Petroleum Economics and Management
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Module - 04
Price of Oil
Lecture - 20
Oil price since 2018

Hi everyone, I am a Dr. Anwesha Aditya, your instructor for the course Petroleum Economics and Management. We are in Module 4 where we are discussing the oil price movement and we are relating the oil price movement with major local and global event. In today's class we will be discussing the Oil price movement since 2018.

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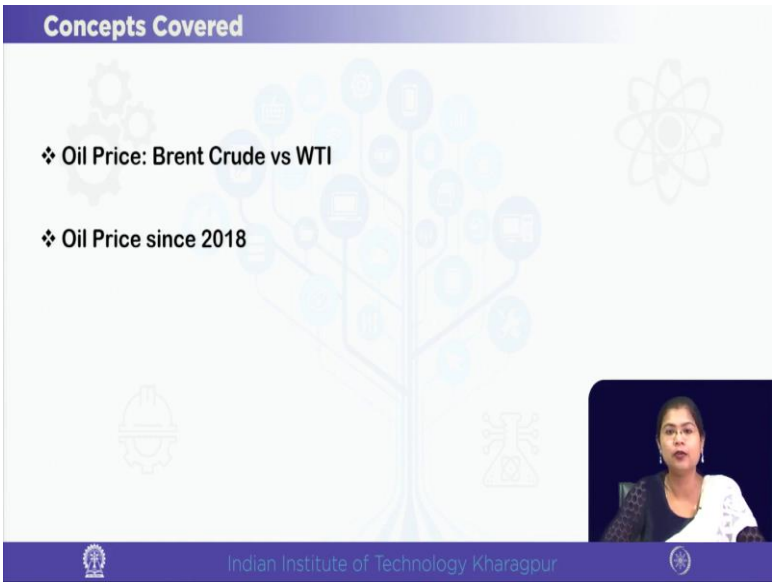

Now, before proceeding further for discussing the oil price movement since 2014 we need to understand the crude oil price indexes because if you remember we have already talked about the COVID-19 pandemic impact on oil market and that is a very interesting scenario because when we motivated our course, we discussed that the phenomenal movement of oil price is one of the reason of having a course on petroleum economics and management.

But it is not that oil price is always increasing. There are instances of sudden dip in oil price and one extreme scenario we experienced was the pandemic. So, due to the

pandemic and the lockdown measures more or less the global economic came to a halt, the global transportation was completely restricted.

So, a point of time came in April 2020 where the future contract WTI price became negative. So, when we will be discussing the oil price movement in the post 2018 period we need to discuss need to emphasize on the impact of COVID-19 pandemic on world oil market.

So, negative price in economics is just unprecedented. So, we need to study this event in very detail. For that we need to know what we mean by this WTI or Brent because we are hearing them so many times in the course, we need to know what they refer to. So, in today's class we will be first doing a comparative analysis of the Brent crude pricing and the WTI pricing and then we will be studying the movement of oil price since 2018.

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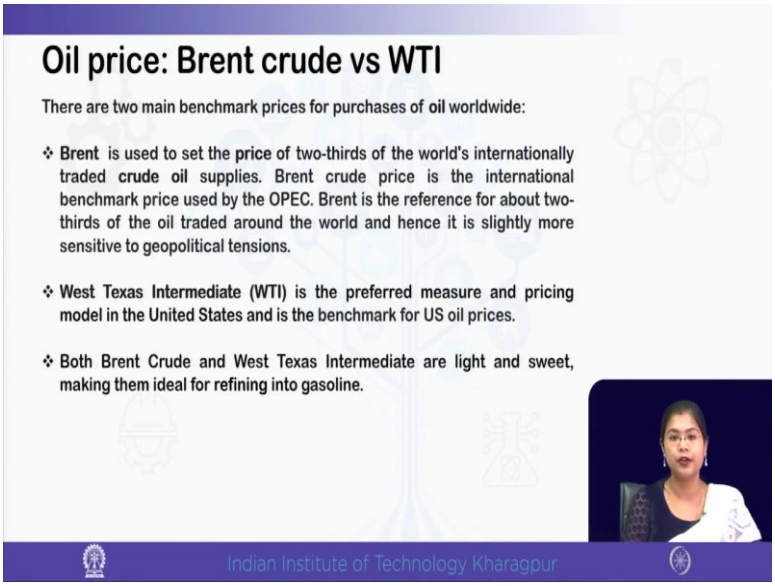

So, we need to first know what is the Brent crude pricing. So, Brent is used to set the price of two-third of worlds internationally traded crude oil supply. Now, Brent crude is the price of international benchmark which is used by the OPEC. So, Brent is also the reference price for about two-third of total oil trade around the world.

Therefore, it is more sensitive to the geopolitical tension, therefore since the OPEC countries which is the largest supplier of oil in the world market so far it follows the

Brent in the crude price. Therefore, if there is any kind of tension because we know that often the countries in the Middle East they are subject to lot of political the unrest.

So, if there is something happening say Gulf War is happening or some attack is happening so that will also influence the Brent oil price. So, therefore, this one is the Brent price is subject to more geopolitical tensions. We have already studied the world geopolitics how that can affect the oil price. So, Brent one is more frequently affected.

Now, what is the other one? The other one is the West Texas Intermediate WTI, which is the preferred measure and pricing model in the US. And this is the benchmark of US oil price. Now, both the Brent and WTI they are both light and sweet and they are ideal for refining them into gasoline. So, that is why these two are the internationally used benchmark prices for purchase of oil globally.

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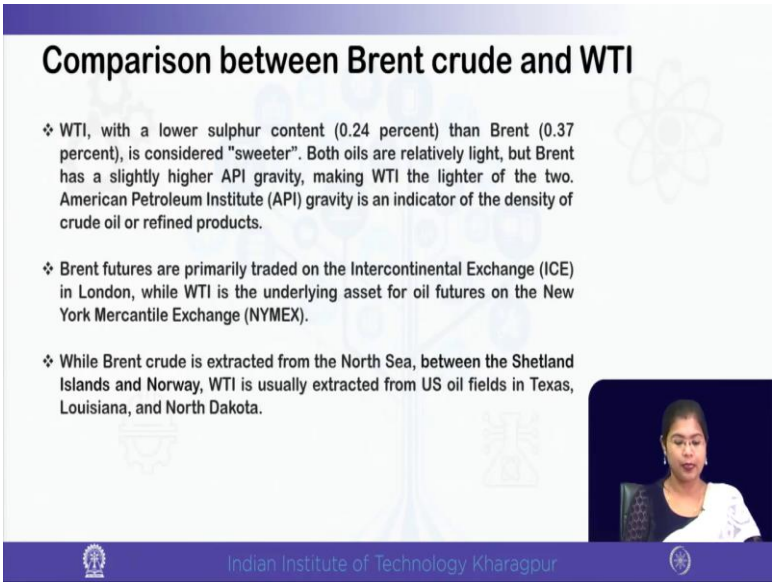

Now, if we compare more specifically between Brent and WTI what we find is that WTI has a lower sulfur content around 0.24 percent and the Brent sulfur content is around 0.37 percent. Therefore, WTI is considered to be the “sweeter” one and both the oils are light, but if we compare with respect to the API gravity. What is the API gravity? That is the American Petroleum Institute gravity and this is used as an indicator of the density of crude oil or refined oil.

Now, as far as the API gravity index is concerned the Brent has a slightly higher API gravity. So, Brent is heavier therefore, WTI on the other hand can be said to be the lighter of the two.

So, Brent futures are primarily traded on the Intercontinental Exchange ICE in London, UK. And WTI is the underlying asset for oil futures in the New York Mercantile Exchange NYMEX because we already discussed that WTI is the benchmark of US oil price. So, it is used in the New York Exchange whereas, Brent is futures are traded in the London Intercontinental Exchange.

And Brent crude oil is mainly extracted from North Sea, between the Shetland Island and Norway whereas, WTI is extracted from US oil field because WTI is the US benchmark so, it is mainly extracted in Texas, Louisiana and North Dakota.

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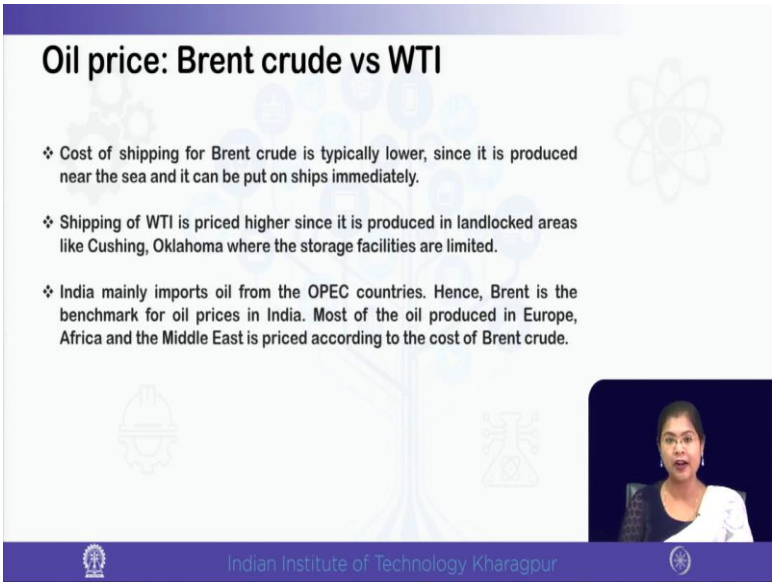

So, if we now we have compared the chemical composition we have compared the sweetness and the gravity index of Brent and WTI. Now, what about the oil price indexes? So, now we are coming to the pricing part ok.

So, cost of shipping for the Brent crude oil is lower, because see we cannot deny the fact that the OPEC countries the Middle East countries, they have comparative advantage in oil given their endowment. Now, US is supplying shale oil, we have just discussed shale

oil in our previous lecture, but that US developed over time that US invested into R & D, but the Middle East countries are naturally endowed with huge amount of oil.

Therefore the cost of shipping for Brent crude is lower because it is produced near the sea and it can be put on the ships immediately. So, once it is produced it can be shipped easily because we have already studied that when oil was suddenly discovered in Saudi Arabia it was a poor province and in other countries also in the Middle East especially they were poor countries their level of economic development was low.

So, there was limited domestic use of oil. So, what they did? They sold the oil in world market. Now, you see why they gained this advantage, they were endowed with oil, but their cost of shipping was also low because the oil fields or the oil mines were very near to the sea.

Whereas, if you now compare the Brent crude with WTI we see that WTI shipping cost is higher. Why, because it is produced in landlocked area. Landlocked area means those areas which do not have a coastal line. In one of the classes I think we have discussed that historically we have seen that the places which have ports or rivers those places were developed faster than the landlocked areas because what happens landlocked areas are dependent on other regions for international trade for their transaction. Why?

Because a large part of international trade export and import takes place via sea transport because in sea transport, we can trade we can transport the heavy equipment's the heavy weight products because in air transport we cannot ship the heavy weight products. So, international trade till nowadays depends largely on sea transport.

Therefore, when it comes to the landlocked areas the cost of transportation will increase. Therefore, the WTI pricing is higher because it is produced in landlocked area so, they have to ship the oil cost of transportation naturally increases. So, for example, we can take the example of Cushing, Oklahoma where the storage facilities are limited.

So, now you can easily understand you can reverse the example also. Once the cost of storage is high means cost of shipping is high cost of storage is also high. Now, from these we can easily conclude why the WTI price became negative, the future contract price became negative when the economies were under lockdown during the pandemic, but not the Brent one.

Brent price also fell, but it did not the Brent future price it did not become negative. Why? Because when there was sudden announcement of travel restrictions or the lockdown measure, we already discussed that there was decline in the demand side for oil because we have shown the sector wise use of oil we and we found that a major use of oil comes from transportation.

So, when transportation came to a sudden halt there was a huge demand side unexpected shock. Now, you see if WTI oil is coming far from the sea means it is a landlocked area. So, the cost of shipping is higher, but if the buyers are not willing to take; that means, the companies had to store oil.

So, storage cost will also be high whereas, in Brent crude it is very near to the sea the storage cost is less. So, that is one of the reason because a negative future contract price means what? The sellers are willing to pay to the buyers if they are taking the oil because the storage cost may be higher.

If the buyers are not taking the oil the storage cost that the seller has to make is greater than the price, they are actually paying to the buyer it is just opposite because so far you see the economics part we have discussed that you have to buy something you have to pay something, but now in this instance of a negative future price the seller is willing to pay something to the buyer.

Why? Because if the buyer does not take the product the storage cost will be even greater. So, basically you can say that the seller was actually minimizing it is loss isn't it? So, from this we can easily say that why the WTI price we can negative, but not the Brent one.

And from this we have another implication interesting implication also because when you are hearing me that I am saying so many times the WTI future contract price became negative and the Brent price also fell during the lockdown COVID-19 pandemic, but you may think that, but we did not experience such price fall because you see in India, we follow the Brent one why, because India imports oil from OPEC countries.

So, you may think that we did not experience this negative oil price, no because India imports oil mainly from the OPEC countries and we just now studied that OPEC follows the Brent one, not the WTI that is why when the WTI future contract price became

negative we did not experience that because we purchased from OPEC countries therefore, the Brent is also the benchmark for oil price in India not the WTI one.

In fact, you see that most of the oil produced in Europe, Africa and Middle East it is priced according to the Brent crude pricing and since India imports oil from OPEC and countries like Russia therefore, India also the Brent pricing is followed not the WTI pricing.

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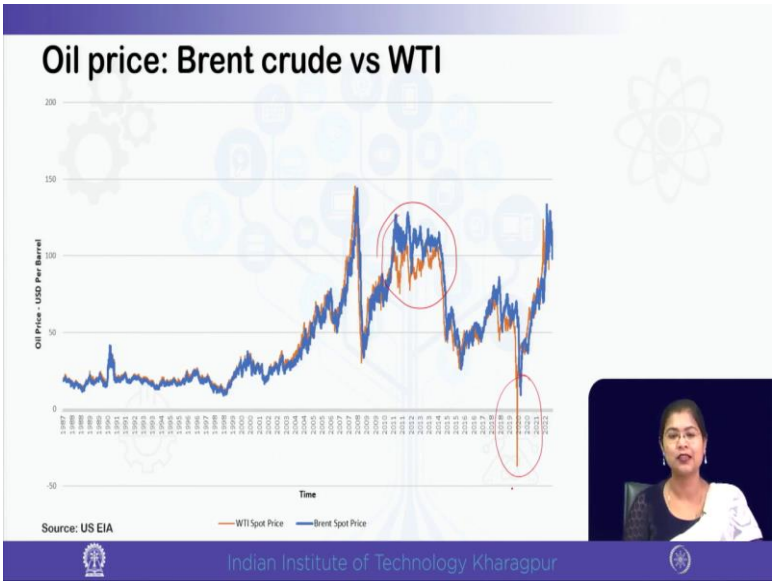

Now, here we have plotted with data the oil price movement of both Brent vis-a-vis WTI over time from 1987 onwards to the very recent 2022. So, the data sources EIA once again. So, the blue line is the Brent spot price this one we have plotted is the spot price which is the current price and the orange one is the WTI price.

So, we see that more or less they move over time, but in one of the lectures we have already discussed that during the shale oil revolution there was a widening gap between the WTI and Brent price. So, you can see over here I am not discussing it again because this one we already discussed that due to the shale oil revolution the WTI and Brent crude prices diverged a bit because the shale oil was mainly restricted to US so, the WTI price declined.

So, we can see from here and after that due to the shale oil revolution the price declined. So, the price index of both the Brent and WTI declined due to the increased oil supply.

But then you see the post 2018 period if we look at the COVID-19 pandemic impact we can easily see that how the WTI spot price became negative which was just unprecedented making it is very important to discuss the oil market.

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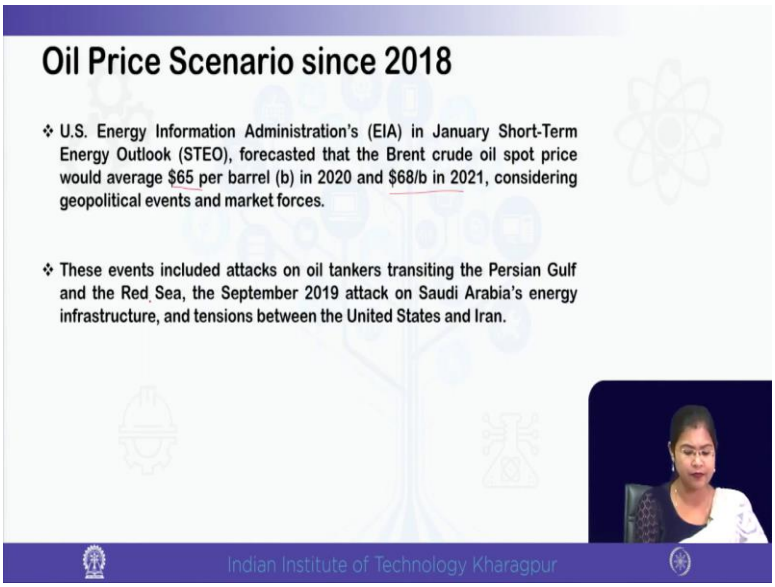

So, we can see once again how the oil prices are uncertain. So, if we now look at the oil price scenarios since 2018 as we are already, we have started looking at the data. So, the EIA January Short-Term Energy Outlook report, forecasted that the Brent crude oil spot price will be averaging around 65 dollar per barrel in 2020 and 68 dollar per barrel in 2021, due to the geopolitical events and market forces.

And these events included what the attack on oil tankers transiting from the Persian Gulf and the Red Sea area, the September 2019 attack on Saudi Arabia's energy infrastructure Aramco and the tension between the US and the Iran. So, they predicted the oil price to be in the range of 65 to 68 dollar per barrel during 2020 to 2021.

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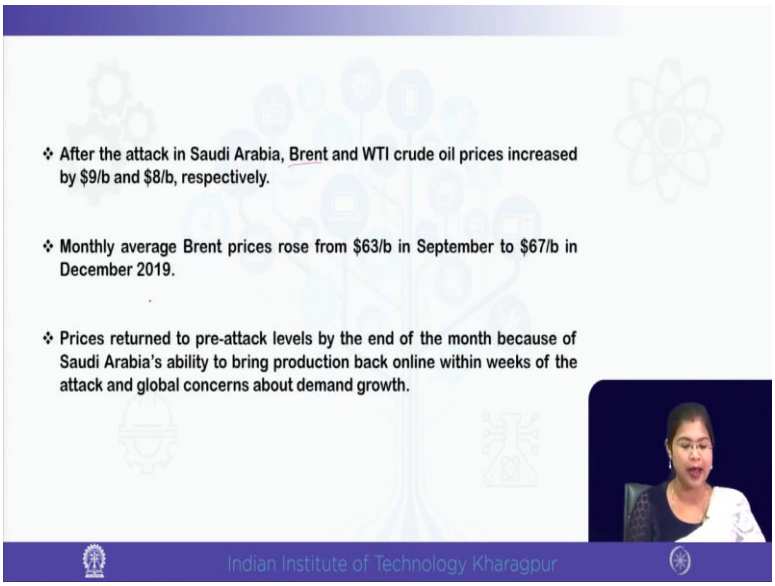

After the attack in Saudi Arabia, the Brent and WTI crude oil prices increased by 9 and 10 dollar per barrel respectively. So, Brent one increased greater because as we already found that the Brent price is more sensitive to the geopolitical tensions because Brent is followed by the OPEC countries.

Now, the monthly average Brent prices increased from 63 dollar per barrel in September to 67 dollar per barrel in December 2019, but prices again moved back to the pre-attack level because these are just temporary events. So, there is a attack there is sudden disruption in supply side again after the disruption is over again the supply will be going back to the initial level and the impact is not felt anymore.

So, prices quickly return to the pre-attack levels by the end of the month of December 2019, because of Saudi Arabia's ability to bring production back in the same line within few weeks of the attack and the global concerns regarding demand growth. So, these were just temporary these events just we now discussed these were very temporary events. So, that did not have any long run impact.

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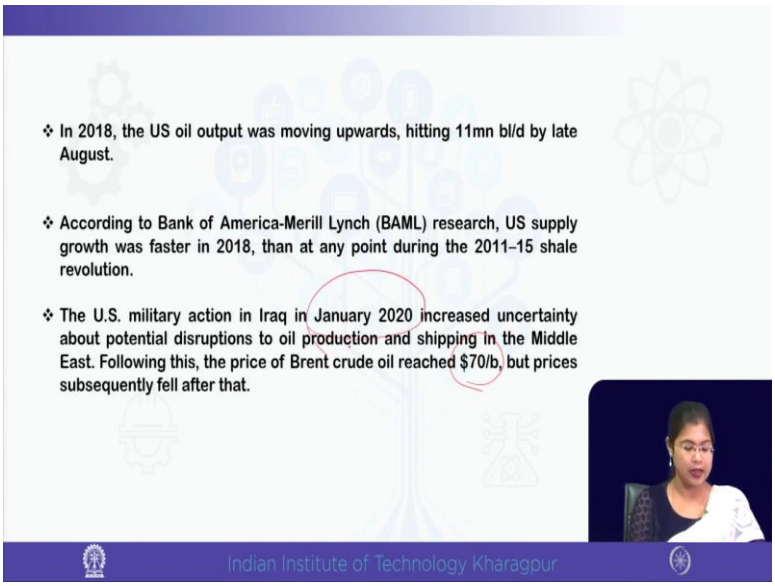

So, what we can see is that in 2018, the US oil output was moving upwards and it hit 11 million barrel per day by late August. So, according to the Bank of America-Merrill Lynch research we can see that, US supply growth was faster in 2018 than any point during the 2011 to 15 shale oil revolution.

And The US military action in Iraq in January 2020 it increased the uncertainty about the disruption in oil supply and shipping to the Middle East and after this the Brent price the Brent crude oil price reached a level of 70 dollar per barrel, but after that prices started declining. So, this happened in January 2020.

But after that this COVID impact is started feeling because from if you remember from February and March 2020 onward the restrictions the lockdown measures were being imposed across most of the countries in the world.

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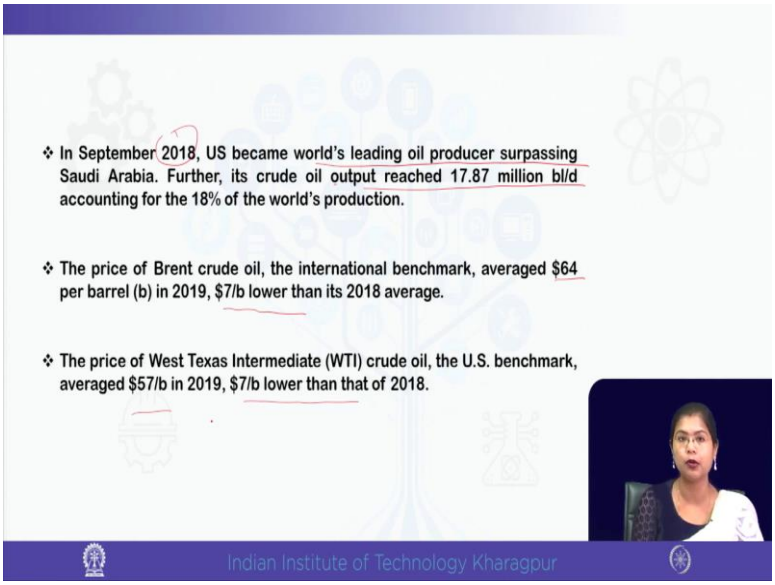

So, if we again just move back we see that in September 2018 US become world's leading oil producers are passing Saudi Arabia. If you remember in the shale oil revolution lecture, we plotted the oil export crude oil export of US, Saudi Arabia and Russia.

And we saw that Harper's Russia and Saudi Arabia even the projected values after 2018 was that US maybe surpassing Russia and maybe going very close to Saudi Arabia for oil export and from 2015 onwards we found narrowing gap between the export values of Saudi Arabia Russia with US because US became a net exporter of oil.

So, we see that in September 2018 due to the shale oil revolution US became world's leading oil producer exceeding Saudi Arabia and the crude oil output reached around 17.87 million barrel per day and that was around 18% of world oil production which is a significant share by a single country. See, remember, this is not OPEC this is by single country US. So, US also started influencing the world market by after the shale oil revolution.

So, the price of Brent crude oil it was in the range of 64 dollar per barrel which was 7 dollar per barrel less than the 2018 value. So, due to the shale oil revolution and increase supply by US so, Brent price also fell because there was increased total supply of oil and whereas, the WTI price which is the US benchmark that was also more or less the same to the same extent it was lower than the 2018 average.

So, it was around 57 dollar per barrel. So, WTI was less than Brent you see. In 2018 and 2019 both WTI and Brent were less than their 18 value and in 19 if you compare between WTI and Brent, Brent was higher and WTI was lower.

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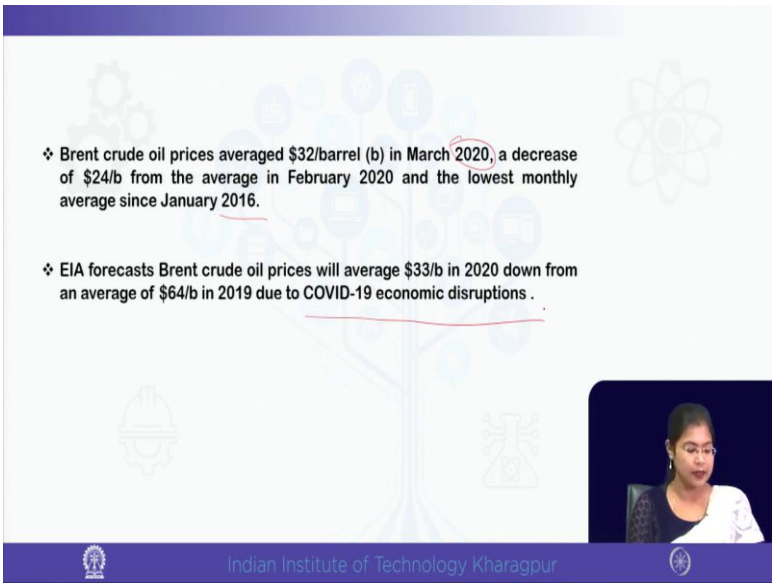

And in March 2020 then if you compare so, Brent crude oil prices average around 32 dollar per barrel in March 2020 and it decreased from February and it was in fact, the lowest since January 2016.

So, you see that in March 2020 when the economies started restricting the travel both the goods and services travel May only the essential services were provided, but the passenger transportation and transportation of goods were also restricted. Very essential goods and services were allowed. So, we see that the oil price started declining due to the demand shock.

So, EIA forecast that Brent crude oil prices would average between 33 dollar per barrel in 2020 and which will be less than the 2019 value due to the COVID-19 economic disruption.

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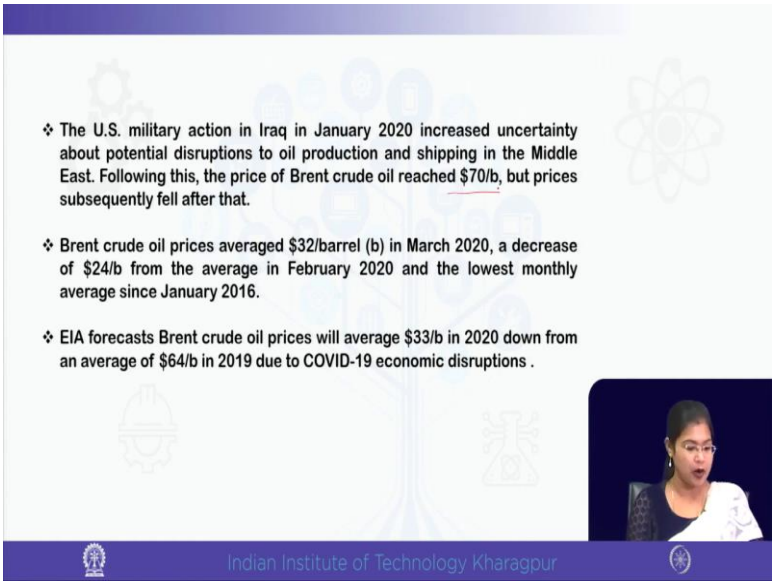

Now, we are looking at the events in the early 2020 now because we need to know what was going on before just during the starting point of the pandemic at the lockdown measure.

So, what we can find is that the US military action in Iraq in January 2020 that increased the uncertainty about the potential disruption to oil production and shipping to the Middle East and the price of Brent crude oil reached around this 70 dollar per barrel.

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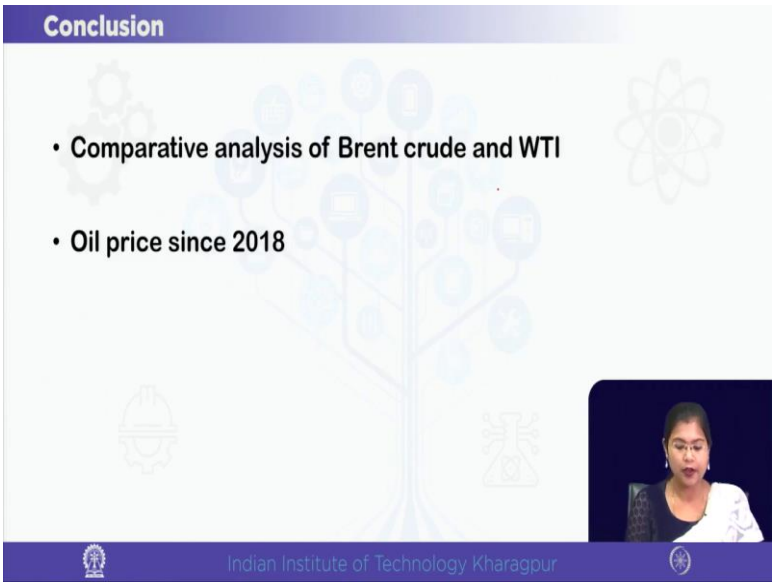

So, here what we have discussed is that we compared the oil price of Brent and WTI and we first what we did we made a comparative analysis of the Brent and WTI we discussed from the point of view of their chemical composition, their gravity index and then we discussed the oil pricing and from the nature of the Brent and WTI crude oil we saw that Brent crude oil is found very near to the coastal line therefore, the cost of shipping is less whereas, the WTI is mainly extracted in the landlocked area.

So, the cost of shipping is higher for WTI and that had two implication, so when there is a demand side fall. So, the storage cost of WTI oil will be greater than the Brent one because we cannot deny the fact that the developed the Middle East countries are well endowed with oil that is their natural source of comparative advantage.

And the second implication of that it also implies that, since India follows the Brent pricing because India mainly imports oil from OPEC countries and some non- OPEC countries like Russia. So, and those countries follow the Brent crude. So, in India when the WTI price became negative.

But we could not access that because we follow the Brent not the WTI and after discussing the comparison between WTI and Brent we looked into the oil price movement since 2018 to the COVID-19 pandemic, we will be discussing more in depth about the impact of the pandemic on the oil market and we will also be discussing the very recent Russia- Ukraine war impact on the oil market in our upcoming classes.

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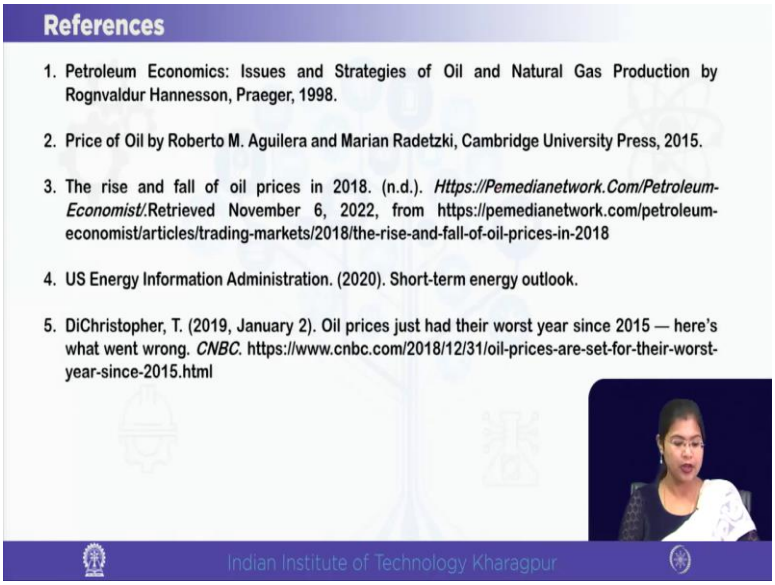

So, here we have followed the standard Petroleum Economics book, but of course, these books are a bit older. So, we have to rely on more recent sources for this topic. So, you can see we can we have mentioned all the sources, research papers and the reports and those will be provided to you as additional study materials. So, those who are interested they should go beyond the PPT and study these papers.

So, with this I finish today's lecture and we will be discussing the impact of COVID-19 pandemic and the Russia- Ukraine War on world oil market in our next lecture.

Thank you very much.