga copper industry. Today the capacity has increased to about 1,512 kw-hr. The larger Hydro-electric power in Katanga district include the Cornet Falls Stations in the Katanaga on the Lufira River, and the Nzilo Gorge Station on the Lualaba River. There are over thirty hydro-electric plants in the Republic of Congo alone, but the largest is the massive Inga Dam near the mouth of River Congo, at a site which has a potential capacity of over 30 million kw. The Inga Dam was completed in 1974 (Udo, 1982).

Furthermore, other large hydro-electric power stations in Central Africa include the 276 MW Le Marinel Dam at the Nzilo gorge on the upper Lualaba, the 270MW Edea Dam on the Sanaga River near Douala in Cameroon, and the 260 MW Cambambe Dam in Angola. There is the 750 MW Kafue Dam Station near Lusaka (Zambia) and the much larger 1600 MW Kariba Dam power stations in the central African sub-region among others (Udo, 1982. Uwechue, 1991).

In West Africa, the water potentials are relatively low partly because of the extreme seasonal fluctuation in water level in most rivers or partly as a result of the nature of the terrain. Indeed, a large number of small power stations established by mining syndicates exist all over West Africa dating back to the colonial era. There are also quite a number of Hydro-electric power stations built in West Africa after independence. The minning syndicate hydro-power stations are on Kura River, River Gyel in Nigeria; and outside Nigeria is found the Markala Dam (near Bamako) in Mali, the 18,000 Kw Grand Chutes power station on the Samou River in Guinea, the 7,500 Kw Mount Coffee Station on the St. Paul in Liberia, and the Ayame I and Ayame II plants on the Bia River in the Ivory Coast. However, two large scale hydro-electric power stations have been built as part of the water development projects. These are the Volta River Dam at Akosombo (Ghana) and the Kainji Dam on the River Niger near Bussa (Nigeria). The Volta power station had an initial capacity of 589,000kw and the eventual capacity of 883,000kw. The growing industrial complex of Accra-Tema depends on power supplied from this giant power station, which also sells electricity to Togo and Benin. The Kainiji Dam power station, opened in 1969, has an initial installed capacity of 320,000kw which eventually increased to 880,000kw-making it the first of the three Niger Basin dams; the other two are built at Jebba on the River Niger and at the Sheroro Gorge on River Kaduna. Both power stations have a joint capacity of 980,000kw (Udo, 1978, Udo, 1982).

In East Africa, the oldest major hydro-electric power station is the 150mw Owen falls dam in Uganda while the largest is the 2200mw Cabora Bassa in Mozambique. The Cabora Basa Station, on the lower Zambesi, is currently the largest hydro-electric power station in the African continent (Udo, 1982).

Indeed, these few hydro-electric power stations represent the numerous hydro-electric power stations built all over Africa. When the petroleum oil energy would seize to exist or owing to technological advancement other forms of energy replace it, hydro-perhaps would still remain as the source of power for the future. Hydro-electricity is the biggest source of electricity in a number of countries in African, its potential remains largely untapped. Some of the largest water courses with hydro potentials in the world are found in African region, therefore several decentralized mini and micro hydro-plants on the Nile, Niger Congo, Senegal, Orange, Limpopo, Zambesi, Volta rivers can generate enough electricity to meet all the electricity needs of Africa.

Again apart from hydro-electricity power other forms power are found in Africa even though they remain untapped for now such energy sources include solar power, geothermal energy, wind energy biofuel energy, nuclear energy.

Challenges

The challenges faced by Africans in the energy sector of her economies varied. This is so because African states lack the technological capacity of this age to galvanize her developmental strides. It means that the issue of dam construction or development, nuclear energy, the conversion of coal for energy required and sound technical skill is grossly lacking among Africans. In other words Africans depend on the advanced West and Eastern European nations which invariable constitute capital flight. Besides, African states lack the finance to execute developmental projects in Africa in which hydro-electricity from the numerous hydro potentials is one. That quite a good number of viable projects in Africa are externally funded through loans and aids.

Solar Energy

Africa situates on the tropical zone with abundant sunshine almost throughout the year except on the temperate South Africa, the Mediterranean zone and the high attitudes – mountains, hills and highlands. Thus, solar energy is by far the single most abundant energy resource Africa has and if harnessed could meet all the electricity needs of Africa.

Indeed, solar energy is inexhaustible. However, it is believed to be the ultimate origin of most forms of utilized energy: fossil fuels, plant life, water power and wind power. The direct capture of solar energy that is seen to many as the best hope satisfying a large proportion of future energy needs. In the United States both passive and active solar heating technologies have been put in place and got foothold in the market. That the use of solar panels is now common for individual homes in climates that are warm and sunny with not too much cloud cover and not too many hours of darkness in winter when the demand for energy is at its highest. A second type of solar energy use involves converting concentrated solar energy into thermal energy to generate electricity. Electricity can also be generated directly from the solar rays by photovoltaic (pv) cells, a semi-conductor device made silicon (Ogbole, 2004); Crude Oil, Retrieved 11 November, 2014

Geothermal Energy

The method in which deep wells drilled into the reserviour use the heat energy either to generate electricity or for direct heat applications, such as heating of homes or drying of crops. Thus, geothermal energy could be derived from the Red Sea Valley, the Rift Valley and between Nigeria's Atlantic southeast coast and Cameroon's Atlantic southwest coast remain largely untapped. If earnestly put to use could assist solve some of the Africa's energy needs (Ogbole, 2004; Crude Oil, Retrieved 11 February, 2015). Wind energy; Africa, again is situated in the tropical region with intense radiation from the sun, making the region an area with intense wind movement. Thus Africa is surrounded by Indian Ocean on the east coast, Atlantic Ocean on the west, Mediterranean Sea on the north, with huge ocean wind and current which, if properly harnessed for electricity has the potential to complement the energy needs in Africa.

Biomas fuel

It is believed that more than half of the people in the world depend on wood or other forms of biomass. Plant material and animal waste are used as fuel for their daily energy needs. For instance in Burkina Faso and Malawi, about 94 per cent of the energy consumption is derived from biomass. In India and Costa Rica it is 42 per cent. There are two major sources of biomass for energy derivation, one is trees, grains, sugar, crops, and oil- bearing plant like sunflower. The other is wastes including crop residues, animal wastes, garbage and human sewage. Biomass can be transformed into fuel in many ways such as combustion gasification, and anaerobic digestion (Ogbole, 2004).

Nuclear Energy

Nuclear energy perhaps in future may become part of energy needed to propel African economies. It is believed that it is one of the fuel that would be virtually inexhaustible. It is also argued that nuclear energy poses technological, political problems for the society than it can solve for now. African nations lack the technology and it is seen as the fuel energy for the future, not now.

Coal

Coal like petroleum is a fossil and an irreplaceable source of energy. During the Industrial Revolution and even after it coal was a dominant energy and the commanding source of power in manufacturing industries and these industries were located near coalfields. With the advent of petroleum and natural gas energy and by extension complemented by hydro-power, coal is used in an indirect way to generate electricity. With less value attached to it, the coal – mining industry is currently ailing in most countries partly because of competition from petroleum and hydroelectricity both seen as being cleaner and more readily transportable sources of energy.

Africa unlike other regions such as Eastern Europe is not rich in coal. The most extensive known reserves of coal occurs in Zimbabwe and she is also the largest producer. Zimbabwe has several coalfields but exploitation is restricted to the Wankie coalfield where mining started since 1903. Zimbabwe as in 1982 produced about 3.5 million tonnes each year, most of it is high quality for cooking; out of which about 1million tonnes are exported to Botswana, Zambia, Malawi, Mozambique and Democratic Republic of Congo.

Nigeria is the second largest producer of coal in Africa and the only producer in West Africa. Coal mining began in Enugu in 1915 and Nigeria is believed to have a reserve of about 72 million tonnes mainly of low quality sub-bituminous coal. However, coal is also found in kwara, Benue and Plateau states of Nigeria.

Indeed, coal is also found in other states of Africa such as Democratic Republic of Congo, Namibia, which has two important coalfields; the Lukiga basin near Kalemie on the edge of lake Tankayinka, with reserves of about 50mn tonnes, and the Luena basin in Shaba, with reserves of about 5mm tonnes (Uwechue, 1981).some other countries in Africa mainly east and south Africa have coal.

What is important is that although coal had been in used since the early 19th century and was later abandoned for petroleum and hydro-electricity, solar, wind and geothermal energy, it

can still be use in the future. Secondly, that Africa can still go back to coal if petroleum would no longer command the prestige it has today because of scientific discoveries and the need to diversify for modern energy. But even if countries such as China, Russia are still using coal, coal can be relevant as a trading commodity in the international exchange relations, and Africans stand a better chance to export it. Coal is useful and indeed can complement other forms of energy in cottage industries.

SUMMARY AND CONCLUSION

Energy as a commodity is central to the development of economies. It does not really matter whether developing or developed, energy commands respect and every nation searches for it. The convenient production of goods, services, the movement of people from one clime to another requires energy. The storing of products for the future anchors on the supply of energy whether from petroleum, coal, hydroelectricity, solar, wind or even nuclear. In Africa and beyond, the demand for energy for maintaining and or improving upon civilization depends on energy and therefore the need for energy is inelastic.

The use of oil as fuel for generation of energy in Africa started in the 1950s and since then it had been one of the most sort for commodity in every country of the globe. There are so many oil wells now in Africa and more are being expected to be explored. Africa is next to the Persian Gulf in oil production and may remain so for a long time. The top ten countries that are producing oil are Nigeria, Algeria, Angola, Libya, Egypt, Sudan, Equatorial Guinea, the Republic of Congo, Gabon, and South Africa. Other countries currently exploring and producing oil include Ghana, Ivory Coast, Uganda, Kenya, Tanzania, and Mozambique among others.

Indeed, petroleum oil is the major driving force of African economies. Petroleum oil is the energy of the moment. It is believed that in spite of its importance today, it will dry up as time goes on. As petroleum oil will dry up what would become of African energy supply? The answer lies on the fact that before the coming of petroleum oil, coal was used as a source of power or energy. With the changing status in civilization, petroleum was discovered and because of its cleanliness and easy transportation, it has become the energy of the movement. The advantages notwithstanding and its supply, one day the petroleum oil will dry up or would be insignificant to economies. However, whatever status petroleum would shape itself African countries would not scamper for energy. Africa holds forty percent of hydro-electric potential in the world; hydro-electric energy is inexhaustible. Already hydro-electric is regarded as a source of power for the future because of its many advantages as seen in the earlier discussion. In other words Africa beyond petroleum oil would still make Africa economies relevant in world economy. However, even beyond oil and by extension with modern technological break-through, Africa will key in the use of solar, wind, nuclear, geothermal biofuel and coal to run her economies. It means beyond oil Africa has enough energy reserve from the sources enumerated above and would be actively involve in world economy as it is today. Africa energy beyond oil appears even brighter than the contemporary scenario – Africa has the power and the power from the various energy sources for the future.

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