

SYNERGY

Bilkent Energy Policy Research Center Newsletter



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Crude Oil Freight Rates to Asia Sets New Records

According to Worldscale reports, spot VLCC rates for shipping crude from the Persian Gulf to the Far East exceeded \$200,000/day for the first time in this decade. It means that the cost of transporting the oil past 20% value of the oil that is exported in a shipment. The authorities discuss three different reasons for this price hike.

The essential impact comes from the American sanctions imposed on China and its shipping giant company COSCO due to oil exports from Iran. Since Iran and Venezuela were also sanctioned by the United States, importing oil from these countries was the official excuse for the American government to impose sanctions on China. Since the beginning of the sanctions in May 2019, there were several reports on that China was continuing importing crude oil from these countries through indirect ways. The United States government responded to these actions by extending the sanctions by adding COSCO Shipping to the list on September 23, 2019. A while after that, Exxon Mobile Corporation also banned the use of vessels linked to oil flows from Venezuela, which affected nearly 250 tankers. These decisions caused customers to replace ships, and since the number of supplies declined significantly in the region, the freight rates spiked rapidly.

The second reason is that Saudi Aramco's statement that production will come back to normal levels. According to a VLCC owner, who responded to Platts, the Saudi announcement plus the increase in the supply of the U.S. crude, creating a massive demand on the refinery side. The refineries that tried to secure the ships for their winter supplies played a role in the shift of prices.



Among these reasons, one last important factor is the ships that anchored for the scrubber installation. Starting from 2020, the International Maritime Organization (IMO) will impose a new regulation that restricts shipping companies from using fuels that have high sulfur rates.

Up to now, ships have different solutions to comply with this rule. One of them is to use fuels that have low sulfur, and the second one is to install a system called scrubber to their tankers. Scrubbers will filter the harmful emissions and enable a ship to stay within the pollution limits. However, the installation of this system is not very easy. It takes up to 90 days for one tanker to complete the operation. Today, nearly 60 tankers are installing scrubbers at the ports and becoming unavailable for transportation. Eventually, their absence creates a positive impact on prices. As we get closer to 2020, more tankers are expected to put scrubbers; therefore, the number of available tankers may remain low in the following months as well. On the other hand, the tankers that do not have scrubbers also facing increasing costs. Depending on the

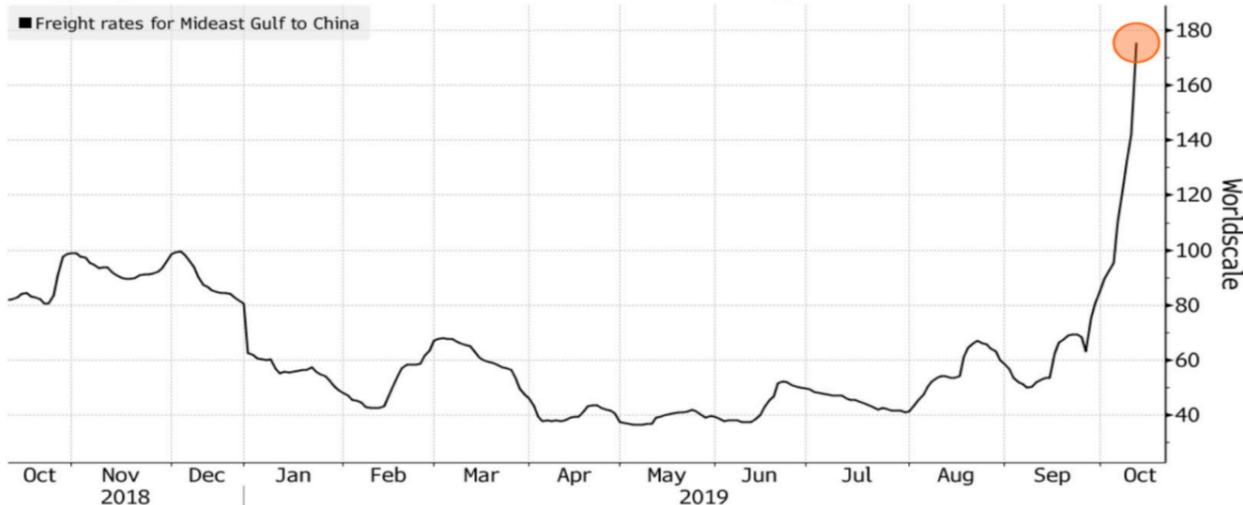
region, shifting from high sulfur fuel oil to low sulfur fuel oil creates around \$150 to \$200 extra cost per tones to the shipowners. These additional costs also play a role in the more expensive contracts.

While these three reasons increase the cost of the oil shipments, China seeks to ask the U.S. to lift sanctions on its shipping companies. This week both parties will gather again to discuss the future of tariffs and sanctions between the two states. Last Friday, there was another negotiation between the high-level officials, and the Chinese government agreed to increase its agricultural product purchases from \$16 billion to \$40-\$50 billion dollars. Additionally, they agree to purchase \$16-\$20 billion on Boeing Planes services. After this agreement, Trump suspended a new round of tariffs that were planned to implement in October, which was an increase to 30% from 25% on Chinese imports that costs \$250 billion.

The American President Donald Trump speaks confidently about the partial agreement and states that he had done the greatest and biggest deal ever made for the American farmers in history. The experts, on the other hand, states that it is an only minor improvement which even can be achieved a long time ago. The ongoing economic conflict between two parties in tariffs and accusations of intellectual property thefts still reaches \$1 trillion. Therefore, it is unexpected for these parties to conclude a substantial deal.

As a result, the shipping sector will be closely following the meetings of two governments this week. Even though it seems like a slight possibility, an agreement on the shipping sector may help prices to stabilize in the future.

Big Jump Shipping costs from Mideast to China continue to surge



Dark Side of Renewable Energy

Consumption of hydrocarbon resources not only makes states dependent on one and another but also harms the environment by increasing carbon emissions. Shifting to renewable energy consumption can help the mitigation of climate change by increasing greenhouse gas emissions. As a result of energy security concerns, global warming, and advancements in intelligence technology (IT) sector, states started to invest more in renewable energies like solar panels, windmills, and nuclear plants. With the progress in the IT sector, since minerals like cobalt constitute the critical component of electric devices batteries, demand for these minerals also increased. A new market already established for some metals like copper, silver, silicon, cobalt, and nickel. Yet the usage of other minerals like tellurium, indium, gallium, selenium, and molybdenum are not that common yet.

In his, the mineral foundation of the energy transition, article Morgan D. Bazilian indicates that 75% of the world's production of cobalt comes from developing countries; studies show that Latin America owns a regional potential for minerals such as copper, nickel, and lithium. Africa is rich in terms of platinum, manganese, bauxite, and chromium stratums. When it comes to Asia, like Malaysia and Indonesia, they have good deposits of nickel and others, and it is foreseen that China deposits rare minerals.

Development and democratization wise, for me, the biggest problem is the locations of these minerals. As it's mentioned in Bazilian's article, the majority of these precious minerals are located in developing countries. Under the lack of proper legal consulting systems, working conditions in the mineral mines are significant uncertainty. Labour security, working hours, regulations needed to be kept under control in these countries; otherwise, these natural resources will create an adverse effect on the development rate of the country. In 2016, much of the world's cobalt, more specifically 63% of it was produced in the Democratic Republic of the Congo. Still, the mining industry constitutes a significant rate in Congo's export income. United States Geological Survey indicated that Congo owns approximately 1 million tons of lithium reserves.

Raconteur reports that an estimated 35,000 children work in unsafe conditions in Congo to extract cobalt only. Due to the lack of democratic political structure, rules and regulations in specific sectors, and precise mechanisms to force to follow mine owners to act under international labor rights future of the Congo does not look that bright. If we consider the working conditions, violence, and payments these workers receive (many of these labors working less than 2\$ per day), international regulations must be set for such mineral supply chains. It is likely to come across a similar scene in other mineral-rich countries.

To break this paradox setting international regulations is not enough on its own. If companies do not invest in mineral-rich states, this exploiter and exploited dynamics can never be changed. As O'Sullivan, Overland, and Sandalow indicate, if these developing countries convince that they can advance their technologies and can use these minerals in their markets, then they may stop exploring mineral mines and labors. Right now, the majority of these states, like China, are importing their minerals for processing and then re-importing them. If the reliance on renewable energy increases, states may decide to hold their rare metals for themselves.

Minerals can be traded among countries located in different geographies; however, it is harder to trade energy obtained from renewable energy resources among the states. Due to its nature by constructing



pipelines, oil and gas can be transferred over far distances. LNG can also be transported across the continents via ships. When it comes to renewable sources such as electricity produced by solar panels, bio fossils, windmills, or geothermal energy, it is harder to export them. To export or increase the usage of renewable energy, states have changed in the current infrastructure. For instance, for electric cars, countries need to construct electric vehicles charging systems.

Currently, based on their charging and traveling capacity/time, these vehicles are not efficient enough. To make these vehicles more demanded products, manufacturing companies are producing hybrid cards. Some may claim that seeing such hybrid systems is normal for the transition period; however, it is a fact that the storage of these renewables is problematic. Set up locations for large solar panels, and windmills also are selected cautiously. American Institute of Physics indicates that living close to wind turbines (within a range of 600 meters to 10 kilometers) negatively affect human life, due to windmills audible sounds.

On the contrary to that, renewable energy can open up new markets, job options for locals and makes states less dependent on other countries, energy provider firms. In terms of energy security, more countries produce their energy more dependent they become to other states. Due to storage limitations, solar panels may not be the best alternative for long term usage, such as heating. Promoting renewable energy states can decrease the power of energy monopolies.

In addition to that, states would become less vulnerable to cyber-attacks. If a household can sustain itself electricity via solar panels, it won't be affected by electricity cuts in its neighborhood. The same logic applies to regions and cities. "In India, more than a million households are benefiting from solar energy, with over 10,000 remote villages securing basic electricity through distributed renewable power alone." In terms of security, it is always a good idea to expand your options and try to be dependent on one particular recourse or state as less as possible, but the cost of this transformation should not be avoided too.

Yüksel Yasemin Altıntaş

BRENT OIL	59.09 \$/BL	GASOLINE	6.94 ₺/LT
USD/TRY	5.92	DIESEL	6.52 ₺/LT
EUR/TRY	6.54	FUEL OIL	3.84 ₺

Podcast Channels on Energy Topics

In the energy sector, due to rapid changes in situations, publications become quickly irrelevant even before they have published. To overcome this problem, one of the methods is to stream podcasts about recent topics.

Bilkent Energy Policy Research Center has its podcast channel. Serkan Şahin and Hakan Berument discuss the energy news and technical aspects of the crude oil sector with professionals on the market. Up to now, they have published nine different podcasts that are in Turkish and around 35 minutes long. You can listen to them at bilken-teprc.com/podcasts.

Bariş Sanlı initiates another important Turkish energy podcast channel from the Ministry of Energy and Natural Resources of Turkey. Sanlı started to publish podcasts in September 2019 and up to now, published 12 podcasts that include discussions of energy topics with the leading energy experts in the Turkish energy sector. On average, the podcasts are 20 minutes long and can be listened to at barissanli.com/podcasts.

On the global level, one of the most active podcast channels is the Columbia Energy Exchange initiated by the Center on Global Energy Policy at Columbia University. In this channel, climate, energy, and environmental issues are being discussed with the academicians, professionals, and other experts.

Nearly 200 podcasts are starting from 2015 that includes book reviews, paper presentations, comments on trends in energy policies. You can access this channel at <https://energypolicy.columbia.edu/podcast/columbia-energy-exchange>.



Other than Columbia University, MIT Energy Initiative, and The Oxford Institute For Energy Studies also offer similar services. You can also check these channels at the following links <http://energy.mit.edu/news-tag/podcast/>, and <https://www.oxfordenergy.org/publications/oxford-energy-podcast/?v=ebe021079e5a>.

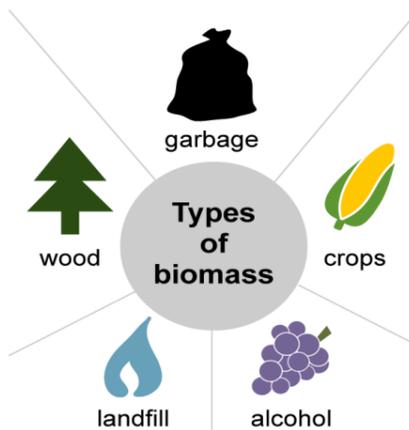
Finally, if you look for a less academic perspective, you can follow the podcast series of Platts Global at <https://www.spglobal.com/platts/en/market-insights/podcasts> that focuses on the market insights mostly.

Overall, if you intend to extend your knowledge on the energy topics, listening podcasts might be a good starting point. Most of them are easy to follow and contains enormous amounts of information that are presented compactly.

Gökberk Bilgin

The Question of Renewable Energy

Change is a big part of our world. Since the beginning of life on earth, changes have occurred, and our climate is no exception. Still, we have to differ what is a natural transition and what is not. Until the last 50 years, climate change could be categorized as a natural process. Nonetheless, these last decades, the process seems to be getting bigger at a faster rate, and human activity does seem to have a direct effect on it.



United Nations Intergovernmental Panel on Climate change (IPCC) confirmed that the warming of the climate system has caused by the world population. Since climate warming is an explicit threat, the solutions are searched for. One of the most popular and widespread solutions is renewable energy. But is it as useful and non-problematic as declared?

A widely acknowledged solution to global warming is to transition to renewable energy. The concept has gained so much popularity that it became a medium to affect the policies all around the world. Nonetheless, the downsides of this concept are often overlooked. To be able to criticize this concept, we need to understand the definition of it.

The term was found in the literature since the early 1900s. Up to this date, the meaning of the concept does not indicate any changes. International Energy Agency (IEA) defines it as “energy derived from natural processes that are replenished at a faster rate than they are consumed,” which includes solar, wind, hydro, and biomass as renewable energy. It is a broad but clearly defined the concept. Thus the problem is not related to its definition or what is renewable energy and what is not. Atte Harjanne and Janne Korhonen indicate several issues existing with the concept.

First, renewable does not necessarily mean sustainable. Although they seem to be linked, it is crucial to comprehend what sustainability

means. The Brundtland Report (1987) defines it as a development that meets the needs of the present without compromising the ability of the future to meet their own needs. Nonetheless, within the renewables, biomass usage, which has a crucial role, contradicts with sustainability. Biomass has three major environmental issues. It can threaten the biodiversity in the area that is produced and can affect the quality of water. Second, biomass combustion can cause net emission. And lastly, biomass burning can increase pollution, which can lead to an increase in diseases.

Secondly, renewables differ from each other. The definition of renewable energy is clear, but it is a broad umbrella that includes many different sources. Harjanne suggests, this variability of energy sources are widely recognized issues of renewable energy production. Excluding biomass, all of these sources are dependent on local conditions. Wind power and solar output solely depend on local weather conditions. Hydropower is directly linked with the water levels, which can vary hourly.

Last but not least, the problem of renewable energy is that there is no renewable energy. I want to introduce the second law of thermodynamics to explain the contradiction within the concept itself. The total entropy in an isolated system will always increase, and the changes in the universe can never be negative. Hence, energy cannot be renewed. Another aspect of addressing this issue is that to produce renewable energy, the machinery has to be from the non-renewable materials, which increase this problem. Or even to produce bioenergy, biomass is the source; however, the negative impacts of biomass are irreversible.

Harjanne indicates the problems with the concept. Renewable energy is often associated with sustainability, but they are often contradictory to each other. The incoherent nature of renewable energy comes from its wide variety of energy sources. And eventually, the concept of renewable energy does not exist. The concept gains praise is not only problematic but has the potential to be harmful. It is very crucial to understand the detrimental outcomes of this concept and find a better alternative for it.

İrem Ayça Aykın

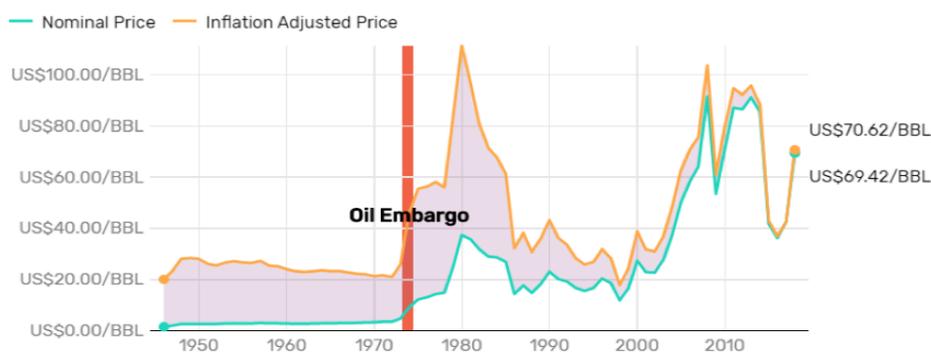
The New Rival of OPEC: Shale Oil

Petroleum products are utilized in many fields such as transportation fuels, fuel oils for heating and electricity generation, road oil, and feedstocks for making the chemicals, plastics, and synthetic materials that are in nearly everything we use. Due to the unbalanced distribution of oil, which is a necessary and irreplaceable resource, the countries having this resource can create monopoly power on energy. Therefore they can influence the world economy and politics with the decisions they make. The most prominent example of this is the oil production association OPEC (Organization of Petroleum Exporting Countries), which was established in 1960 with the participation of Saudi Arabia, Iran, Iraq, Kuwait, and Venezuela. Thanks to this union, OPEC sells oil at a fair price by determining production rates according to reserve amounts of member countries. In this way, being a monopoly in the market has given OPEC states the economic and political power they want. We can also say that OPEC has a structure between cartel and oligopoly due to the lack of sanctions if the decisions are not followed. Let us briefly recall the 1973 oil crisis to explain OPEC's power in the world economy and politics. In fact, until the 1974 Arab-Israeli (Yom Kippur) war, OPEC was operating a regular market for \$2 per barrel. In this process, developed and developing countries, especially the American economy, became entirely dependent on imported oil. In 1973, Egypt and Syria attacked Israel to take back the land they lost to Israel during the Six-Day War. When U.S. President Richard Nixon announced his support for Israel, OPEC used oil, its most destructive weapon. It stopped selling oil to all Israel-backed countries, and the price of oil quadrupled by 1974 from \$3 to nearly \$12 per barrel.

Due to oil dependence in production, production costs increased, and so these countries experienced high inflation and economic stagnation. Speeds of cars in America are limited to 80km. Car-producing brands have experienced significant profit declines. It is the crisis that has led to saving measures such as the production of front-wheel-drive cars instead of rear-push performance vehicles, which has more or less determined the standards of today's cars. The strikes in Britain caused by the energy crisis caused the change of government. An increase in oil prices forced U.S. government to create the first Department of Energy that year and rethink energy efficiency. U.S. federal investments in energy R&D more than doubled from 1973-1976. The Japanese economy has shifted its direction from the petroleum-dependent industry to electronics. The political, economic, and social effects of the crisis on states can be further elaborated. In short, I want to draw your attention to the fact that: thanks to OPEC oil prices, it has caused developments that changed world history for a period.

Crude Oil Price Per Barrel Since 1946

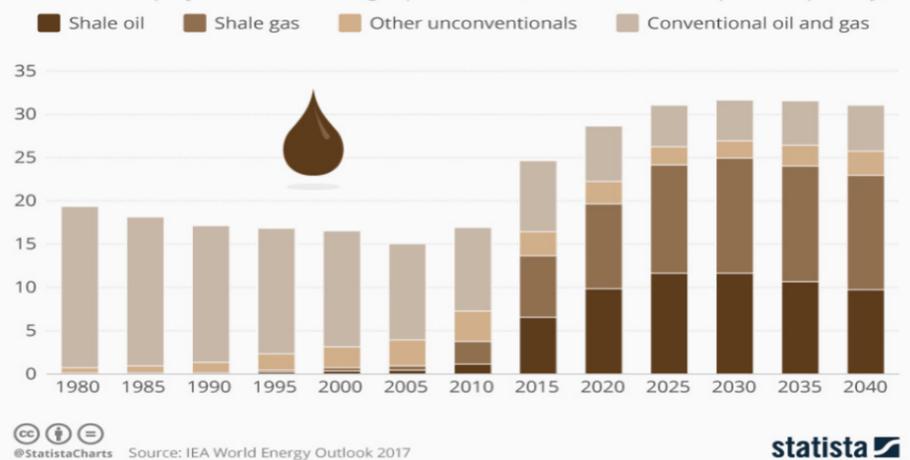
The OPEC oil embargo began in October 1973 and ended March 1974. Chart compares the nominal price of crude oil/bbl and the inflation adjusted price. During the embargo, adjusted oil prices rose from \$25.97 in 1973 to \$46.63 in 1974.



In 2013, the statistical arm of the U.S. Department of Energy, the Energy Information Administration (EIA), estimated that 345 billion barrels of shale oil might be technically recoverable, making up approximately 11% of total crude oil resources. "In November 2014, OPEC abandoned its market balancing role, leaving market forces to balance global supply and demand," says Evan Calio, head of U.S. integrated oil, exploration & production and refining research at Morgan Stanley. Whereas changes in conventional oil production can take at least three to five years to play out, U.S. shale can respond relatively quickly to price signals. Consequently, he adds, "the U.S. is the new swing oil producer." Because of the capital-intensive production system too much debt, quick decline rates and low prices are all problems for the U.S. shale industry. However, an analysis of the sustainability of shale must be broader than merely examining the balance sheets of various oil and gas companies. (Clemente, 2019)

The American Shale Revolution

Historical and projected U.S. oil and gas production (million barrels oil equivalent per day)



Moreover, shale oil extraction, based in the U.S. as Permian, Eagle Ford, and Bakken Basins, has become widespread in China and Argentina in recent years. Leading companies in the sector like B.P., Exxon, Shell, and Chevron Corp. predicts that the shale sector will bring about significant changes in the energy world. Exxon Mobil Corp., which has used bolt-on acquisitions to beef up its shale position in recent years in the Bakken and Permian, is also ready to integrate its upstream operations into new pipelines, refinery capacity, petrochemical crackers and export deals... (Eberhart, 2018) This brings us to a crucial point in our discussion; if the US can become an oil exporter through North America, it can take the role of OPEC in the energy market.

Sena Tengilimoğlu

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