Impact of COVID-19 on UK energy sector

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Abstract:

The truth is that the COVID-19 pandemic has affected the UK economy. This has prompted policy makers, scientists and academicians to examine the impact of the COVID-19 pandemic on the UK economy at large. The UK economy is sustained by intertwining network of economic models of which the energy sector plays a vital role. This study has examined the impact of the COVID-19 pandemic on the UK energy sector. The study has attested to the fact that the energy sector is large and diverse and comprises of primary and secondary energy resources. Therefore, it will be limited to the impact of COVID-19 pandemic on the UK secondary energy resources. A desk-based study approached was favoured and adopted to analyze pertinent data and documents that are deemed relevant to the study. The study has confirmed that the impact of the COVID-19 pandemic varies on different energy models of the UK economy. An improvised energy supply chain for the study has revealed that the impact of COVID-19 pandemic on the UK energy sector could be seen on the consumer phase of the energy supply chain. The lockdown and stay at home strategy that was implemented by the UK government puts additional burden on low-level income family. For this reason, low level income family were unable to meet their energy bills during the lockdown and this affect the energy supplier's ability in the long run to provide sustainable secondary energy supply to the consumers.

Keywords: Energy sector, Electricity production, Transportation sector, Covid-19 pandemic and UK.

Word Count: 6,498

Track 29: Strategy-as-Practice

Introduction

The COVID-19 pandemic has slowed the world economies and the UK economy will not be an exception. For this reason, The World Bank Report, (2020) stated that the pandemic is the most significant negative shock on economies all over the world since the global financial crisis between mid-2007 and early 2009 and this is causing severe damage to global crisis. The energy sector will not be immune to the measures taken by the UK government in combating the spread of the Corona virus. Despite there was 15-20% reduction in total electricity demand as many economic sectors have halted, domestic energy consumption has increased (UK ERC, 2020).

Similarly, a study conducted in New York by The Earth Institute, Columbia University (2020) showed that the industrial and commercial, overall energy consumption was decreased around 7% in pandemic time, but the domestic household consumption increased to about 23% in March and 10% in April 2020.

For this reason, households where people stay at home may each spend an extra £16 a month on energy (Samson, 2020). According to Uswitch.com, (2020) the surge in the numbers of people staying home because of the COVID-19 pandemic could lift Britain's household energy bills by £52 million a week.

According to a study conducted by the Imperial College London (2020) on how the global transport sector responding to the Corona virus (COVID-19), passenger demand had decreased by 80%-95% for most of railways and metros around mid-April globally. It is imperative to note that electricity remains a minor fuel for the UK transportation energy use, although its importance in passenger rail transportation remains relatively high.

Similarly, the World Economic Outlook (2020) stated that global energy demand will drop by 5% in 2020, energy-related CO_2 emissions by 7% and energy investment by 18%. The estimated falls of 8% in oil demand and 7% in coal use stand in sharp contrast to a slight rise in the contribution of renewable and the reduction in natural gas demand is around 3%, while global electricity demand looks set to be down by a relatively modest 2% for the year. It was evidently clear that majority of people lost their jobs during the COVID-19 pandemic. Nabarro (2020) stated that payroll data to August suggest there has already been a loss of over 700,000 employee jobs, even before the end of the furlough scheme and the COVID-19 shock is unusually concentrated in the service sector.

The United Kingdom is not a major oil producing country. Therefore, the economy is heavily depends on secondary energy sources to keep it running. These types of energy resources are essential to this study. The production of so-called conventional and unconventional fuels will continue to achieve greater global significance because it is an economy driven factor. The energy industry which includes secondary energy resources such as electricity and transportation

production can be price along with earnings performance of energy-producers. This is largely driven by the supply and demand for worldwide energy. The energy sector includes integrated power utility companies such as fossil fuels, renewable energy and coal. Diverse as it may be, the energy sector is intertwine network of companies, directly and indirectly, involved in the production and distribution of energy needed to power the economy and facilitate the means of production and transportation.

The oil and gas producers for electricity and transportation usage tend to perform well during periods of elevated oil and gas prices. This trend is normal with supply and demand. The laws of supply and demand cause both conventional and unconventional fuels prices to fluctuate. In addition, natural disasters and pandemic can potentially disrupt oil production. Instability in oil producing countries can impact prices. It is worth mentioning that the World Health Organization (WHO) declared the outbreak of COVID-19 a pandemic on the 11 March 2020, which means COVID-19, has spread worldwide. A pandemic is generally defined as a new disease that is rapidly transmissible in a number of countries and continents.

The composition the UK economic model

It is imperative for this study to start by providing a holistic understanding of the terminology **economy**. For that reason, a definition of an economy was provided by Kenton, (2020) who stated that; an economy is the large set of inter-related production, consumption, and exchange activities that aid in determining how scarce resources are allocated. In addition, the production and consumption of goods and services are used to fulfil the needs of those living and operating the economy. Hang and Zhao, (2011) explained to us that we have three typical market economy models that are acknowledged presently: Free market economy model, social market economy model and government-dominant market model.

For clarity sake, the unit of this study is the United Kingdom energy sector and for this disposition, it is imperative to note that the United Kingdom has a mixed economy. This implies that, part of the economy is left to the free market, and part of it is managed by the government. In a mixed economic model, it is imperative for the governments to intervene in certain areas of the economy, such as providing public services.

Profoundly, Public services are a complex word to define. **Public services** can be understood base on the context of usage. For instance, services like energy supply, transport and medical utilities can be refer to as public services and at the same time, they can equally be refer to as commercial activities. Take for instance, the United Kingdom government once said; “we have restored our nation’s pride in our public services and they are more firmly than ever part of the fabric of British national life. Some of our public services have done even better. Our top schools, hospitals, universities, and police forces as well as our armed forces are admired around

the world" (Cabinet Office, 2008, p5). Therefore, Table.1 shows the composition of a mixed economy.

Table 1: Mixed economies features

Free market	Government intervention
Freedom to set up business	Government provision of public goods
Private ownership of business	Taxes on demerit goods
Prices determined by market forces	Government regulations
Entrepreneurs able to make profit	Progressive taxes to reduce inequality

Certainly, no system could be 100 percent perfect and the mixed economy model is no exception to this. This type of economic model is often criticised by Libertarians that the governments often make poor managers of the economy, invariably being influenced by political and short-term factors. Conversely, the mixed economic model can encourages business and industry to be managed by private firms.

Furthermore, the study will examine the economic disposition of the unit of study. The GDP of the United Kingdom can be analysed in terms of the output produced of different industries of the economy. According to the House of Commons library, (2021) services are largest part of the United Kingdom economy. Take for instance, in 2019 they accounted for 79% of output, production for 13%, construction for 7% and agriculture for 1%. However, service sector output fell by 3.5% in January. It is 10.2% lower than it was in February 2020. Similarly, the Office for National Statistic, (2020) supported this narrative by indicating that Service sector comprises 79.6% of the UK economy, while production and construction comprise 13.6% and 6.1% respectively.

United Kingdom service sector

The service sector is the largest economic contributor to the United Kingdom economy. The services constitute 79.6% of the United Kingdom economy that is why it is imperative for this study to generate a definition for the service sector in context of the UK economic model. According to the House of Commons library, (2021) the services sector industries include the retail sector, the financial sector, the public sector, business administration, leisure and cultural activities. It is evident that the success of this sector will highly dependent on energy resources, notably secondary energy resources.

For this reason, the study has improvised an understanding of the terminology primary and secondary energy source in Figure 1.0. According to UN, Concepts and Methods in Energy Statistics, New York, (1982) secondary energy should be used to designate all sources of energy that results from transformation of primary sources.

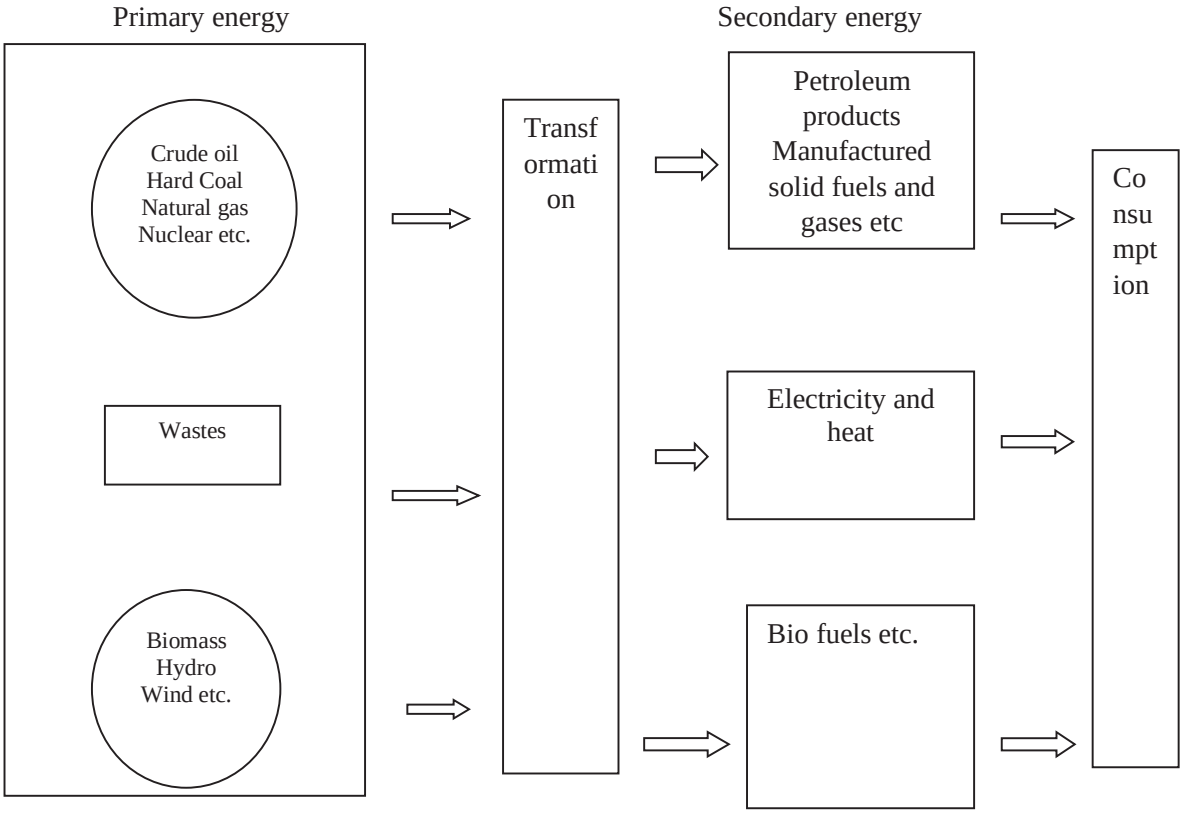


Figure 1 Primary and secondary energy

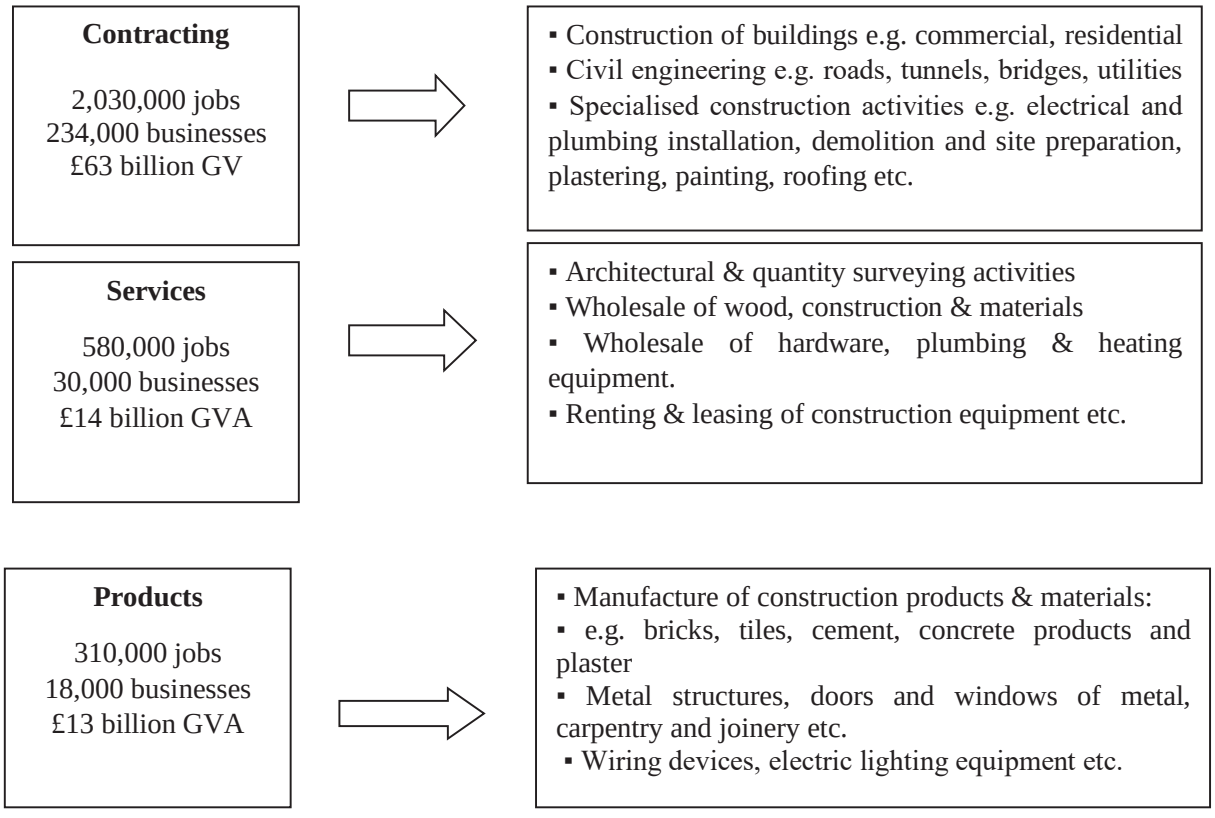
Figure 1 has explicitly demonstrated the significance of secondary energy resources in delivering a vibrant service sector. Fundamentally, without electricity production and energy resources for transportation, the service sector will be render ineffective. Imagine the economic ramification for the economy when the following sectors are shutdown; retail sector, financial sector, public sector, business administration, leisure and cultural activities. Certainly, the scenario will also adversely affect the petroleum and electricity production industry. The investigation of the impact of the COVID-19 pandemic on UK energy consumption due to the lockdown has justified the significant of this research. Furthermore, this study has attested to the fact that the energy sector is an essential economic driven factor. The COVID-19 pandemic has inflicted high and rising human costs worldwide, and the necessary protection measures are severely impacting economic activity (WEO, 2020).

United Kingdom construction sector

According to the Department of Business Innovation and Skills, (2013) the construction sector is defined as: (i) construction contracting industry; (ii) provision of construction related professional services; and (iii) construction related products and materials. However, this definition has deliberately excludes distribution and sales of construction products.

The construction company is a vital sector of the United Kingdom economy. For instance, the composition of the United Kingdom construction sector is represented in Figure 1.1 in 2011 that comprises a wide range of services, technologies and products.

Figure 2 the composition of the UK construction sector



Source: ONS Annual Business Survey (2011 provisional results).

The construction sector of an economy also has wider significance to the economy. This creates, builds and maintains the workplaces which service sector can operate and flourish. This includes; the economic infrastructure which keeps every nation connected, the homes in which we live and the schools and hospitals which provide the crucial services that society needs. The success of this sector will also primarily dependant on the energy resources.

The composition of the UK production sector

The United Kingdom production sector is complex and comprising a wide-ranging number of different industries, technologies and activities. Take for instance in 2010, manufacturing is the third largest sector in the UK economy, after business services and the retail sector (Wholesale and retail distribution) in terms of share of UK Gross Domestic Product (GDP) (ONS, 2010). Base on statistic in 2009, the manufacturing sector employed around 2.6 million people, representing over 8% of the UK workforce, (ONS, 2010).

According to statistical Industry Classification (SIC) code system for industry statistics, (2007) the manufacturing sector is defined as follows;

- Rubber and plastic products
- Other non-metallic mineral products
- Basic metals and fabricated metal products
- Other machinery and equipment
- Electrical and optical equipment
- Transport equipment
- Food, beverage and tobacco products
- Textiles and textile products
- Wood and wood products
- Pulp, paper and paper products
- Publishing and printing
- Coke, petroleum products and nuclear fuel
- Chemicals, chemical products and man-made fibres
- Other manufacturing

There is a high degree of energy interdependence between industries within the manufacturing sector. In the production sector the output of one production industry can be a very crucial input for another production industry. What this mean is that, the basic metals and fabricated metal industries produce metal sheeting for the automotive and wider transport equipment industries.

An overview of United Kingdom energy sector

This is an undeniable fact that the backbone of any developed economy is the energy sector. Energy in a simple concept means that which is continually passing from one portion of matter to another. However, this definition has not explicitly provided an understanding of the energy sector. As a result, Chen (2021) showed that the energy sector is a category of stocks that relate to producing or supplying energy. Traditionally, the energy sector includes companies involved in the exploration and development of gas or oil reserves and drilling together with refining.

The energy sector is a vital component of the United Kingdom economy and all other developed economies at large. In 2019, the sector created £30.9bn in value adding activity, measured in gross value added (GVA) (ONS, 2020). Through intermediate consumption across the supply chain, the sector contributed an added £94.6bn to the UK's economy (ONS, 2019). In 2018/19, the most recent year for which data is available, the sector contributed over £7.8bn total in taxes, including £2.4bn in national insurance contributions and £1bn in corporate taxes (FY, 2017/18). Whereas, the low carbon and renewable energy economy(LCREE) achieved a turnover of £47bn in 2018, a 16% increase over 2015, the year of the survey's launch (ONS, 2020).

The energy sector is large and complex and entails an interrelated network of companies, directly and indirectly, involved in the production and distribution of energy needed to power the economy and facilitate the means of production and transportation. Investment in the energy industries has increased since 2004 in the United Kingdom, especially in the electricity sector. Prior to the outbreak of COVID-19 pandemic, demand by product of various energy sources in the United Kingdom is represented in Figure 3 and Figure 4 below.

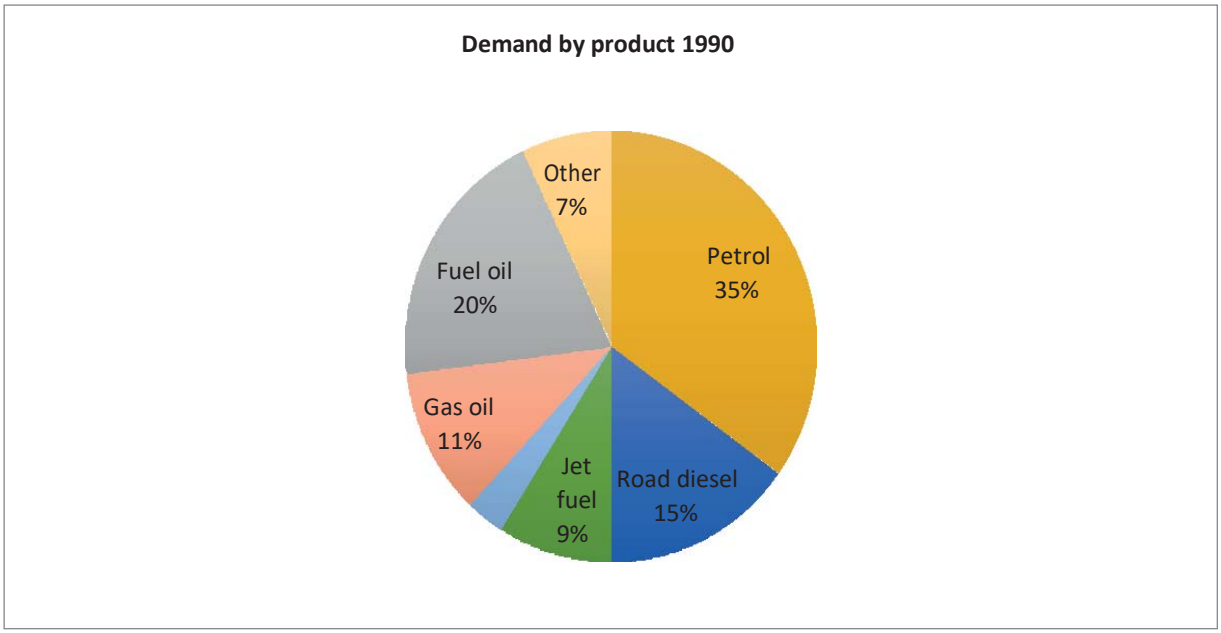


Figure 3 Demand of energy sources prior to the lockdown UK

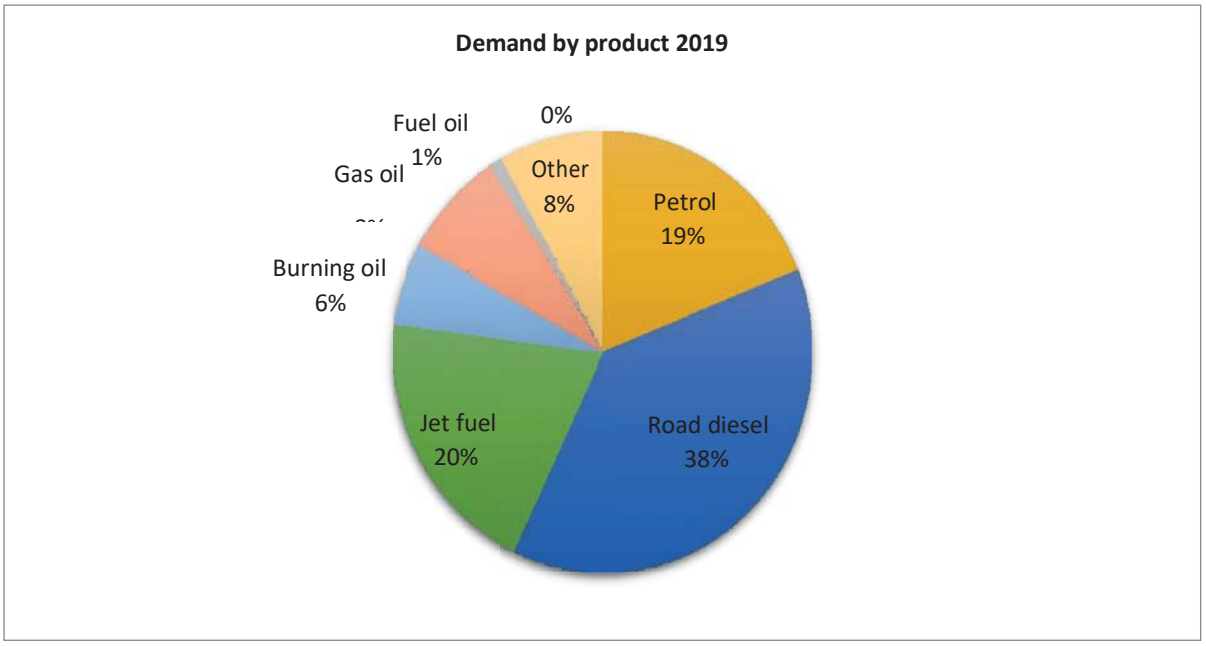


Figure 4 Demand of energy sources prior to the lockdown UK

The energy industry which includes secondary energy sources such as electricity and transportation can be priced along with earnings performance of energy-producers. The energy sector includes integrated power utility companies such as fossil fuels, renewable energy and coal. The oil and gas producers for electricity and transportation usage tend to perform well during periods of elevated oil and gas prices. This trend can be normal with supply and demand. The laws of supply and demand cause both conventional and unconventional fuels prices to fluctuate.

It is evidently clear that when the supply of energy for electricity and transportation usage exceeds demand, prices fall. Therefore, the inverse is also true when the demand outpaces supply. The secondary energy sources needed for electricity production and transportation price can be influenced by a variety of factors. For instance, the decision about output is made by producers such as the organisation of petroleum exporting countries. Here in the United Kingdom, this decision is made by energy providers such as British Gas, Eon and Npower. The energy sector is no exception to supply and demand. Therefore, the law of supply and demand can influence prices.

In addition, natural disasters and pandemic might disrupt oil production. Instability in oil-producing countries can impact prices. It is worth mentioning again that the World Health Organization (WHO) declared the outbreak of COVID-19 a pandemic on the 11 March 2020, which means COVID-19, has spread worldwide. A pandemic is generally defined as a new disease that is rapidly transmissible in a number of countries and continents.

Another factor that can influence the prices of secondary energy sources will be production and transportation costs. To the less impactful will direction of interest rates. For example, the Organisation of Petroleum Exporting Countries is in a consortium to set production levels to meet global demand which can influence energy provider's prices. Midway through 2013 the prices of oil fell from $100 a barrel to below $50 a barrel (U.S. Energy Information Administration, 2021). The Organisation of Petroleum Exporting Countries was the major cause of cheap oil in that circumstance, as it refused to cut oil production, leading to the tumble in prices.

Prior to the government of United Kingdom imposition of the lockdown order banning all non-essential travel and contact with other people, and shut almost all schools, businesses and gathering places. Historical anomaly has struck the oil market in April 2020, when the May WTI Crude futures contract fell to negative $40.32 (Lioudis, 2021). Longley, et al (2021) explained that the price on the futures contract for West Texas crude that is due to expire in April 2020 fell into a negative territory of minus $37.63 a barrel. In the event of the COVID-19 pandemic bringing the economy to standstill, there is so much unused oil sloshing around that American energy companies have run out of room to store it. This theory was further supported by Lioudis, (2021) who mentioned that one way of understanding on how the futures contract could negative is to understand that the cost of storing oil was very high because of months of oversupply and the total lack of demand brought about by the COVID-19 pandemic.

Overview of the COVID-19 pandemic in the United Kingdom

The World Health Organization (WHO) was formally notified about a cluster of cases of pneumonia in Wuhan City on 31 December 2019. By 5 January, 59 cases were known and none had been fatal (WHO, 2020). Ten days later, WHO was aware of 282 confirmed cases, of which four were in Japan, South Korea and Thailand (WHO, 2020). The COVID-19 virus is an infectious disease caused by a newly discovered Corona virus. The virus was first detected in Wuhan China. Figure 5 and Figure 6, shows the number of people with at least one positive COVID-19 test result daily and cumulative total. The people tested positive more than once are only counted once, on the date of their first positive test. The cumulative number of COVID-19 cases in the UK is represented in Figure 7.

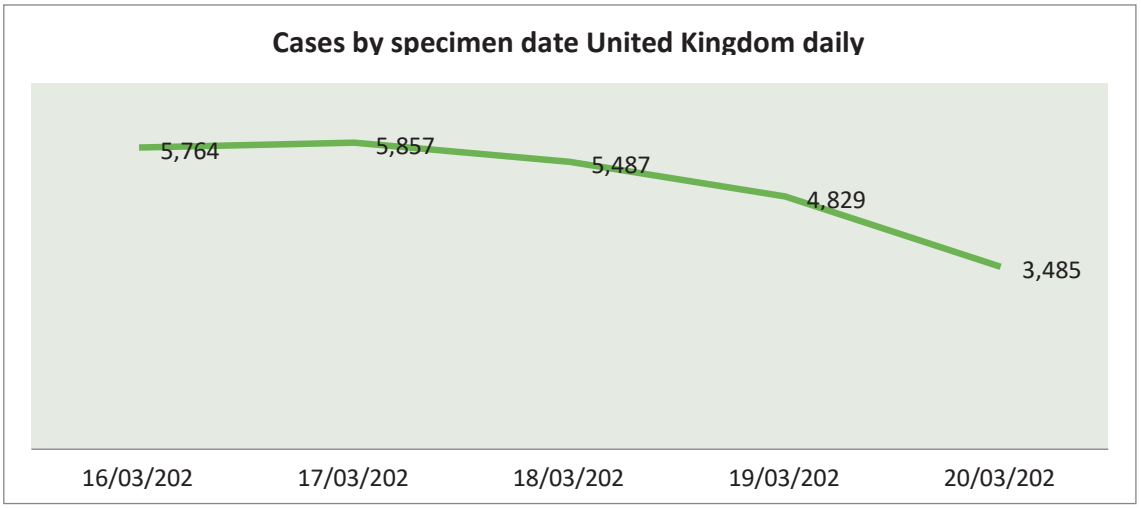


Figure 5 Cases by specimen date UK daily (GOV.UK, 2021)

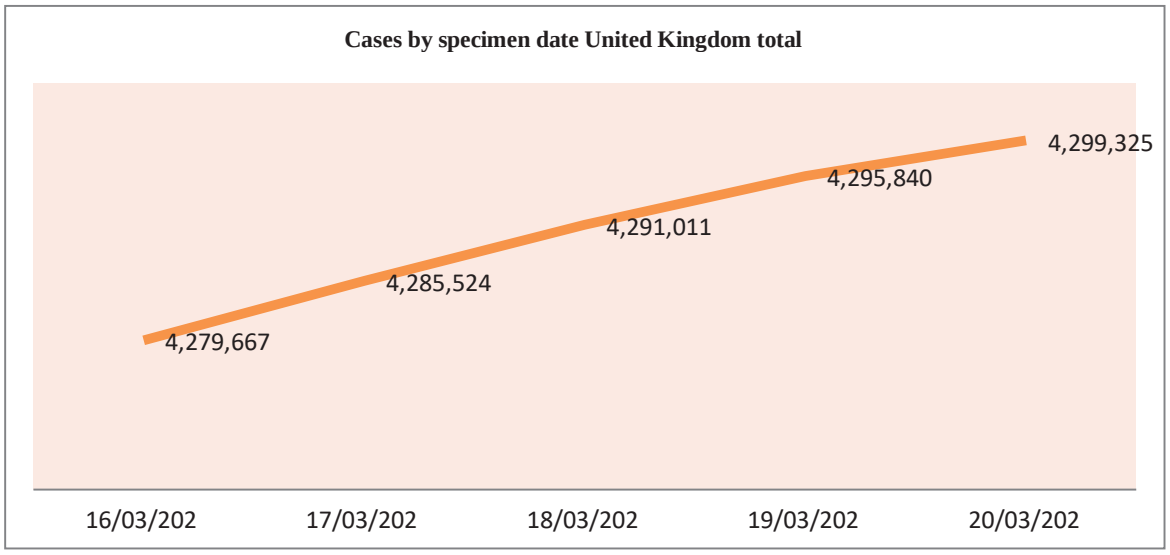


Figure 6 Cases by specimen date UK daily (GOV.UK, 2021)

COVID-19 virus cases subsequently increased in the UK exponentially and this resulted in several fatalities which have been represented in Figure 8 and Figure 9. The data shows the number of deaths of people who had had a positive test result for COVID-19 and died within 28 days of the first positive test.

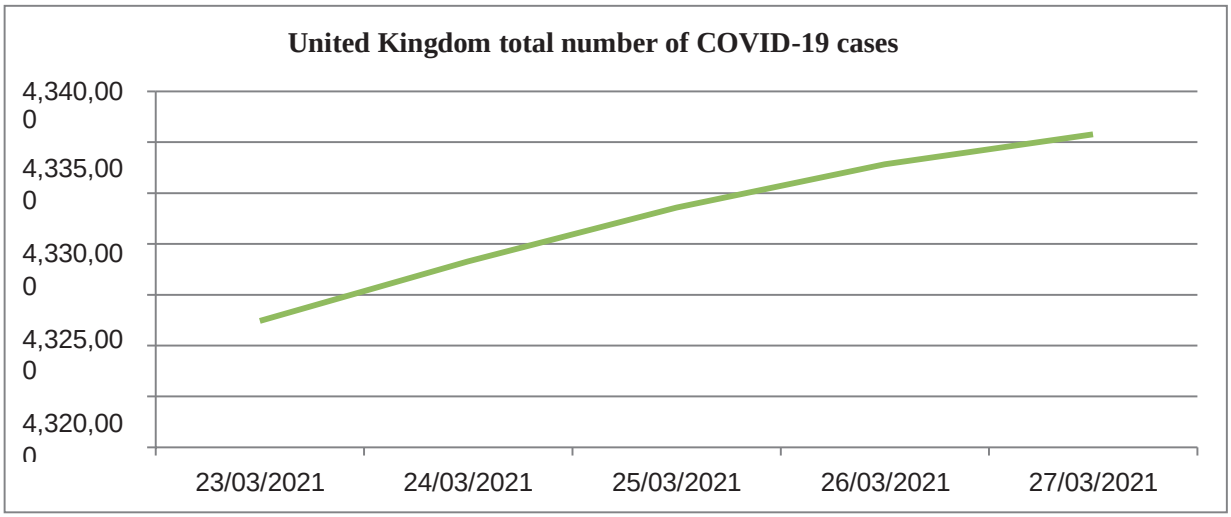


Figure 7 United Kingdom total numbers of cases (GOV.UK, 2021).

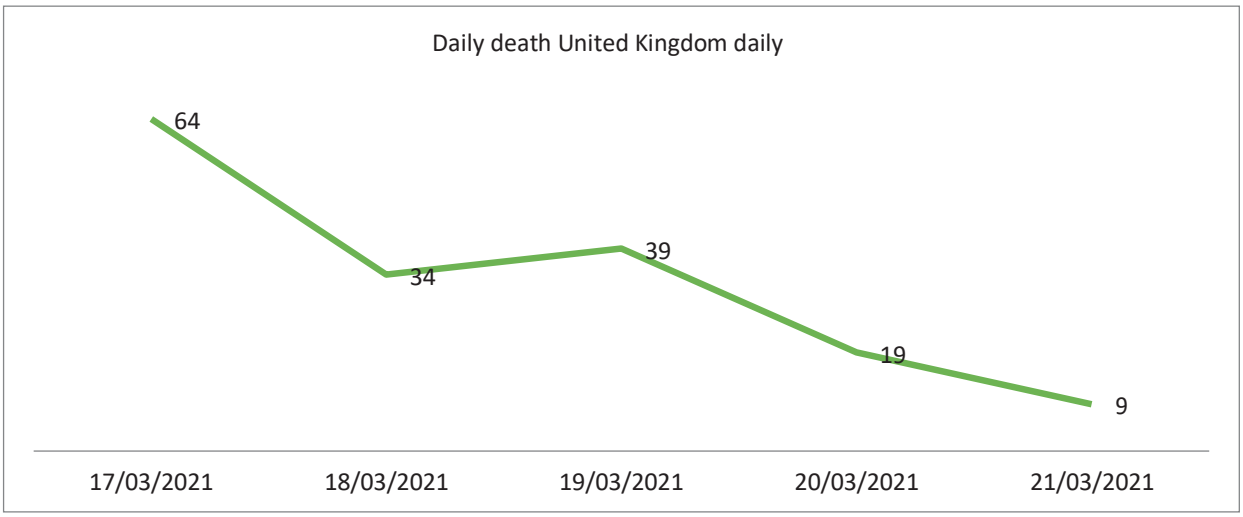


Figure 8 United Kingdom daily COVID-19 deaths (GOV.UK, 2021).

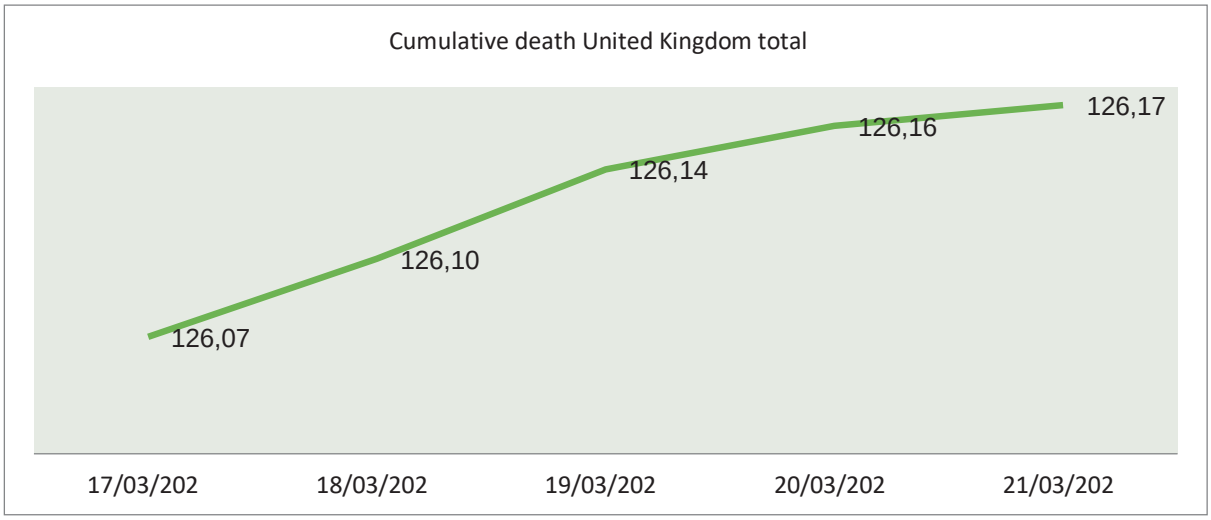


Figure 9 United Kingdom cumulative COVID-19 deaths (GOV.UK, 2021).

With a population of 67.8 million, the UK is the third largest country in Europe, and 21st largest worldwide (Worldometer, 2020). For this reason, the UK government implemented a host of measures to rapidly decelerate the spread of SARS-CoV-2 (‘flattening the curve’) to reduce the impact on the healthcare system, including social distancing, self isolation and lockdown strategies. However, this measure will certainly have implications on the overall economy of the UK upon which the energy sector is a vital component. This supposition again justifies the importance of this study which is to examine the impact of COVID-19 lockdown on the energy sector of the UK.

Research methodology

The research investigates the impact of COVID-19 on UK secondary energy resources. The starting point in conducting a research is to identify the methodology and method that will be used in the research. Bryman and Bell (2015) noted that research design considers how best to carry out research to save time and cost. Given the relatively new and unexplored nature of the research problem, I have adopted a desk-based study. A case study methodology is suitable for this study because the research is using experimental theory comprising several combinations of data collection such as documentary evidence.

The systematic search used for academic articles of the study ran through Scopus on 23 March 2021 with search phases such as COVID-19 pandemic, the UK energy sector, IAE and WHO. This systematic search resulted in 200 publications. Furthermore, this study has referenced 50 news outlets that covered the first six months of the Covid-19 pandemic and focused on the impact of COVID-19 on the United Kingdom economy.

The search was conducted on Google and limited to popular media outlet including the BBC news, Daily Mail, The Guardian, The Economist, The Telegraph, CNN news, ITV news, SKY news and the Financial Times. Using media outlets to identify the impact of Covid-19 pandemic on the energy sector was pivotal to the success of this study. This is due to the relatively unexplored nature of the unit of study. In line with the research question, this study has focused on the impact of Covid-19 on secondary energy sources. The study is entirely desk base and therefore, depends entirely on secondary data from pertinent sources such as the WHO, Cabinet Office (UK), ONS, Department for Business, Energy and Industrial Strategy and Office for National Statistic (UK). This approach has correlated with the unit of study. This requires an understanding of the perceptions and experiences of the United Kingdom energy sector in becoming secure from the COVID-19 pandemic.

Data analysis and discussion

The study has read through Department for Business, Energy and Industrial Strategy and Office for National Statistic (UK) reports, NHS COVID-19 reports, and newspaper items electronically and manually and identified clusters of information that could feed into this study. As part of the analysis, the study used data and statistics from The Department for Business, Energy and Industrial Strategy and Office for National Statistic (UK) to answer the research question. The result findings will be limited to the impact of COVID-19 on secondary energy sources used to perform action such as energy consumption as electricity usage and energy consumption as transportation. A general understanding of energy consumption in this study mean all the energy used to perform an action. This study will conclude that electricity generation is the main activity within the energy sector with almost half the electricity produced in thermal power plants using fossil fuels.

Research findings

Electricity generation in UK

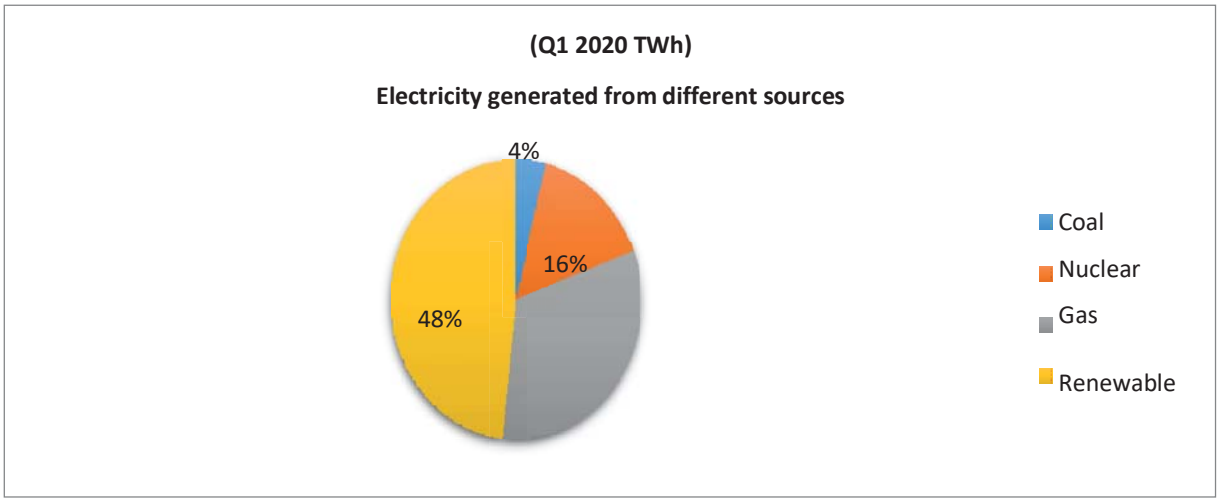
Table 2 shows the total energy production in the UK in Million tonnes of oil equivalent for 2020 and a percentage change on a year earlier. It is imperative to note the followings; Primary electricity percentage change on a year earlier was up +9.4 and the total production of oil percentage change on a year earlier was -5.5.

Table 2 Total energy production in the UK (Million tonnes)

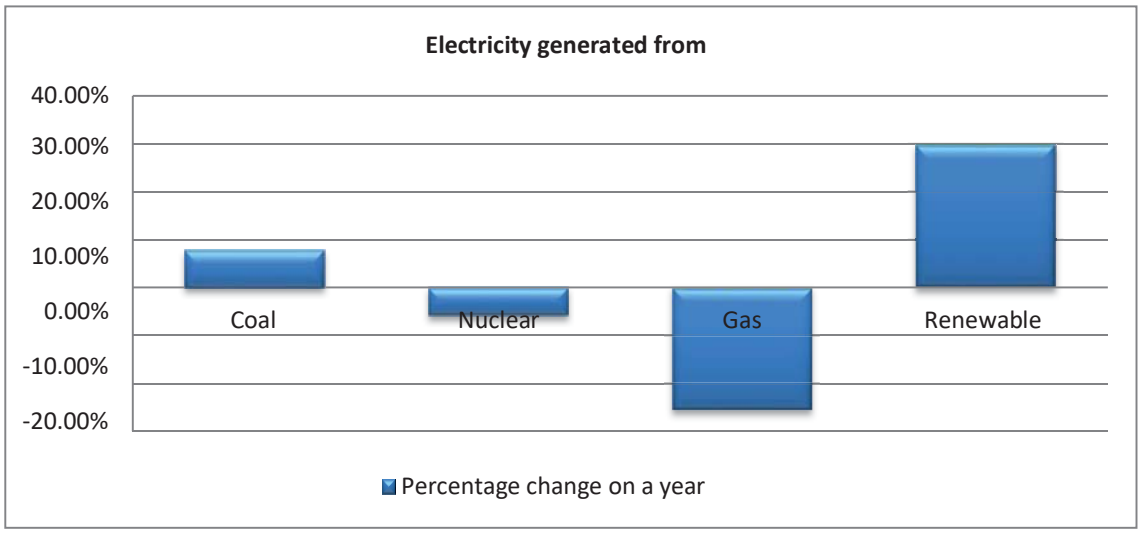
	Q1 2020 Million tonnes of oil equivalent	Percentage change on a year earlier
Total production	34.6	+1.8
Oil	14.1	-5.5
Natural gas	10	+3.6
Primary electricity	5.7	+9.4
Bio energy & waste	4.5	+18.9
Coal	0.3	-26.5

Source: Department of Business, Energy & Industry Strategy UK

Table 2 explains to us that during the COVID-19 pandemic primary electricity production was not affected as compared to the production of oil. This was due to the restricted vehicles movement and transportation during lockdown. The energy sources derived from table.2 are from nuclear and wind, solar & natural flow hydroelectricity. It is also imperative to note that the source of energy for this study is not relevant to the outcome of the study. Figure 10 illustrated the various sources the electricity production is generated from the UK and Figure 11 showed the percentage change on a year earlier.

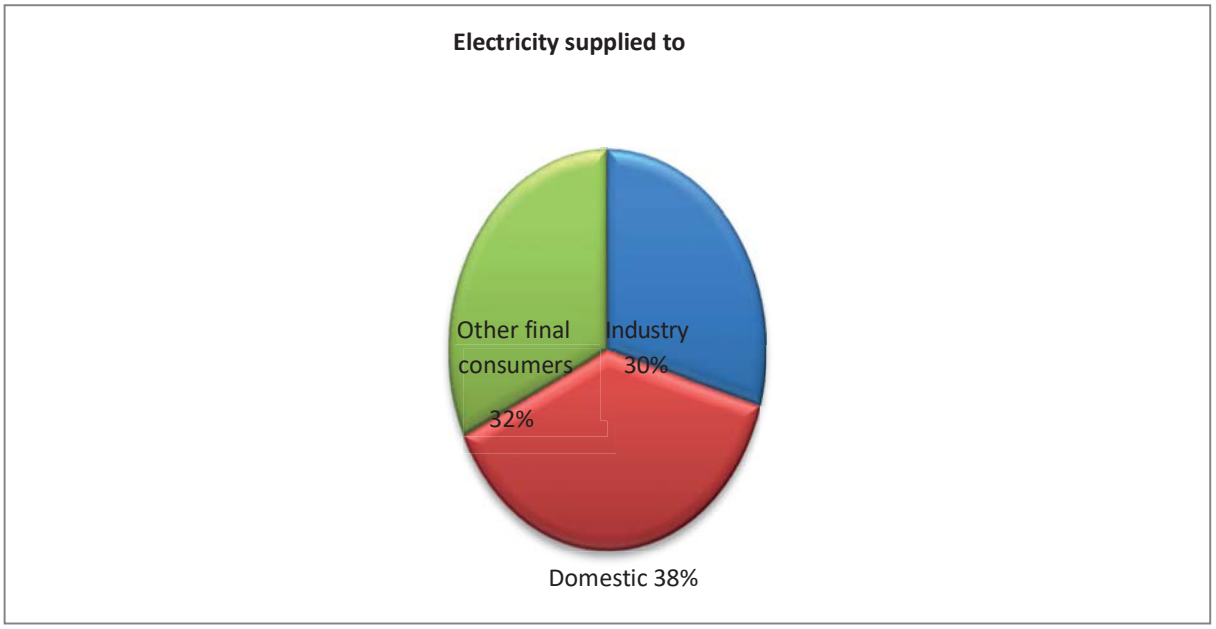


Source: Department of Business, Energy & Industry Strategy UK



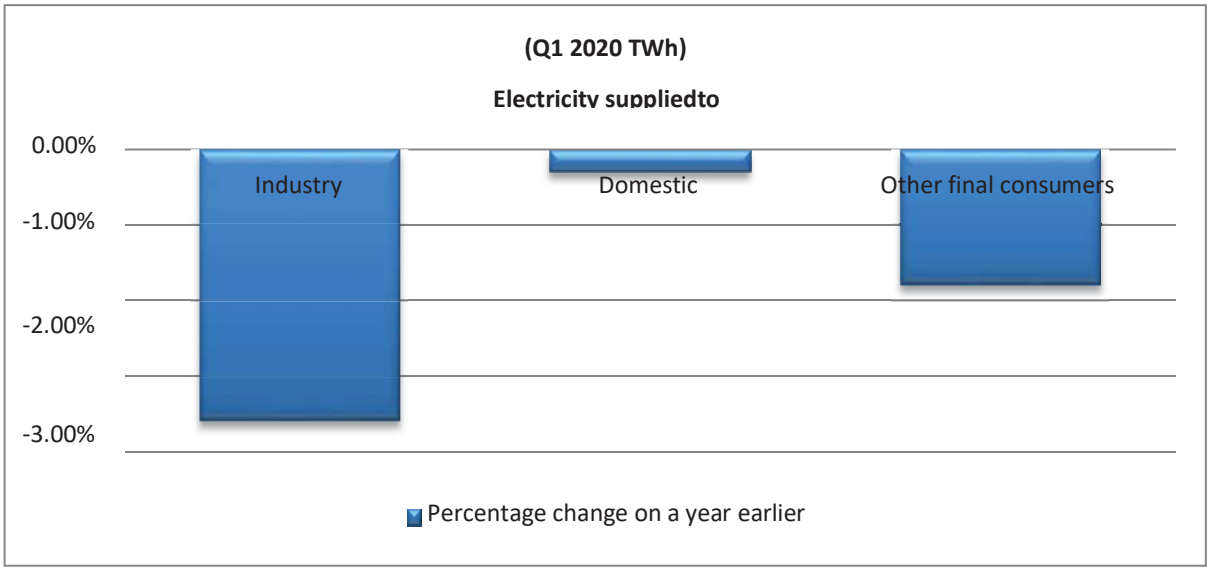
Source: Department of Business, Energy & Industry Strategy

The percentage change in Gas during the COVID-19 pandemic was clear. Demand for gas for electricity generation during the COVID-19 pandemic dropped by 24 percent following exceptionally windy weather that increased the output of renewable to record levels. Figure 12 illustrated the electricity supplied in percentage during the pandemic and the percentage change on electricity supplied to.



Source: Department of Business, Energy & Industry Strategy

The electricity consumption was down by 1.8% in Q1 of 2020 in contrast to the same period in 2019. It is important to note that during the COVID-19 pandemic, consumption of electricity was lower in all sectors. However, there was a large decrease for the industrial sector which was down by 3.6 per cent as compared to Q1 of 2019 Figure 13.



Source: Department of Business, Energy

The fossil fuels share of generation decreased to 35.4% in Q1 2020, this was because the fuel mix continued to move towards renewable sources. During the COVID-19 pandemic, the share of electricity generated from low carbon sources was 62.1% in Q1 of 2020; this was the highest quarterly value on the published data series. This originated from a record share of electricity from renewable sources of 47.0 percent; despite a fall in nuclear generation (down 5.8 percent compared to Q1 of 2019).A schematic representation of the market flow of oil has been represented in the Figure 14.

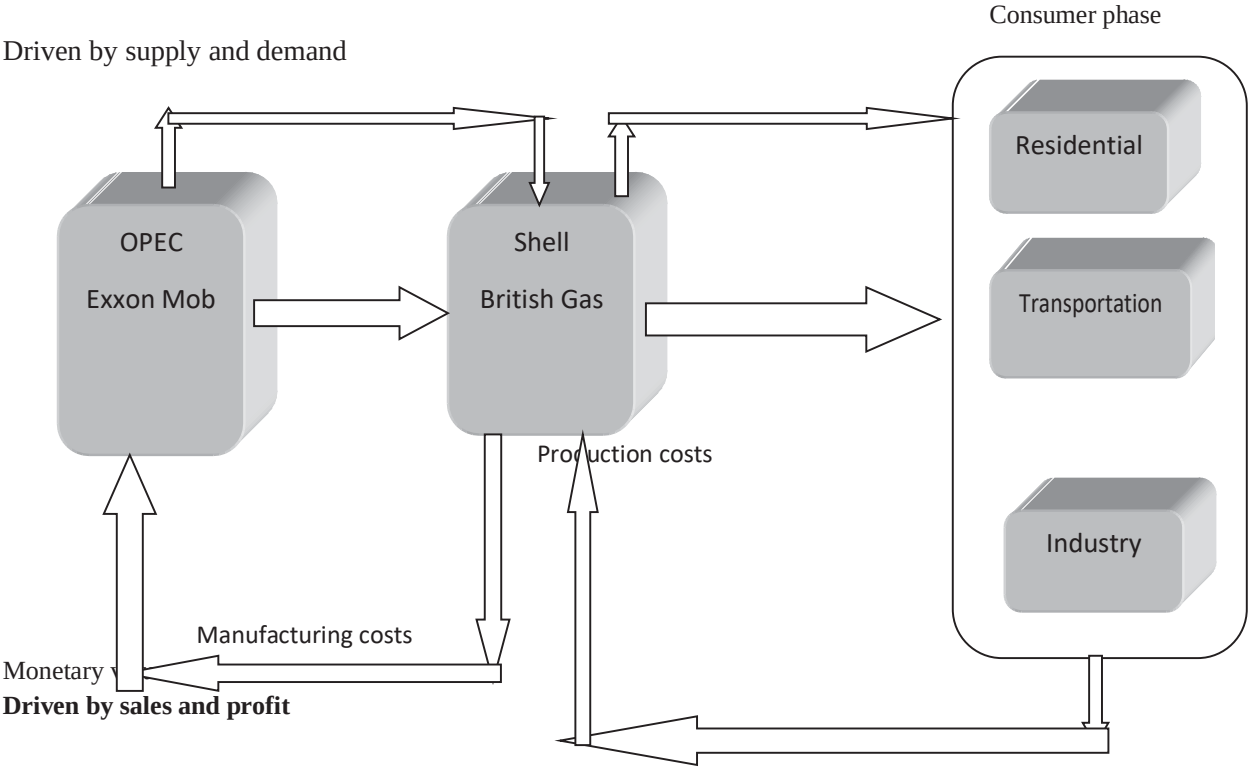


Figure 14 Market Flow of oil

The construction and production activities during the COVID-19 pandemic in the United Kingdom were ineffective due to the COVID-19 pandemic and this resulted in the demand for oil to quickly diminish. For instance, there was so much unused oil sloshing around the American energy companies that they run out of room to store it. With this scenario, the supply of crude oil was greater than the demand during the COVID-19 pandemic. This will result in the significant decrease in oil prices.Figure.1.9 has explained to us that the primary impact of the COVID-19 pandemic on the energy sector could be seen on the consumer phase on the energy supply chain. This was because of inability of low-income family to meet their electricity bills.

Transportation sector

This study will imply transportation industry to mean the movement of goods and services or people from one place to another. This movement could be by road, water, railway or air travel. The unscientific measure implemented by countries around the world including the United Kingdom to combat the spread of the virus is the lockdown of cities. The transportation industry carries an important social and environmental load. This industry provides economic and social opportunities such as better accessibility to markets, employment, educational entities and additional investments. The relationship in Figure.1.9 still applies to the transport sector. What this mean is that the study implies that oil is the predominant source of energy on this sector. There was low demand for transportation during the COVID-19 pandemic as the economy shut down.

The daily road traffic estimates calculate the implication of COVID-19 on the United Kingdom transportation sector. This is a suitable indicator for traffic change rather than actual traffic volumes. To achieve a daily estimate of traffic change, they applied lower levels of validation compared to normal statistical outputs. Figure.2.0 has showed prior to the lockdown in March 23 2020 the performance of the transport sector in the United Kingdom as compared to (Fig. 15) and (Fig. 16).

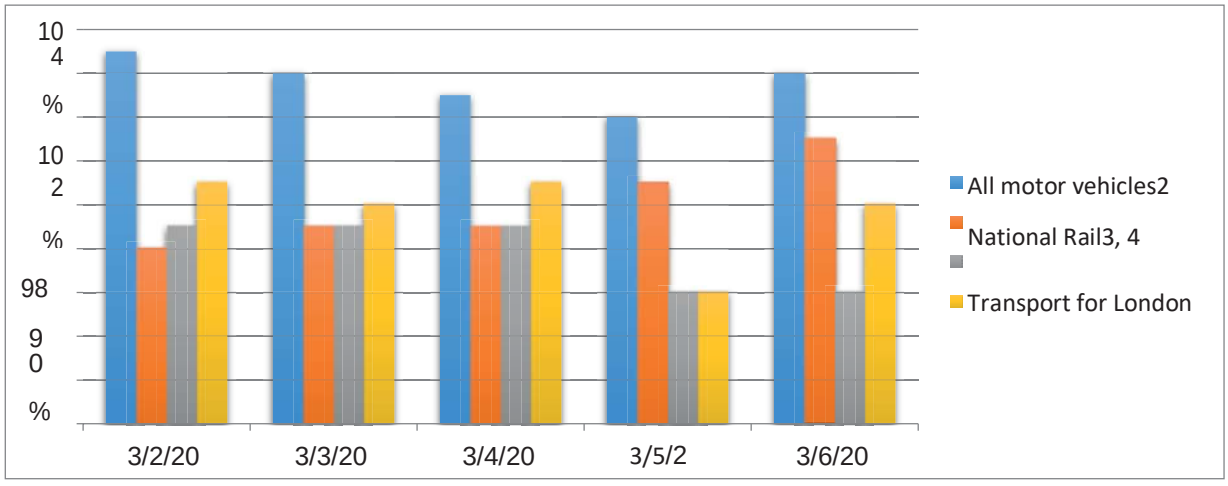


Figure 16 - Percentage of UK transportation prior to lockdown

It is evident from Figure.2.0 that prior to lockdown the percentage usage of motor vehicles in the UK exceeds 100%. However, this scenario will not be expected when the country was shutdown. The percentage usage of vehicles significantly drops during the lockdown (Fig. 17) and (Fig. 18) and stays within 35% - 40%.

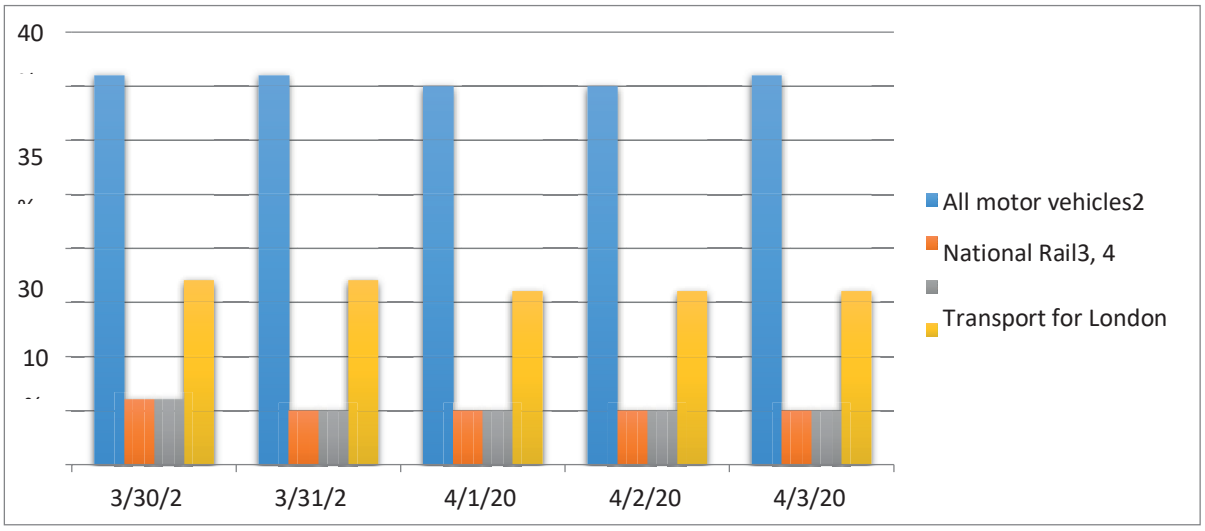


Fig. 17- Percentage of UK transportation during lockdown

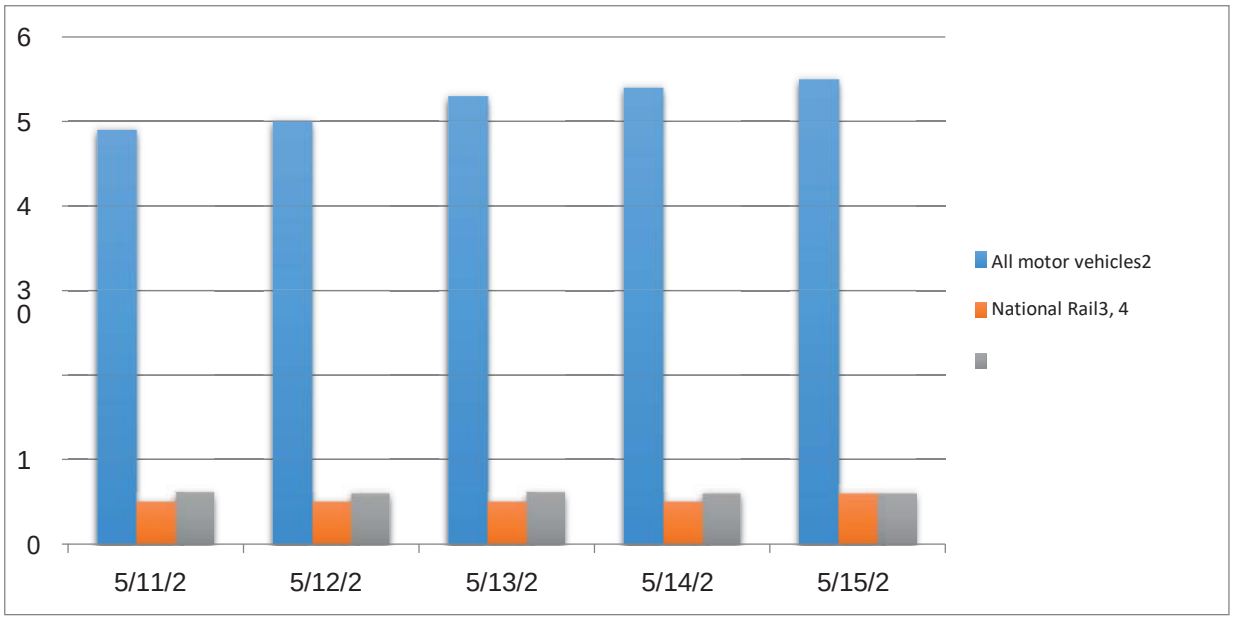


Figure 18- Percentage of UK transportation during lockdown

For instance, with restricted movement in the United Kingdom the service sector a major economy driven sector, has reduced the consumption of nonessential commodities as tourism, hotel and restaurant. Finally, Table.3 explained to that from July to September 2020, the overall energy consumption in the UK remains low. This was mainly because of disruption cause in the service sector such as leisure and travel.

Table 3- Overall energy consumption in the UK (July to September 2020).

	Production	Imports	Exports	Demand
Total energy	-9%	-19%	-9%	-13%
Coal	-39%	-1%	+108%	-10%
Primary oil	-12%	-21%	-11%	-20%
Oil products	-21%	-38%	-18%	-25%
Gas	-4%	+10%	+18%	+3%
Electricity	-13%	-27%	54%	-13%

Source: Department for Business, Energy & Industrial Strategy

Whereas, the energy requirements for industrial and services use are both down nearly 10% on last year. We can see the most notable fall in Figure 17 and 18. The transportation demand was down 30%. This was mainly due to air transport sector that was aborted during the COVID-19 pandemic and was down nearly two-thirds of last year. Primary energy production was also affected. Overall production was down 9% with drops in oil and gas production. This was mainly because of maintenance activity delayed. Coal production was also very low and this resulted in electricity production from coal to be down by 30%.

Renewable energy has increased by 40.2% of the total generation. However, low carbon generation and nuclear generation has fallen and the later reached a record low in the quarter as a result of maintenance across the estate. The performance of the energy sector during the COVID-19 pandemic resulted in the reduction of UK greenhouse gas emissions. According to Conway, (2021) the fall in UK greenhouse gas emissions in 2020 amounted to 8.9%. This fall confirms the outcome of the study position on the transportation sector performance during the COVID-19 pandemic this was because of reduction of road transport and business activity.

When applying le chatelier's principle that states; when a system experiences a disturbance, the system will respond to restore a new equilibrium state. This approach is like the steps taken by UK government to lessen the impact of COVID-19 on its economies. The United Kingdom government ensure that electricity providers continue to provide uninterrupted electricity service to consumers; this will benefit 4 million energy users in UK. The Department for Business, Energy & Industrial Strategy indicated that The UK government ensures that no line disconnection for prepaid and pay as you go customers, energy supply is ensured of Corona virus outbreak and all industry agreement signed by UK Energy suppliers will come into effect immediately. The same was implemented for the transport sector. Buses and trains fares were free during first shutdown of the UK economy because of the COVID-19 pandemic.

Conclusion

The COVID-19 pandemic has once more ascertained the important of the service sector to UK economy and notably the energy sector as vital economic driver. Overall primary energy consumption for energy uses fell by 14 per cent and this was mainly due to low demand for energy consumption on the transport sector. The impact of the COVID-19 pandemic was clearer from the energy supply chain on the consumer phase. What this is the inability of customers to pay their bills and the resultant reduction in revenue collections from energy providers. Even though consumption has picked up from earlier this year before another lockdown was imposed. However, the continued impact of the pandemic on demand has remained in this quarter, with a notable fall in demand for the three main transport fuels.

The lockdown will certainly have an impact on the transport consumption and the industrial consumption. Therefore, the transportation consumption and the industrial consumption fell by 30% and 8.4% respectively. The backbone economic model of the UK economy which is the service sector fell by 7.8% because of the pandemic. Interestingly domestic consumption rose by 2.5 per cent and this was due to the home working hours increased. The research recommends urgent action on fuel poverty for low-income family. It is important to address the risk of self-disconnection during the COVID-19 pandemic. The study will attest to the fact that the measures taken by the UK government in addressing fuel poverty were not sustainable and encourage the government to take more robust and sustainable measures for the long-time impact on COVID-19 on the energy sector.

The UK greenhouse gas emissions fell due theCOVID-19 pandemic. This reduction is certainly not sustainable. The landmark piece of UK legislation on climate change 2008 Climate Change Act commits the government to cut national GHG by at least 100% by 2050. As a result, the Prime Minister announced the end of sale of new petrol and diesel cars in the UK by 2030. However, the government lack robust policy on charger point implementation to meet this challenge. A policy recommendation for UK government will be an investment as grants for homeowners, businesses and local authorities to install charger point. The energy sector solution of the impact of the COVID-19 pandemic on the UK economy should be made sustainable. One disadvantage of a mixed economy is the emphasis on profit at the expense of the welfare of the citizens by private sectors. The government should be able to regulate the private sectors for the betterment of it citizen.

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