



International Journal of Multidisciplinary Research and Growth Evaluation



International Journal of Multidisciplinary Research and Growth Evaluation

ISSN: 2582-7138

Received: 27-09-2021; Accepted: 14-10-2021

www.allmultidisciplinaryjournal.com

Volume 2; Issue 6; November-December 2021; Page No. 94-98

Can renewable energy reduce the demand for crude oil: An analysis?

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DOI: <https://doi.org/10.54660/anfo.2021.2.6.3>

Abstract

Demand for crude oil will plateau by 2040, where India will be the highest consumer with growing population, the whole world is dependent on crude oil, which dominant the world. Rise of price and petrol have an effect on every person. Oil is used in more than 6000 product which are part of our daily use from cell phone to tooth paste, curtains, electronic, make up products. Even for the construction of solar panels and wind tribunals component of oil is required. Electric vehicles require oil for their construction, oil has not yet found any alternative. It will take 25 years have all the transport running of electricity, which requires huge infrastructure, strong

power grid to be formed. Drill and more exploration is taking place to take out oil, Google, Amazon and Microsoft have collaborate with the fuel industry for more drilling to take out oil and gas. There is being a reducing in the use of plastic bags, electricity is being produced using renewable energy, green technology, we have green building and adopting a nature based solution to become a carbon neutral world, well that can be applied in the case of electricity production which has helped India to electrified many of its villages and bring in electric vehicles. Even after this the oil industry will continue to dominant for the next 50 years or even more.

Keywords: Crude oil, oil and gas industry, India, price, petrol, drilling, electricity, electric vehicles, renewable energy

Introduction

The world is dominant by the oil industry and the need to control to control oil. The most important source of energy on this planet, the lifeline of industrialized nations, often the cause of wars, oil has brought several economies down, it has also built skyscrapers in deserts. We all know the importance of oil in the transportation and Industrial sector, Many of our everyday objects wouldn't have existed if there was no oil the bubble gum which people chew contains petroleum, toothpaste, perfumes, deodorants, contact lenses, dentures, we are surrounded by objects made from oil. Google, Amazon and Microsoft have collaborated with the fossil fuel Industry to get as much oil and gas as possible from the ground. But how did this black substance comes to rule our world and as we move towards renewable source of energy will our depends on oil reduce. Our enslavement to oil lays back to millions of years. The Earliest civilization found oil and used it as a resource the Mesopotamia used it in 3100 B.C in jews, Babylon used in 1700 B.C to waterproof their boats, the Egyptian used it to empower Mummy's in 2600 B.C, in Ancient Greece was used to light lamps. The Modern oil Industry was born in the mid 19th century by a Scottish Chemist named James Young, he is the father of petrochemicals industry in 1848, he noticed oil stepping in a coal mine and he distilled a thin oil suitable for lamps and a thicker oil suitable for machines. He begin with it and 3 years later partnered with Edward William Binney to form the world's first commercial oil refinery, interesting discoveries followed, the first drilling sites was in Bakou, Russian Empire to North America which led to the creation of more business in United states. There was a rush for Black Gold, in the 19th century America became the largest oil producer country in the world, in the 20th century the oil growth in massive amount especially in the field of transport with the development of automobiles, reconversion of ship engines and the aviation boom. The most decisive point in oil history when a British company struck oil in Persian, modern day Iran, this was the first big petroleum find in West Asia, it set off a wave of exploration and changed the history of West Asia, there was discover of oil reserves in every few years in different parts of West Asia in 1927 in Iraq, 1932 in Bahrain, 1935 in Qatar, 1938 in Kuwait and 1938 Saudi Arabia and in 1958 in UAE, with new discoveries new companies were formed backed by Western Investors each hoping to secure concessions, each trying to determine the price, hence a body was formed to end the Western Monopoly and secure fair and stable prices and this is where the modern oil and gas market and industry starts.

Research Methodology

For the purpose of this exploration, I have used an amalgamation of two of the archetypical social sciences research tools Application-as they are authentic and brilliant method to assemble statistics from multiple appellants in a methodical and convenient way. Questions were asked to the common youth, public policy Analyst, rural people, farmers, survey, interviews –consisting of several interrogations which were dispersed among representatives of each contender group.

Objective of the Research Paper

The main areas of exploration in this paper incorporate:

1. The growing demand of crude oil and the future of oil and gas industry.
2. How far can renewable energy reduce our dependency on crude oil.
3. Future of crude oil in India and across the world.

Literature Review

Organization of the Petroleum Exporting Countries (OPEC) created in 1960, the founding member of OPEC Iran, Kuwait, Iraq, Saudi Arabia and Venezuela, over the years more and more oil countries became a member Qatar, Algeria, Nigeria, UAE, Indonesia, Ecuador, Libya, Lebanon together these countries are controlling 80% of the world's crude oil reserves and 44% of the crude oil production. OPEC strength, unity and dominance made it a monumental success. During the Arab-Israeli War of 1973, OPEC placed an embargo on America and allies that supported Israel, impact of Embargo led \$ 3 barrel to \$ 12 globally. This embargo was called the first oil shock and the second oil shock was in 2020 because

of the Wuhan virus and the second Saudi-Russia price war, the air travel was halted, electricity demand fell by 20%, people stopped driving to work. In January 2020 one barrel of crude oil cost 67.5 dollars by March it crashed to 18 dollars, and in April it was minus 38 dollars. In 2020 oil lost its sheen as liquid gold. In 2021 people say that it's the end of oil. However, it is not oil will remain a main component of the energy industry. The global demand is 92.8 million barrels per day, there are 4.8 billion cars on the road and just 4.9 million electric vehicles. Even if we promote more electric cars it will take 25 years to replace the fleet. Oil is not just to fuel it is almost used in all industries, there are many products which you can't manufacture using renewable energy, you require crude oil computers, carpets, bedrooms, camera, furniture, bottles, pesticides all require oil. Even the electric vehicles require oil, you require crude oil generated fluids and motors. By 2040 the demand for oil will plateau. In the world China, America and India are the largest consumers of oil, the demand day by day is amplifying for crude oil, there is drilling and exploration across the globe in need of more oil. The Middle East countries are the dominant of crude oil, Countries like Dubai, Qatar have developed by producing and exporting more and more crude oil. Saudi Arabia is the main leader of the OPEC, there have been a rise and decline in the price of oil depending on the needs. In order to tackle climate change we are shifting towards renewable energy for the producing of electricity and running of vehicles, it will take a decade to reduce our dependence on oil. The industrial needs to find alternative, the electric vehicles requires a huge infrastructure to totally change itself by that time the consumption and requirement of oil will be more compared to now.

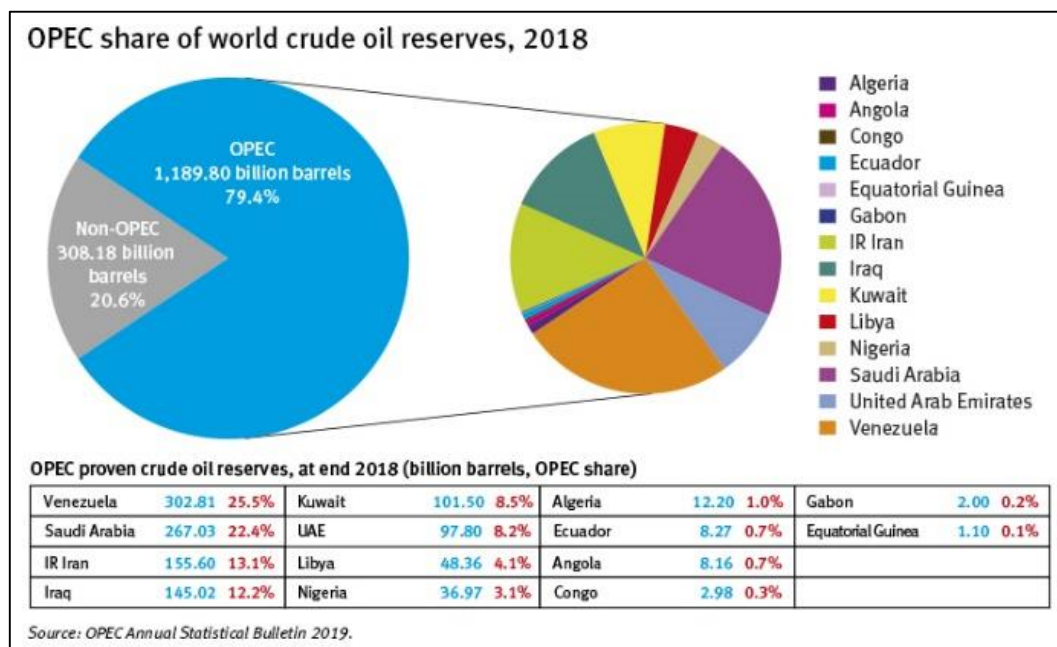


Fig 1

Findings

Globally we consume 96 million barrels of oil per day that is 48 super tankers every 24 hours. We as consumers use oil for all purposes, 42% for gasoline that is vehicles in which 28% for diesel for trucks, trains 12% is for fuel oil, aviation fuel, travel and heating, 18% is for asphalt, petrochemicals, plastics. Understanding the future of oil demand is

understanding the future of population. Canada is a member of a group called the organization for economic cooperation and development (OECD). Canada, America, many countries in Europe and some other countries are part of it. With rise in population demand will increase. China has the largest population, the consumption is more followed by India which in near future will be 3 billion.

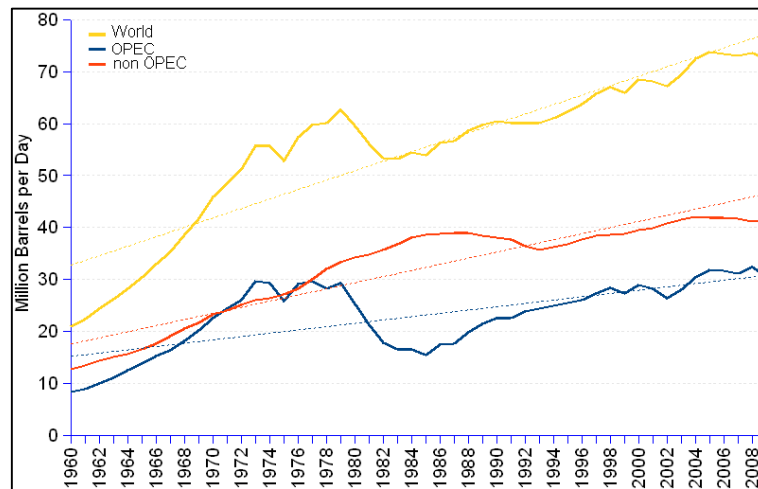


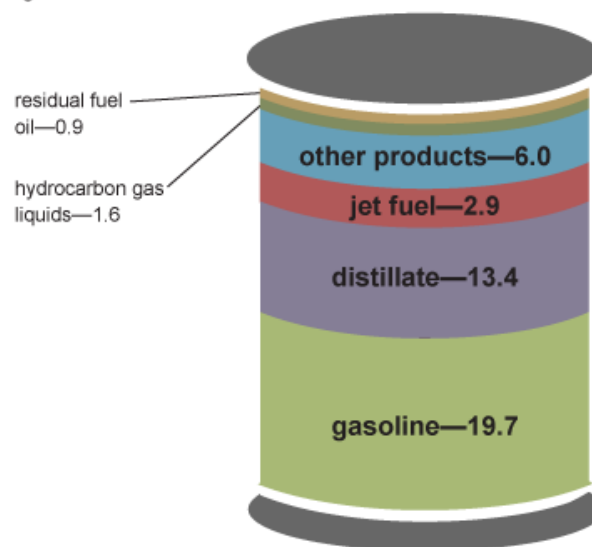
Fig 2

Countries are trying to cut down their demand for crude oil by adopting renewable energy. We are seeing a rise in the use of electric vehicles but it a lot of problem attached with it. Till now the food is not prepared to completely adopt renewable energy. Telsa and many other companies have started producing electric cars which is gaining momentum. Now if we look at the distribution of crude oil uses in India 45% is used for gasoline, 25% for ultra-low sulfur diesel, 4% for hydrocarbon gas liquids, 9% for kerosene oil, 13% for other products, 2 % for residual fuel and 2% for heating oil. It will not be easy to replace the petrol and diesel car so first, the main reason is the cost of the cars it very expensive the Telsa car will cost 70 to 80 Lacs, where as cars costing 3 to 5 Lacs is easily affordable by majority of the Indians run on petrol and diesel. Moreover we don't have the infrastructure. If we have a petrol car, we can easily get petrol to run a car

which takes a few minutes and we have petroleum available on all the highways and within the cities, where when we have a electric car and if the battery is over it will take 1 to 2 hours to charge the battery where as in highways it's a big problem where as if we have access to super chargers than it's a matter of few minutes. Moreover if all the vehicles are replaced then also we have the problem of charging where, in the world that infrastructure has not been created which can take the load of so many cars at one time, power grid capacity needs to be increased. You need to make new grids, but all the countries are not prepared for this, employment will increase and the demand of electrical engineers well this is a long term plan which will take decades to get accomplished followed by that you need to produce more electricity using solar, wind and nuclear energy. However Nuclear energy is not possible in every country.

Petroleum products made from a barrel of crude oil, 2020

gallons



Note: A 42-gallon (U.S.) barrel of crude oil yields about 45 gallons of petroleum products because of refinery processing gain. The sum of the product amounts in the image may not equal 45 because of independent rounding.

Source: U.S. Energy Information Administration, *Petroleum Supply Monthly*, February 2021, preliminary data

Fig 3

Around 6000 objects in our daily life and usage are made from crude oil like shaving cream, hair gel, automobile body, car interiors, credit cards, cable coating, artificial heart valve, sports equipment, electronic, medicine, make up, jackets. Every aspects of our life is surrounded by oil the amount of plastic that we use and we are highly dependent on it is made

from crude oil. The weight of cars have reduced today because it is made up of half metal and half plastic. Even the cell phone on which we dependent the most has oil in it. Solar panels are made using some of the component of oil. Wind tribunals also require components of oil, the badge is made using oil material.



Fig 4

In Middle East 312 new petrochemicals projects are coming, which means that oil is going to remain and with passing years the demand will increase. For the next 40 to 50 the demand of oil will keep on increasing. Today the main focus of companies and government have been to reduce the use of gasoline in the vehicles. Petrochemical Industry is rising, in every country.

The current situation is the price of oil has rise, countries across the world are facing the problem of high price. In India, there is consist debate on the high cost of petrol and diesel which has limit public and private transport on the roads, the charges of public transport have increased. There are rallies across the country to cut down oil prices and taxes on it.

India is the second highest consumer of crude oil, in the upcoming year the demand will increase. It is estimated for the next 22 years, India consumer of crude oil will increase. India is highly depend on exports, now it has started drilling and exploring more and more to cut down its import. The country production of oil has increased, for domestic purpose. India is trying to reduce its dependency on crude oil, particularly in the production of electricity many villages and cities are using solar panels to produce electricity, India is also the largest producer of electricity, moreover to cut down on the use of plastic bags, the government have approved the use of jute bags where India is the second largest producer of Jute in the world. Countries in Europe have minimize the use of gasoline, promoting eco-friendly transport, green building and green economy, even for the production of renewable energy certain amount of oil is required, we haven't found nay alternative for the daily products which require oil, in fact most of the electronic products require oil, where digitalization in the future and there has been a massive demand for electronic goods.

Way Forward

The main problem which people are facing is the cost of price. India has crossed century in the price of petrol and more than 2/3rd to be precise is what we pay as tax. The problem is out of what we pay for petrol only 33% is it cost and the rest is tax. Per crude oil barrel is 4672 rupees, in 1 barrel you have 159 litres, which means the government purchase one crude oil barrel for 29.7 litres, freight and insurance is added and then different petroleum product are formed. If we take about petrol the base price is 29.7 on that we have the dealers commission that is 3.6 price before tax is 33.9. We have then central and state prices, excise duty of 3.3 per litre, every state have their own vax on it. There is a global cartel which control oil price worldwide that is OPEC which controls 75% of the world's crude oil output, the whole world is at the mercy of these few countries. There is a need to control oi prices in India, one way can be to bring petrol under GST then petrol price can come down to 75 rupees and diesel to 68 rupees. The price will become uniform and transparent and second way is the increase the electric vehicles by 30 % in India to tackle oil prices which is a difficult task. In the future the demand for oil will amplify in India and consumption rate because of the growing population Renewable energy can solve some of the problems where as crude oil is dominating the world, as there are main products in the world which are made using oil and which will take decades of research to find an alternative to its use.

Conclusion

The future of oil and gas industry is pride the demand will plateau by 2040, they will no decline, as we have not been success in finding an alternative to it, the renewable energy and moving towards a sustainable carbon neutral further will

require ample infrastructure which can be a success in developed countries where as developing countries and in particular India the situation is difficult. Even with the adoption of renewable energy or dependent on fossil fuel wont reduce, production of renewable energy requires oil. For the next 5 decades oil is the future, it will take centuries to completely end the use of oil, more and more petrochemical industries are being formed, which acts as a prove that we require crude oil where billion dollar are being invested in the production.

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