

# SYNERGY

Bilkent Energy Policy Research Center Newsletter



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## No Good News For Energy Demand

The good news is rare these days. The global economy is slowing down for sure. OECD's leading indicator CLI shows that India, China, Germany, and OECD as a whole are heading for tough autumn. CLI may signal the downturn for another three months. What can be the implications for energy markets?

If everyone is pretty sure that a downturn is inevitable and we are entering into a recession, then there is less to worry. But as the geopolitical uncertainties combined with climate emergency and increasing unemployment in the developing countries is like a perfect storm waiting for food prices to rise.

The question now is the timing of the global recession and the duration of it. Already the energy investments are not in their best shape. A prolonged slow-down or lower than average growth may impact producer countries, especially in the MENA region.

What is more worrying is, the economic order of the day for the developed countries is set to change. Whether it is Brexit, tariffs, or industrial growth, the world is in the transition to a much more complex environment.

On the crude oil side, OPEC cuts may not be enough, and OPEC countries may not have deep pockets to survive in a prolonged downturn. Like China, increasing employment may be hard to sustain. OPEC discipline may suffer from domestic pressures. The timing of all these events will be necessary.



A recession or a crisis in autumn and winter is different than a crisis in spring or summer.

On the gas side, lots of FIDs have been closed for LNG. That translates to new investments for the next 2-4 years as Sohbet Karbuz claims in our podcast. Asian economies may be the primary destination for LNG demand growth. But having all these future economic troubles may hit the LNG sector hard. History hints us that the diminishing returns will increase efficiency. That may result in lower costs in the capital and operational expenditures in the mid-term. But not now.

One troubling question is the inter fuel competition and coupling. Instead of curtailing renewables, can we convert the electrons into gas with power to gas projects? Can hydrogen be a new energy carrier, for real this time? This coupling may tie the fate of renewables and natural gas together and even their prices. Can there be any TTF based renewable

contracts in the future? It may be an exciting thought exercise...

But one troubling question remains. What will happen if another recession strikes economies? One thing for sure. The priorities will change. Investments will be hard hit again. The producer countries will try to balance their budgets. Unemployment will be a significant concern. The stability of the current energy system will be questioned not because of climate emergencies but because of fundamental shifts.

This whole story is not new or unprecedented in world energy history. The question is, who will be the winners and losers this time? How there winners and losers will affect consumers globally? My understanding is that we are heading for a downturn and then with plenty of upward volatility to follow. If I may be mistaken, a brief recession or stability with the regrowing world economy is carrying just one significant risk. That is the undersupply resulting from under-investments in the last 3-5 years.

There is one big possibility that energy demand may have slowed down forever with increasing electrification and renewable investments. Can energy demand peak, or are we again falling under the influence of "end of growth" narratives?

There is a lot to speculate on. For now, we should keep our eyes on economic growth.

Bariş Sanlı



## Bill Gates vs. The World



We all know Bill Gates as the guy who broke the rules of getting rich by accumulating a fortune of more than 100 billion dollars thanks to his success in Microsoft. But he and his wife ventured towards saving the world and founded the Bill and Melinda Gates Foundation in the year 2000. They have fully equal say in the decision-making process, different from Microsoft. Today, the foundation has more than 50 billion dollars in the budget, and it is growing every day.

Gates Foundation focuses on many world problems at once. They are eliminating polio. They started a campaign to vaccinate every child born in Africa. Problems arose from terrorist groups in Africa, forbidding the foundation from entering their territory and even killing some of the people working for the foundation. Therefore, the foundation couldn't reach its goal of eliminating it yet, but they aren't giving up. There were only 33 reported polio cases worldwide in 2018, decreasing drastically from 350,000 in 1988.

The foundation also focuses on a topic that doesn't cross ordinary people's minds when they talk about world issues; toilet. In 2011, they started working towards the 2.5 billion people who don't have access

to safe sanitation. They aim towards inventing a bathroom that is low in cost, operates without any water, sewer, or electrical line connection, desirable to be used in developed countries as well, removes germs from human waste and recover water and energy.

The actual effects of lacking safe sanitation are astonishing and very scary. It is effortless to get diarrhea from an unclean environment, and diarrhea causes 1.8 million deaths per year consistently throughout the world. According to the CDC, diarrhea causes 2195 child deaths every day, and 1 in 9 child death is caused by diarrhea even though it is a preventable problem with enough funding. To encourage and urge scientists to work on this issue, the foundation awarded a grant to 16 research groups from various universities. To compare the results, they have hosted "Reinvent the Toilet Challenge" with a prize of 7 million dollars. One of the projects even produced drinkable water, and Bill Gates has poured and drank from it.

In my opinion, the essential innovation from them is TerraPower. It is a nuclear reactor design company founded by Bill Gates in 2006. After they started seeking atomic energy, troubles came with it. Because of the potential environmental catastrophes that could go with it, public opinion on nuclear power is not envied. After the Fukushima disaster, TerraPower came up with a design immune to environmental catastrophes. But, the most exciting feature of their reactor is its fuel. TerraPower found a way to use depleted uranium from other nuclear reactors to fuel their design. According to their data, the US currently hosts 700,000 metric tons of depleted uranium, and only eight metric tons of it could power 2.5 million homes for a year. Sadly, to achieve that, they have to start building prototypes around the globe. Even though they made a deal with China to build a prototype there, the project had to be abandoned due to the trade limitations implemented by the Trump administration in January 2019.

Canberk Taze

## History of the Seven Sisters

The Seven Sisters (oil companies) is a classification named by the Enrico Mattei who is an Italian politician for the seven giant oil companies that managed the oil industry worldwide until the 1970s. The company names of seven sisters are; Anglo-Persian Oil Company worked between 1908-1954 after that they became BP, Gulf Oil run within these years 1901-1985 after this year purchased by Chevron, Royal Dutch Shell, Chevron, Exxon later joined with Mobil, Texaco (1901-2000) acquired by Chevron in 2001.

The traditional period starts with the Seven Sisters giant oil firms as the authoritative strength in world petroleum businesses for the decades after World War II. Royal Dutch Shell, British Petroleum, Gulf, Exxon, Mobil, Texaco, and Chevron, the cartel operated authorizations to oil in sovereign nations with plentiful petroleum sources (Sampson, 1975).

Permission gave a private power to explore for oil in countries area, along with the liberty to explore and making production any oil that was discovered (Wagner, 2009). In the oil market, the firm supplied a division of the earnings in authorities to the country in which they worked.

This adjustment proffered the Sister's attribute powers over oil in Venezuela and newly named OPECs countries, and end of 1950, the Sister's cartel maintained a 98.3% exchange portion of world petroleum production (Engen, 2009). BP, Chevron, Mobil, and Shell are remaining today, and we can say that they are the big four for the oil industry of today's world. As for why this description is accepted;

After the 1940s, these seven big companies built a cartel that provided more than 83% of world oil production and became an oligopoly for the oil industry. They are in steadfast competition with each other, but when the rise of another company comes together, they blend and threaten that company. These companies could be termed a stop at least partially with the later OPEC countries.

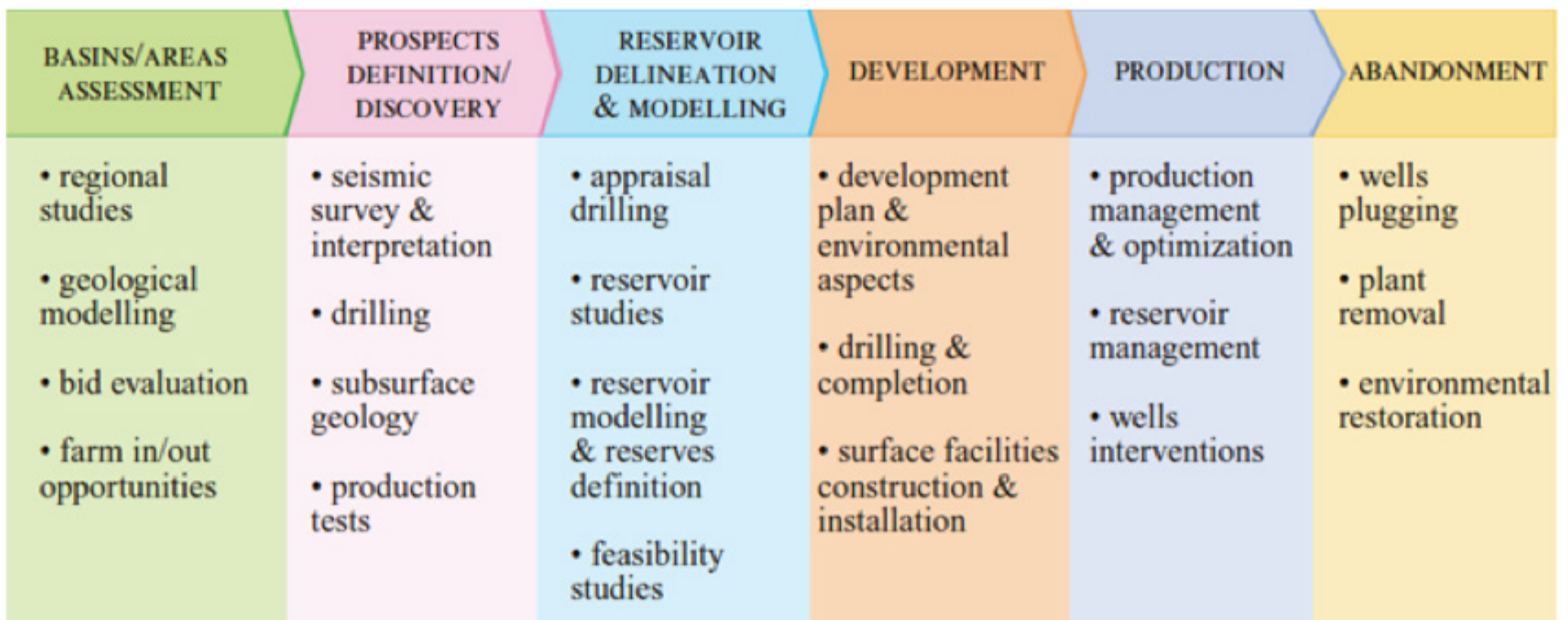


According to the freshest statement of the Financial Times, cartels of this century; Shell, Exxon Mobil, Chevron, BP, as well as four major oil giants, as well as Total and ENI. However, especially in recent years, non-OECD countries have included China National Petroleum Co. (CNPC), Gazprom Russia, ConocoPhillips, Petrobras Brazil, Petronas Malaysia, and Saudi Aramco. However, the share and support of the four major oil giants among these companies, which have achieved significant progress in recent years, is not known. Some energy experts claimed that new companies' growth occurred with the help of seven sisters.

These seven sisters, who established the international oil industry for nearly a century, developed them through incorporations, takeovers, and incorporations and brought them to the present day, have a higher income than the gross national product of many other countries, and the tonnage of the tankers they possess is higher than the naval forces of many nations.

Baran Can Yücel

## The Tale of Oil&Gas Part 2: Exploration



In the first part of this series, I've tried to explain the processes that make up the oil and gas underground. In this part, I will be trying to give information about how we determine where this oil and gas is accumulated.

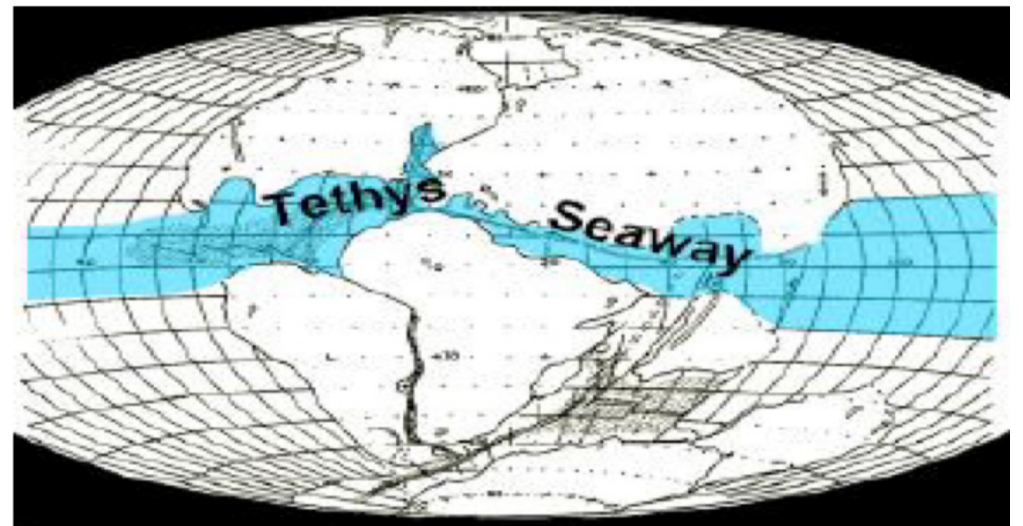
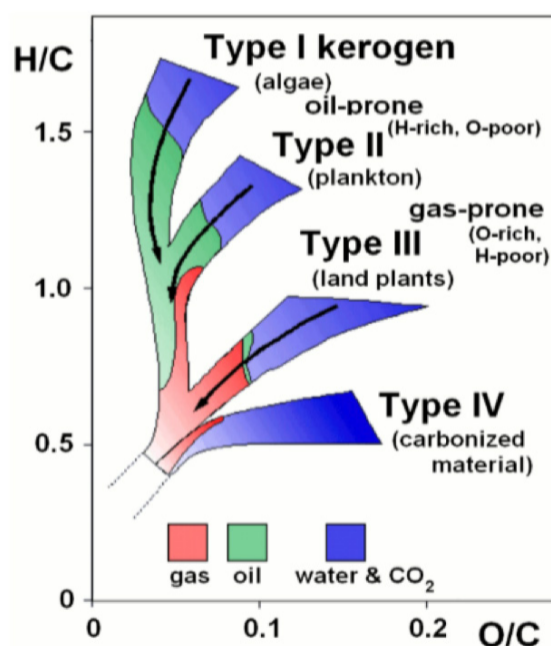
The so-called magic 5 of exploration are;

- 1)Source Rock (OM%, kerogen type (origin of that organic matter), etc.)
- 2)Reservoir (porosity ( $\Phi$ ), permeability ( $k$ ), thickness ( $h$ ), etc.)
- 3)Heat (Oil Window temperatures)
- 4)CapRock (Shales, evaporites, etc.)
- 5)Trap (has to be ready before the accumulation)

The plate tectonics theory built on the continental drift (2-10 cm/year) theory by Alfred Wegener shows that nine major plates with many other smaller ones that make up the Earth's surface are in constant relative motion caused by the convection in the mantle.

This heat convection causes uplifting, and subduction, basically hot material near the core rises while cold mantle rock sinks.

By paleolatitude (the north-south coordinates in the past), the zones which are thought support life and, therefore, with the potential of having today's petroleum geologists know source rocks. Furthermore, the visible signs on the surface (seepages, stratigraphy, structures) hint the place to search for based on the principle of uniformitarianism (today's occurrences result from the same dynamics of the past).



For example, you can see type 1 kerogen algae as green debris on the water surface or type 2 kerogen might be observed as moon-light reflecting on murky water behind a ship. Seepages are especially crucial for marine exploration activities since the sea bottom can not be seen directly with the eye.

Before the seismic tools were developed, the explorers just looked for the anticlinal traps on the surface, thinking there might also be one underground, drilled, and just hoped for the best (creekology).

Since today's technology is far more advanced, modern tools are used to analyze and interpret the petroleum systems. Many logging devices, gravimeters, magnetometers, and seismic instruments have been developed. However, the human factor is still the essential aspect of the whole process is open to different interpretations.

An experienced, sensible petroleum geologist is priceless, and when he demands that you drill, you better be drilling. In the third part of The Tale of Oil&Gas, I will try to explain how reserves are classified and what is the current situation right now.

Hasan Gürsel

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Publisher: Bilkent Energy Policy Research Center

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