

Allow Crude Oil to Die a Natural Death

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ABSTRACT

The sudden calls for the end of fossil fuel production as a source of energy inspired this research. This study attempts to understand if these calls are due to “cartelization by political bodies” as described by Libecap, in 1972, promotion of self-benefits, or genuine calls based on disastrous impacts of global warming and general climate changes. Alternative energy sources and their present sustainability will be examined, policies affecting fossil fuels over time will be identified, the effects of these global and national policies, the politics behind calls and perspectives from various continents will be discussed, the lowest and highest GHG emitters will be identified, and recommendations will be made on the best course of action based on reviews and findings from around the world. Furthermore, this study understands that the world is a global village and considered the effect of climate change as a global challenge, however, its arguments and suggestion were made by critical analysis of the causation, major beneficiaries of policies, effects on countries dependent on fossil fuels, responses towards the effect of emission, and impact of climate change.

Key Words: Fossil fuel, Crude oil, Oil Price, Climate change, Renewable energy, Energy Transition.

1. INTRODUCTION

Crude oil has long been an important source of energy around the world, accounting for a significant portion of the GDP of most emerging countries. Crude oil contributes about 10% of Nigeria's GDP, 65% of government revenue, and a whopping 88% of foreign exchange revenues (KPMG, 2019). Crude oil is Nigeria's most important commercial energy source, accounting for 70% of the country's energy consumption (Odularu and Okonkwo, 2009). On the other hand, for the past 40 years counting from 2008, the United States of America has used 22% of global oil consumption, demonstrating that fossil fuel use is equally significant in the far west (Shafiee and Topal, 2009). Crude oil is the source of both petroleum and natural gas, as well as a variety of byproducts. This means that, aside from the transport sector, industry, and household heating, crude oil production yields a variety of benefits ranging from medicine to helmets and plastics to paints (Demirbaş, 2001; Jiang and Lu, 2020; Masih et al., 2010; Nandha and Brooks, 2009). Crude oil is the world's leading fuel and the value of crude oil for every producing country is always significant to an extent that it controls world politics (Gupta and Nigam, 2020). Crude oil further contributes to the cost of inflations in prices of local commodities, utilities, and transportation. The burden of crude oil on the budgets of French households is about 4.4% (Kasparian, 2009). As of 2009, crude oil accounted for about 39% of Indonesia's energy supply, and as of 2012, Indonesia's energy still relies heavily on non-renewable resources (Hasan et al., 2012). These, and other factors, contribute to the critical demand for crude oil as a source of energy generation around the world. However, the tremendous exploitation of this incredible black gold, as it is frequently referred to, is seen as a major contributor to global climate change, GHG, global warming, and the issues it poses around the world (Prasad et al., 2020). This leads to requests for evaluations and reviews of crude oil exploration policies, emission policies, production policies, and, in the worst-case scenario, the cessation of crude oil operations (Napp et al., 2014; Pointvogl, 2009). There is a schism, and different classes on both sides of the schism see crude oil in different ways. Researchers have also described the supply of fossil fuels as inelastic since reserves are gradually depleting but, on another

hand, new findings are being made like Shell's discovery in Namibia and the TotalEnergies discovery at Suriname (AFP, 2022; Bloomberg, 2022; Shafiee and Topal, 2009).

In recent years, there has been a significant advance in the generation of energy from renewable resources (wind, water, sun, electricity, etc.). Renewable energy has shown to be a viable option, but it still confronts its own set of hurdles. For example, while addressing climate change, the increasing demand for energy utilizing electricity as a clean source of power increases the demand for rare solid minerals, which has a negative impact on the environment (Ebube and Akan, 2021). However, that is not the focus of this study.

In 2009, Schmidt and Marschinski suggested that the transition could be triggered by a rise in global energy demands, a reduction in the supply of crude oil, or interventions through policymaking. But their findings showed that there is likely to be path dependence or a technological lock-in that will justify policy interventions, therefore, energy-saving policies might end up leading to a rise in emissions and a rise in the global oil price (Schmidt and Marschinski, 2009). Furthermore, the renewable energy sector is perceived to be policy-driven and still at its infant stage, regardless of the breakthroughs recorded, it is not clear that investments in the sector will be self-sustaining at this point (Schmidt and Marschinski, 2009). This means that the rise of renewable energy as a key source of energy for world energy needs is seen as a buffer to the climate-change saga. Is it, however, the case at present time? This analysis strives to be realistic, taking into account all facts and potential advantages from policy drivers, intentions, alternatives, and the transition process currently taking place and likely to take place. Of course, Africans will have their views on the discussion about climate change and crude oil exploration policies. According to Daggash and Mac Dowell, the abundance of fossil fuels in Sub-Saharan Africa may hinder efforts to combat climate change if policies will negatively affect crude oil and gas extraction (Daggash and mac Dowell, 2021). Northern and Southern America have their own reservations, as climate change has a greater influence on them. Commitments to emissions, external organizations, and cooperative political action are currently among the most important rating criteria for businesses in North America (Jones and Levy, 2007). We can't rule out the Asians or the Europeans because major consumers of energy generated by fossil fuels are scattered around this region and the effect of climate change is also critical within the region (Andres et al., 1996; Behera and Dash, 2017; Rath et al., 2019). Libecap, in 1972 described politics played around crude oil production as "cartelization by political bodies" (Libecap, 1989), since everyone wants a stake, politics is always dicey and has a general impact on economic growth. The politics of making long-term decisions are mostly hinged on what a particular region stands to gain. This study opens the wounds for the world to understand the diversity of concerns for better decision-making that might be skewed diplomatically to regional uniqueness. However, the consciousness of climate change as a global challenge is recognized and policies showing steps being taken to combat the change were also discussed. The research asks the following questions: Are renewable resources so sustainable to displace crude oil now? Will the global energy demand be met if there is an abrupt end to investments in oil and gas? Who benefits most from the climate change policies? What is the fate of developing countries with high dependence on crude oil and those who recently discovered crude in their lands? And how should the energy transition be best met?

2. POLICIES AFFECTING FOSSIL FUELS

2.1 International policies

Primed by decades of activism and advocacy on the global stage, Climate change is today unarguably the dominant concern in the international discourse on the economy and ecology. The quest to pivot away from fossil fuel has even been modeled after the cigarette addiction (Steven, 2013) to better understand the most effective means of taking advantage of human behaviorism in a practice considered to have detrimental effects just like the cigarette addiction. Racing a premium on global action, many new oil and gas projects are now being referred to with such terms as 'carbon bombs' (The Guardian, 2022) and treated as nuclear weapons to galvanize international commitments and subsequent actions by state and non-state actors. On the international stage, the chief platform for these anti-fossil fuel policies and agreements is the United Nations Framework Convention on Climate Change. According to the Council on Foreign Relations, the four international agreements are:

- a. Montreal Protocol, 1987
- b. UN Framework Convention on Climate Change (UNFCCC), 1992
- c. Kyoto Protocol, 2005
- d. Paris Agreement, 2015

It's important to state that the conventions stated above are bolstered by many more groups and pacts as highlighted below. While most of these pacts do not directly call for the ban of fossil fuel projects, they are increasingly subsidizing alternatives and

pursuing a skew in favor of energy sources other than oil and gas. These interconnected structures and organizations are outlined in the table below from the Intergovernmental Panel on Climate Change's 5th Assessment Report (Stavins R. J. et al, 2014).

Table 1: The landscape of agreements and institutions on climate change (IPCC AR 5, 2014)

UNFCCC	Kyoto Protocol, Clean Development Mechanism, International Emissions Trading
Other UN IOs	Intergovernmental Panel on Climate Change, UN Development Programme, UN Environment Programme, UN Global Compact, International Civil Aviation Organization, International Maritime Organization, UN Fund for International Partnerships
Non-UN IOs	World Bank, World Trade Organization Other environmental treaties Montreal Protocol, UN Conference on the Law of the Sea, Environmental Modification Treaty, Convention on Biological Diversity
Non-UN Forums.	The IEA and OECD have formed and jointly manage the Climate Change Expert Group, whose explicit mission is to provide analytical support on technical issues to the international negotiations.
Other multilateral ‘clubs’	Major Economies Forum on Energy and Climate, G20, REDD+ Partnerships
Bilateral arrangements	US-India, Norway-Indonesia, etc.
Partnerships	Global Methane Initiative, Renewable Energy and Energy Efficiency Partnership, Climate Group

While these conventions and treaties provide platforms for members to make commitments that impact fossil fuel investment and development, the Fossil Fuel Non-Proliferation Treaty, which was envisioned in 2015 as a complementary agreement to the Paris Agreement, has focused specifically on the oil and gas industry. The non-proliferation treaty is basically in divestments and organizations like the World Trade Organization are International Trade Agreements to this outcome (Cleo Verkuuji, 2019)

It is important to state that the conventions are set out for the periodic review of actual performance and update of commitments. COP26, the 2021 UN Climate Change Summit in Glasgow resulted in an agreement to phase out the provision of government subsidies for fossil fuel projects and gradual the outright phase-out of coal as an energy source by a coalition of 23 countries in the 2040s (Daniel Wilkinson, 2021)

In a balancing act, the Organization of Petroleum Exporting Companies, OPEC has continued to posture and act as a market stabilization force. OPEC recently dropped the International Energy Agency, IEA as a technical data provider and supports an Energy Transition Research Initiative. The 2021 publication of OPEC World Oil Outlook 2045 highlighted the focus on “ensuring access to affordable, reliable, sustainable and modern energy for all people” in line with the Sustainable Development Goals number 7 of the United Nations

2.1 National policies

International conventions are structured to be implemented through Nationally Determined Contributions, NDCs. With non-state actors such as Non-Governmental Organizations (NGOs) and Multinational Companies declaring their Carbon Neutrality Targets and commitments, States have little or no other choice but to develop their national policy and implementation programs to be in line with international conventions. Increasingly, this has led to the formation of coalitions and groups of nations with similar economic and/or energy profiles for concerted efforts. With Climate Change initiatives rife with political implications and colorations, national policies must be nestled in local realities for social acceptance and ease of implementation. Nations also have to deal with election cycles which could lead to regime change and policy disruption such as was experienced in the pullout of the USA from the Paris Agreement below is a brushstroke review of a representative sample of countries/regions:

Table 2: Countries and their policies on fossil fuels

Country/ Region	Stated Policy on Fossil Fuel
America	<ul style="list-style-type: none"> - Political vacillation in leaving the Paris Agreement before a 2021 return - Initially sanctioned oil and gas projects such as the Keystone Pipeline have been stopped and new oil leases in the Gulf of Mexico have not been granted

Norway	<ul style="list-style-type: none"> - Norway is unlikely to meet its 2030 Paris Agreement Targets (DNV,2021) - Oil and Gas investments would go on; albeit to be gradually phased out. The petroleum sector accounts for about 40% of Norway's exports and 14% of its gross domestic product (GDP). (BBC,
Nigeria	<ul style="list-style-type: none"> - Pledged to phase out Coal usage by 2030 during 2021 COP26. - Declared Gas as a 'Transition' fuel; 2020-2030 a Decade of Gas
Middle East	- Accelerated development of Oil and gas resources with numerous new projects within this transition window in preparation for a world without oil
Brazil,	<p>High investment in renewables</p> <p>Extended coal usage deadline from 2027 to 2040 (Fabio Teixeira, 2022)</p>
Britain	

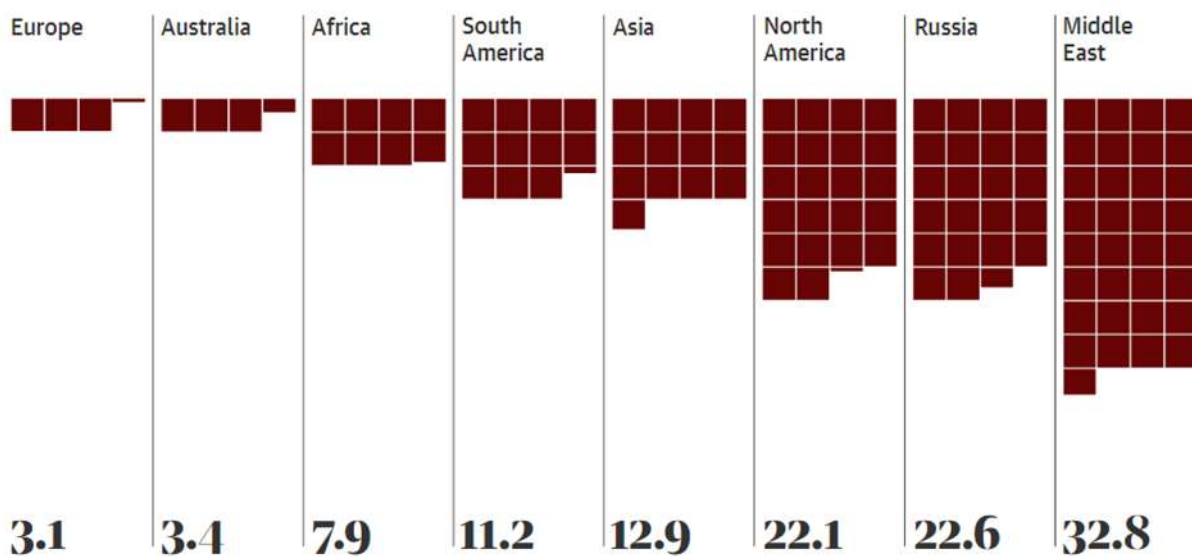


Figure 1: Future projects in bbls that are financially sanctioned (Source: Rystad Energy UCube)

Adding up all carbon dioxide emissions from fossil fuels and cement production over time, the U.S., China and Russia have emitted the most by far, the majority of it in the past 50 years.

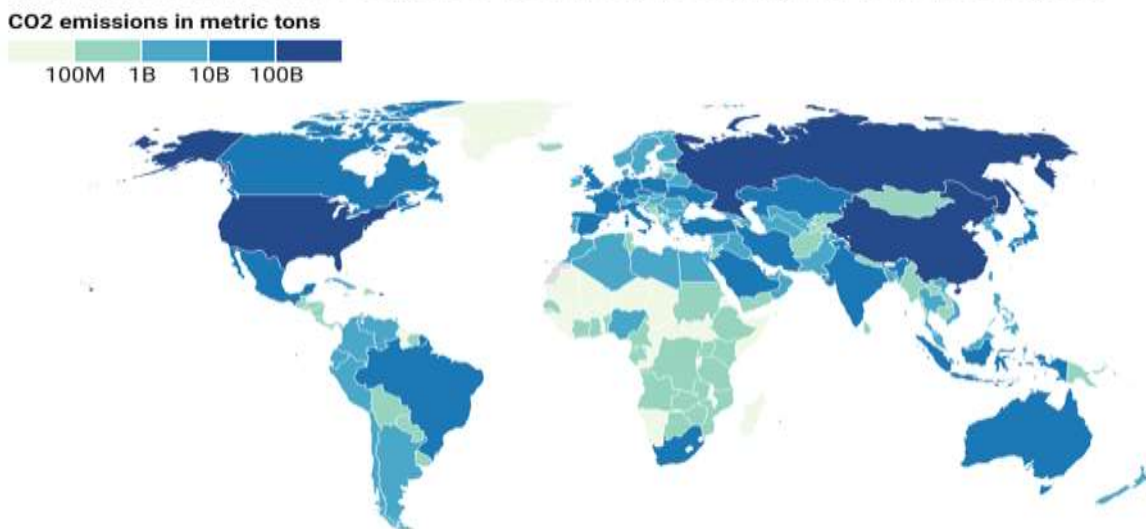


Figure 2: Largest emitters of carbon dioxide from fossil fuel and cement production within 1750 - 2019 (Source: Our world in data, Global Carbon Project)

Figure 1 and 2 suggests that neither the carbon dioxide emissions across continents nor the financial sanctions of future projects across continents are evenly distributed, therefore it could be inferred that future decisions on checkmating the use of fossil fuels as energy transitions should be handled with caution, diplomacy, and a strong sense of belonging since causations are not globally even and resources are still yet untapped. However, there is a cliché of seeing the world as a global village and the impact of climate changes based on emissions as a unified. Though some schools of thought will argue that its effects are still uneven (O'Hara, 2009).

3. EFFECTS OF POLICIES ON GLOBAL ENERGY DEMAND & OIL PRICE

Renewable energy policies give nations the ability to make strategic decisions to address the development of the green energy industry, as well as several other aspects related to renewable energy consumption, production, or distribution. Renewable energy policies may range from legislative decisions to international treaties or incentives are given to organizations that are helping to develop the sector. These policies, although very beneficial to reducing hydrocarbon pollution and greenhouse gases (GHG) have detrimental effects on energy generated from fossil fuels, which are still the dominant source of energy used across the globe.

Several nations have implemented policies to increase the renewable energy they produce and consume. These countries are very ambitious and have planned to follow through with the Paris Agreement, and ensure climate change mitigation, adaptation, and finance. However, the degree of success of these policies is not the same among other countries (Baffes et al., 2015), and may differ depending on the country's position as a major importer or exporter of crude oil, as well as their tax structure (Troster et al., 2018). The level of adoption and implementation of renewable energy policies among the GCC countries (who contribute more than 46% of the world's crude oil), would have different effects on crude oil prices and the global energy demand and supply when compared to the level of adoption and implementation of renewable energy policies in China (the world's largest consumer of fossil fuels) (Al-Maamary et al., 2017).

The price of crude oil is significantly affected by these international policies. With more than 200 countries signing the Paris climate accord in 2015, analysts have forecasted that if the Paris climate goals are achieved, crude oil prices could plummet to \$10 in 2050 (McKeever, 2021). In addition, these international policies are deliberately limiting the supply of crude oil and natural gases to cut down on greenhouse gases and meet the goals of the Paris accord. Their actions may seem beneficial, but they have actually been counterproductive. Analysts panicked that there could be blackouts in Europe by the winter of 2021 due to insufficient gas reserves (Narayan and Nguyen, 2021), and in February 2022 crude oil supply outages affected Libya and Nigeria and led to blackouts in the region as well as hikes in oil prices (Kelly, 2022).

Geopolitical tensions also have tremendous effects on crude oil prices. These tensions are very common in crude oil-producing countries, especially in the Middle East with countries like Iraq, Iran, Kuwait, Saudi Arabia, Libya, etc. (D'enbeau et al., 2015). They include terrorist attacks, sanctions, and other regional issues which can disrupt the supply of oil leading to increased demand for fossil fuels and a spike in the price of crude oil. The current tensions between Russia and Ukraine, which escalated into a full-blown war in 2022 led to a more than 35% surge in the price of West Texas Intermediate (WTI) (Liadze et al., 2022).

In view of these policies designed to increase the adoption of renewable energy globally, studies like Østergaard et al. (2020) argued whether renewable energy technology was sustainable at present. According to the authors, the exploitation of renewable energy is noted as being very site-specific and requires the utilization of available local renewable energy sources. Thus, to fully transition to renewable energy, the region or nation must have an abundant supply of renewable energy sources which requires resource assessments, appropriate technologies, and systems that can properly integrate the renewable energy sources and meet the demands of the population. Their review concluded that while wind, wave, and solar are the major sources of renewable energy, not all nations are blessed with the abundance of these energy sources. Therefore, it may be difficult for many nations to fully rely on renewable energy using the present technologies available (Østergaard et al., 2020).

4. POLITICS AND BENEFICIARIES

African's view

Africa is rich in minerals, including fossil fuels and natural gas (AfDB, 2009). It stated further that new oil and gas discoveries continue to be made throughout the continent, presenting distinctive economic opportunities. Five (5) of the world's top thirty (30) oil-producing states are located on the African continent (EIA, 2020) contributing about 9.6% of the world output per day as of 2019 (Carpenter, 2021). These countries include Nigeria, Angola, Algeria, Libya, and Egypt. That is to show the importance of African producers to the world energy needs. Crude oil has helped to boost the continent's economy and better people's lives (Adedapo, et al., 2022). Oil and gas resources are essential for the growth, development, and good governance in Africa since they are a major source of revenue and energy (AfDB, 2009). As is evident in other climes of the world, oil and gas remain a dominant

source of energy worldwide. This is because there exists a direct relationship between oil & gas production and economic development (WB, 2006) (U.S. Department of Energy, 2006) (EIA, 2006). Over the years, there has been an evolution of discoveries of crude oil reserves in the African continent, one which is positive as this gives the continent leverage to use its natural resources to develop its economy. Figure 3 below shows the data of proven oil reserves over the years.

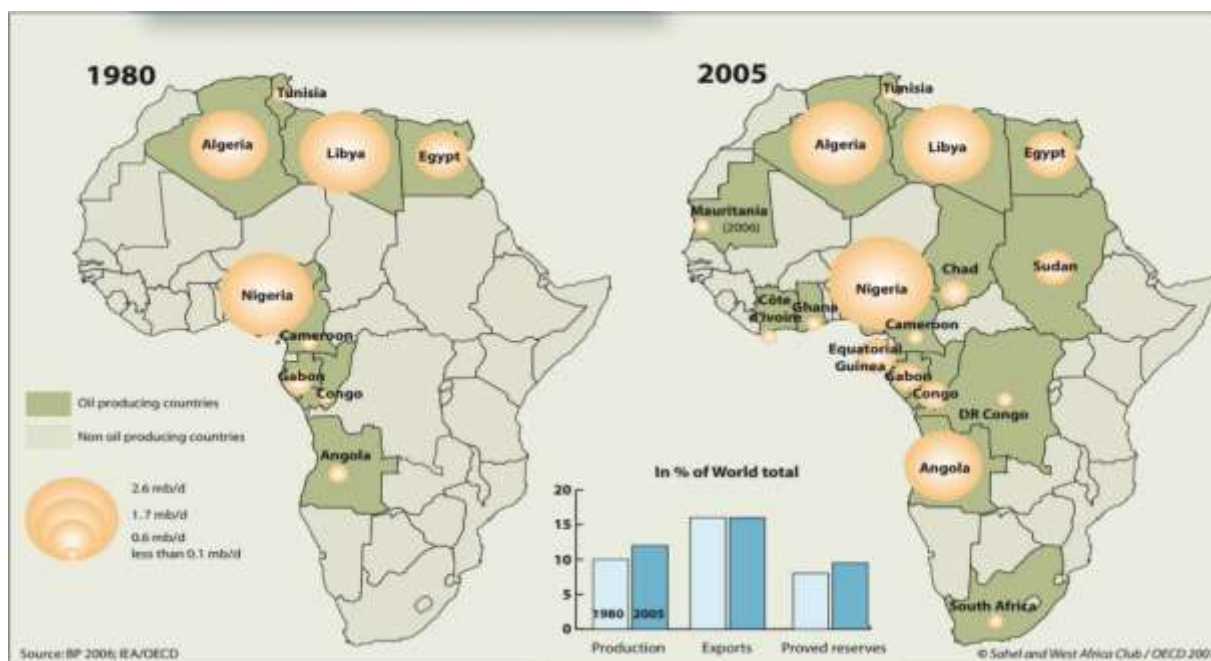


Figure 3: Map of Africa showing the evolution of oil production in Africa Source: (ECOWAS-SWAC/OECD, 2007)

Although many African countries’ economies are having a hard bite due to the rising cost of fuel, especially gas, there seem to be no feasible long-term solutions except a move to an energy mix combining renewable energy sources. While turning green looks to be the most obvious long-term solution to Africa's fuel pricing problems, the renewable energy revolution will not happen overnight. Fossil fuel production will still be key to the continent’s development both as a means of revenue (PWC, 2021), driver of job creation, driver of industrialization, and energy security purposes.

America’s view

The United States consumes and produces a wide range of types of energy from different sources, which can be classified into primary and secondary energy sources (EIA, 2021). These primary sources of energy are fossil fuels (natural gas, coal, crude oil), renewable energy, and nuclear energy sources. For more than a century, fossil fuels have dominated the American energy mix, but that has transformed over time. The U.S annual crude oil production decreased between 1970 and 2008 but took an upward turn in 2009 when it reached a record high of 12.25 million barrels per day. This is largely due to the discovery of new technologies in drilling and production.

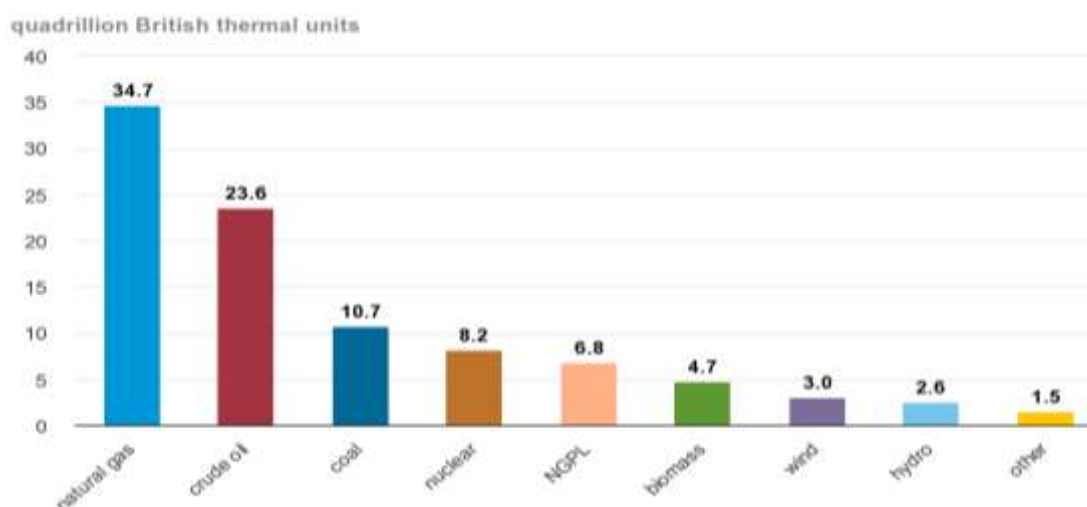


Figure 4: US Primary Energy Production by Major Sources in 2020, Source: (EIA, 2021)

In Figure 4 above, it is clearly shown the amount of primary energy produced in the United States in 2021 in Thermal British Units. Although there are calls by most Americans (77%) seeking the federal government to develop solar and wind power than more production from crude oil, coal, and other fossil fuels (Desilver, 2020), others clamored for carbon emissions neutrality by 2050 (Tyson, et al., 2021). As part of a commitment to be carbon neutral by 2050, The Biden administration has unveiled policies targeted at drastically lowering carbon dioxide emissions in the United States (Tyson, et al., 2021). However, the production of crude oil as of today is significant. This is so because the US meets nearly all its needs for energy through production within the country which is largely fossil fuels driven. This production is consumed by critical sectors of the economy such as the electric power industry, transportation, and industries. Figures 5 and 6 below capture some of these details.

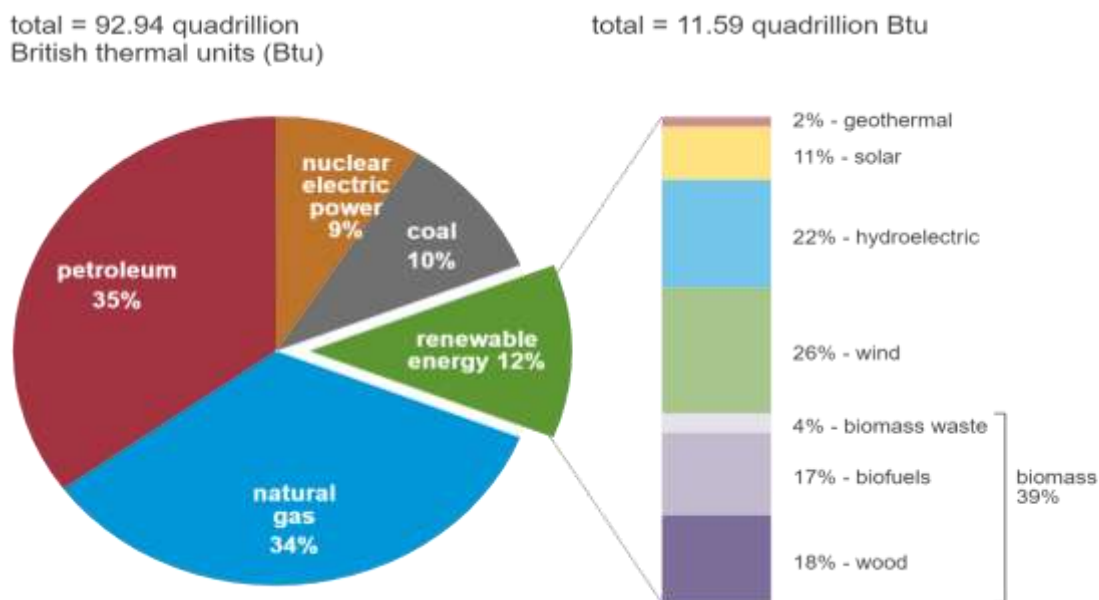


Figure 5: US Primary Energy Consumption by Major Sources in 2020, Source: (EIA, 2021)

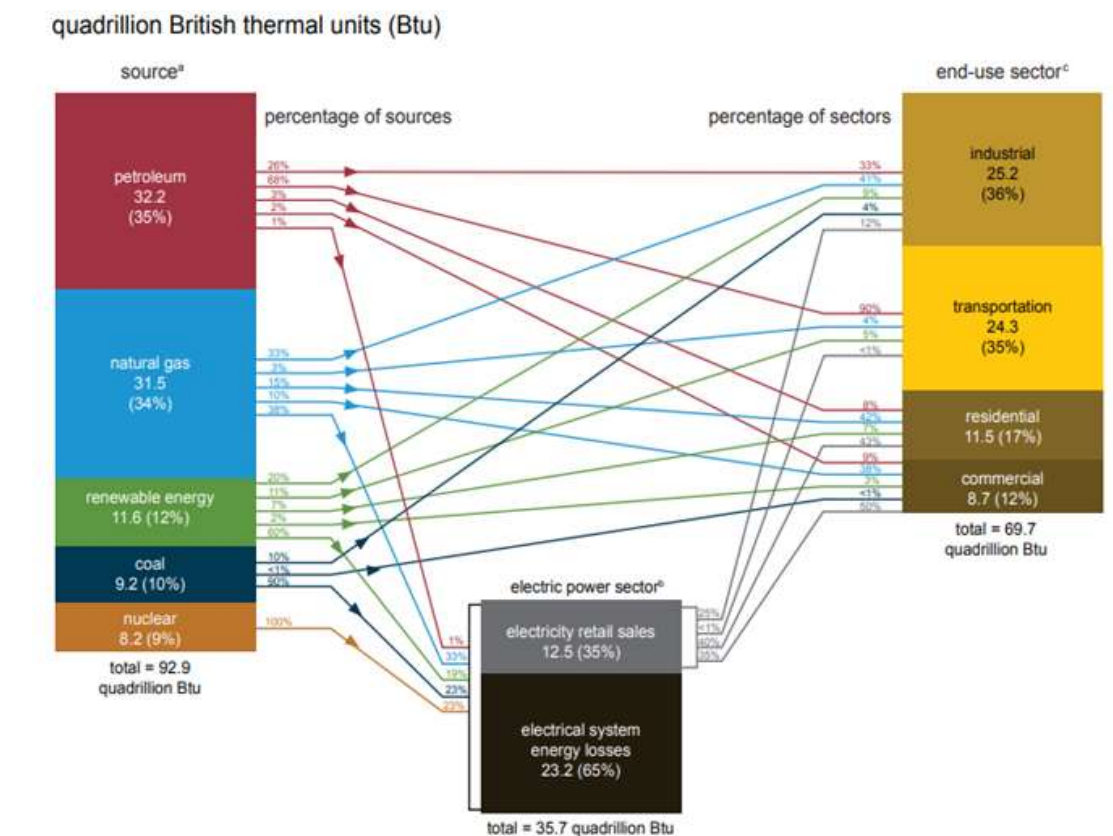


Figure 6: US Energy Consumption by Source and sector in 2020, Source: (EIA, 2021)

It can be seen from these figures above that crude oil production in the United States will continue over the years as a perfect alternative to replace its usage is not yet feasible and fully implemented in the country.

Asia’s view

Energy transition in Asia must be done now to avoid a gloomy future. Asia has about 50% of the world’s population (Ren21, 2022) whose major energy resource emanates from the use of coal. Due to the increase in energy demand, fossil fuel is rising faster than renewable fuels to meet this demand.

As of 2021, Asia has over 80% of 500 GW of global capacity of coal and inhabits 45% of the world’s CO2 emissions, it is expected to grow more if nothing to curb its growth is done (Ren21, 2022). This will be disastrous because more coal usage will lead to more energy insecurity and Air pollution.

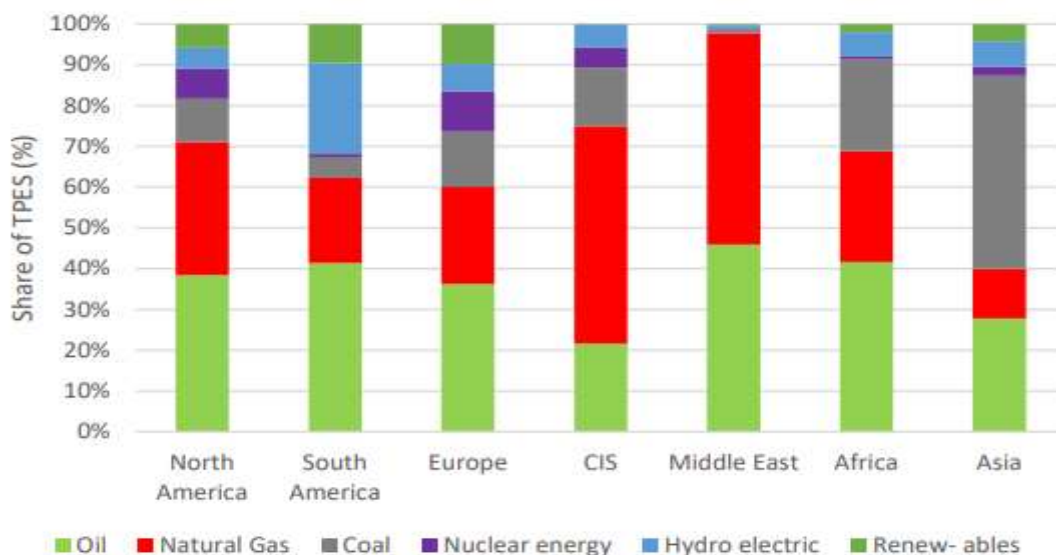


Figure 7: Share of Fuels in Energy Mix (2019), Source: Data from BP Statistical Review of World Energy 2020

Figure 7 shows the share of the energy mix in different continents and Asia has the highest consumption of coal; this clearly means that migration to renewables will take some time following a gradual process. According to the 2021 Energy Transition Index (ETI) record, Singapore is the highest-ranking country in Asia that has made a successful energy transition due to its readiness and significant progress in building affordable and sustainable energy systems. Despite their low renewable energy resources, they are making effort to embrace an alternative plan and their government is providing support by pushing policy towards a future with a renewable energy source.

On the other hand, China is the highest renewable energy producer in Asia and globally, yet still the highest consumer and producer of fossil fuel accounting for one-third of emissions in the world at large. (Eric Koons, 2021).

In 2021, China has made 14th five-year plan (14 FYP) to prioritize technology and innovation with a focus on alternative energy. According to the International Energy Agency (IEA), between 2019 and 2024, China is expected to provide over 35% of global wind and solar capacity expansion which is not limited to onshore wind technology, solar PV, and improved system integration. This is still not good enough as China is one of the major energy consumers and needs to drastically reduce the use of fossil fuels or look for a safer way to produce fossil fuels while making effort to generate a significant amount of alternative energy.

Europe’s view

According to Eurostat in 2020, the energy mix in the EU was made up of 5 sources namely, Petroleum products with crude (35%) followed by natural gas (24%), renewable energy (17 %), nuclear energy (13 %) and solid fossil fuel (12 %).

Cyprus (87 %), Malta (86 %), and Luxembourg (60 %) contain a significant amount of petroleum products, Italy (40%) and the Netherlands (38%) account for natural gas. Sweden (49 %) and Latvia (40 %) have the highest amount of renewable energy, while France (41%) and 25 % in Sweden and Slovakia respectively account for the nuclear energy available. More than half of energy available in Estonia (53 %) and 41 % in Poland comes from solid fossil fuels.

In Europe, Electricity and heat generation and road transport (cars and trucks) contribute more than 50% of CO2 emissions (Institut Montaigne, 2021), as can be seen below.

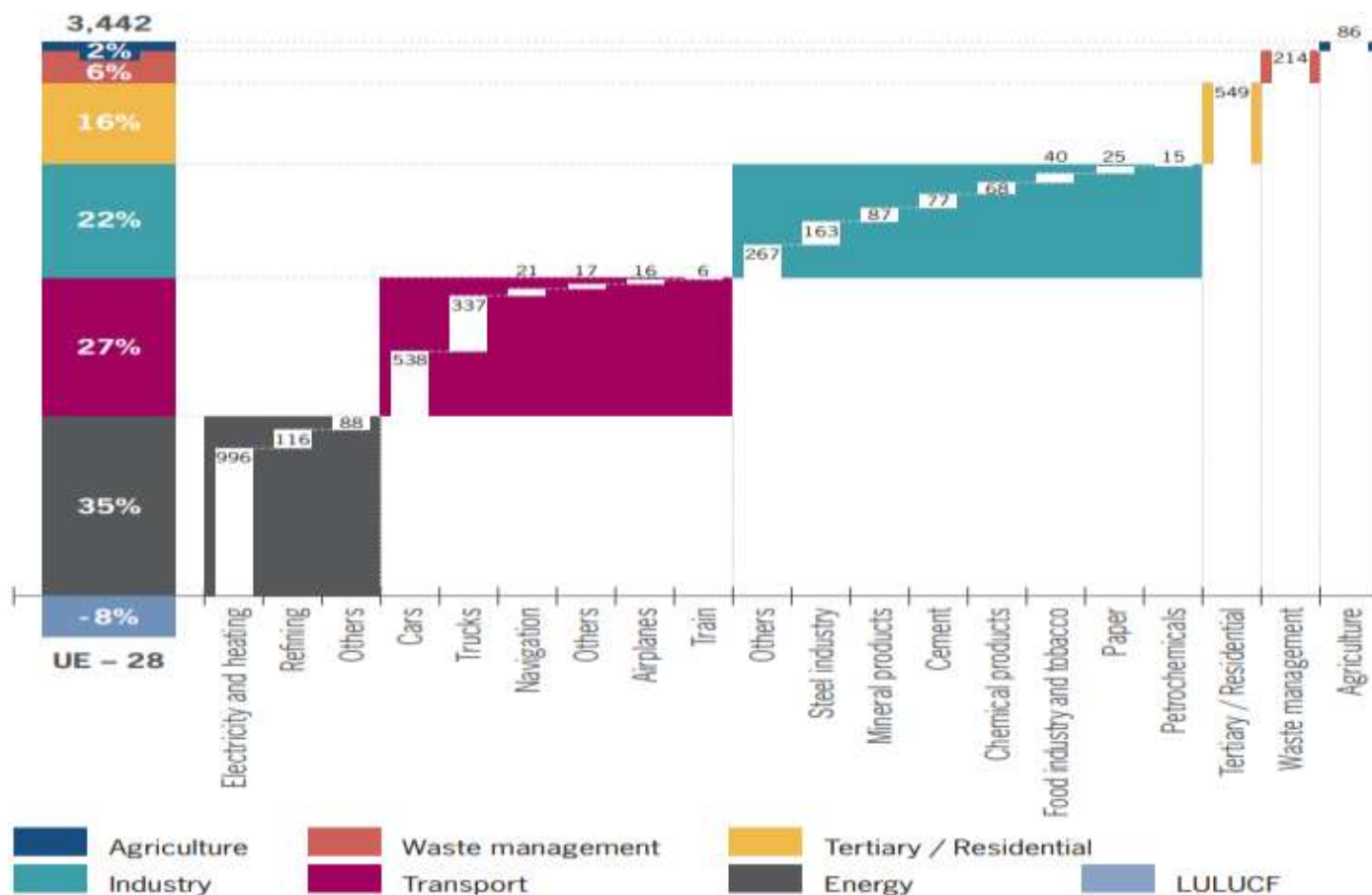


Figure 8 Distribution of European CO2 emissions by sector of activity (2017 – billions of tons), Source: AEE, Eurostat, Kearney

NB: Figure 7 does not include anthropogenic GHG emissions other than CO2, which account for 20 to 25% of total emissions and are concentrated in the agriculture sector, where methane emissions are common.

Also, given the general climate change and economic crisis in the world, European leaders took a decision to support with €1.8 trillion to boost her economy on 11th December 2020, by 2027, they forecasted they will realize €1,074 billion which will be added €750 billion from the new EU recovery instrument, tagged Next Generation EU (NGEU). EU agreed to devote €547 billion to the energy transition which will represent one-fourth of the extra investments required to meet the objective of reducing emissions by 55% by 2030 – according to the European Commission which is estimated to be more than €300 billion per year. (Institut Montaigne, 2021). Again, achieving the above plan or net-zero emission will require aggressive industrial transformation and policy designs. A cleaner means of generating energy should be considered while transiting gradually to green energy.

5. CONCLUSION

In Conclusion, should crude oil be allowed to die naturally? The answer is "Yes, crude oil should be allowed to die a natural death through competition with other energy sources". This is because reviews and findings to date have suggested that there is no current sustainable source of energy to meet global energy needs; additionally, the fossil fuel industry is a major source of revenue for most countries' GDP, employing thousands of people and alleviating poverty to some extent; and, the benefits of crude oil trade are unique, causing different continents' perspectives on this issue to differ. Furthermore, after benefiting greatly from the development of fossil fuels, the largest emitters of hazardous GHGs are now the drivers of climate change. However, this study recognizes that the world is a global village and that harm to one is a harm to all, particularly when it comes to ecology. As a result, policy calls for an immediate transition away from fossil fuels should be ignored in favor of a gradual, diplomatic transition that takes into account all regions with the ability to develop energy through fossil fuels, and more thought should be given to making fossil fuel production cleaner while transitioning to renewable energy. Lastly, cartelization by political bodies cannot be ruled out, nor can self-benefiting influences, however, there is a level of originality in the calls for greener energy.

6. RECOMMENDATIONS

The following recommendations listed below were made based on the findings of this study for the purpose of undergoing a smooth transition.

1. The focus should be on simultaneously enforcing the production of fossil fuels in a cleaner way while exploring the possibilities of other forms of energy to meet global demand without causing a scarcity of energy.
2. A percentage of profits from fossil fuel exploitation should be used for innovations in renewables and transitioning energy.
3. The studies have demonstrated the impact of renewable energy on the price of crude oil as well as its supply and demand. While the policies are beneficial to the growth and adoption of renewable energy, in the long run, intentionally cutting the supply of fossil fuels without making available sustainable alternatives is counterproductive and would only lead to outages globally.
4. Africa's fossil fuel production should be done in an environmentally sustainable manner finding a lasting solution to its many security challenges such as pipeline vandalism that has always impacted negatively on the environment.
5. African countries should leverage their gas reserves for economic development by investing in gas-based industries.
6. It is time to heavily pay attention to the local content development of African countries. It is recommended that revenues from fossil fuel production should be judiciously utilized to boost local content policies that will develop other sectors of the economy.
7. Finally, the abrupt ban on further exploration should be condemned, especially in poorer countries with newly found fossil resources.

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