

SYNERGY

Bilkent Energy Policy Research Center Newsletter



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Potential Game Changer Memorandums Signed Between Libya and Turkey

Last week, two memorandum of understanding was signed between Turkey and Libya on maritime boundaries and military cooperation. These memorandums carry particular importance for Turkey on preserving its strategic rights in the region. One of the memorandums defines the Exclusive Economic Zone of Turkey with its maritime neighbor Libya. A most important benefit that Turkey will get from the agreement is that a shield will be formed for Turkey in the sea from Greece, Greek Administration of Southern Cyprus, and Egypt. Hence, it can be argued that some equations might potentially change in the region.

As already known, in the region, there is an alliance between Greece, the Greek Administration of Southern Cyprus, Egypt, Israel, and Italy. Additionally, the project named East Med is signed in which Turkey is not included. Thus, it is clear that these countries make policies that aim to keep Turkey out of the region. The biggest problem in the area derives from the unilateral decisions that the Greek Administration of Southern Cyprus takes, such as announcing Exclusive Economic Zone.

Unsurprisingly, after the memorandums were signed between Libya and Turkey last week, both Egypt and Greece objected to it. As a response to Greece and Egypt, the Republic of Turkey Ministry of Foreign Affairs spokesman Hami Aksoy stated that "Through this agreement with Libya, the two countries have manifested their intention not to allow any fait-accompli (in the eastern Mediterranean)." The terms of the memorandums are yet to be known. Greece summoned the Libyan ambassador to uncover the contents of the memorandum between Turkey-Libya concerning territorial waters. If it does not happen, in the diplomatic resources, it is stated that it will start expulsion procedures. It proves the importance that the memorandums carry concerning the geopolitics of the region.

Turkey already protects its rights by having seismic research ships and drilling ships in the region. Also, with these two memorandums that are signed currently, the preservation of the rights of Turkey will be consolidated as the deal will determine the limits of the maritime jurisdiction of Turkey within the framework of international law. The Foreign Affairs Minister of Turkey Mevlüt Çavuşoğlu stated that Turkey has the right to negotiate with every country in the region about jurisdiction areas under its rights deriving from international law. It is also important to mention that Turkey mentioned its support for a political solution for building a democratic, stable, and wealthy Libya.



Engineering the Narrative and Hiding the Reality

For the past couple of weeks, I am following British ESO Control Room (@NGControlRoom) accounts tweets. They are publishing the percentages of low-carbon energy resources in the British electricity. Nowadays, when you add up wind and solar, it doesn't add up to 15%. Gas is on the rise again.

IEA has published some estimated costs regarding renewable gas. Hydrogen costs 12-25\$/mmbtu and biomethane around 10-22\$/mmbtu. In countries like Turkey, biomethane costs may be lower due to cheap feedstock. Another graph from the same page (WEO2019), shows the amount of permitted hydrogen in the gas grid by countries. France has the highest limit with 6%, Germany's limit is 2%. Under certain circumstances, it gets to 8%.

One other interesting story was from Georgetown, Texas. The city achieved 100% renewable energy by 2017. But last year customer bills increased and now the people don't look happy. The reason is not so simple. One explanation claims that the city over contracted its energy needs and had to sell excess energy in the spot market. Low natural gas prices in Texas caused losses when excess generation from low carbon contracts was sold in the spot. Al Gore also hailed the city.

The renewable success of Texas can be attributed to George W Bush. His support for wind generation has paved the way for more wind generation in Texas. On the other hand, Barack Obama has hailed himself as the enabler for shale gas and oil.

What is the biggest threat to the rise of renewables? It is a technology that enables us to recover resources from shale and tight rocks. Fracking has lowered oil and gas prices worldwide. The lower oil and gas prices are rendering all alternative options in clean energy to unfeasible for the time being.

Varun Sivaram, in his book "Taming the Sun" gives examples of how cheap Chinese solar

panels destroyed alternative solar technologies. Startups crashed, new photovoltaic technologies came to a halt.

Three years ago, China was hailed as scrapping 100 coal projects. But in the last two years, it installed 43000 MW new coal plants. Recently there are political narratives that fuse coal and energy security back again in China. On the other hand, there is a significant slowdown in solar. This will impact world renewable and solar growth too. Back to coal and retreating from solar will hamper the climate change efforts.

In all these examples, what I see is the beauty of a narrative that captivates us with numbers but numbers are not matching those narratives. The future, like everything else, is a mixed picture. Britain is not producing 100% clean electricity, green gas is not cheaper, 100% renewable cities are seeing backlash from higher bills, not only low oil and gas prices are a problem for clean energy tech but also cheap clean tech is problem for innovation, China's energy picture is not what it looks like....

Practically no economist has seen the 2008 economic crises as coming. Despite all these models and genius in the field, forecasting is difficult. But this trauma of past failure is causing economists to overpredict the next crises. I fear that this sentiment is infecting the climate change discussion as well. This pushes the private entities to engineer their narratives and statistics as if they are the greenest of all. This creates a veil that hides the ongoing reality.

The next wave of cleantech will rise with increasing oil and gas prices, that is for sure. But R&D and financing are not where it should be. Political pressure is not helping. European targets are getting determined on a broader horizon (20-30 years instead of 5-10), so practically postponing the significant changes to the next governments. The engineering of narratives to create an illusionary "change" is getting short of the reality we are facing.

Vision 2030: Saudi Arabia's Safe Way Out



Saudi Arabia is a country in the middle east, with 18% of the proven petroleum reserves in the world. It also is the biggest exporter of oil, carrying responsibility with 16% of global oil exports. It is no easy job and comes with the trust, but thanks to them owning the biggest company in the world, Saudi Aramco, they can get the job done without trouble. Aramco has been 100% state-owned since its founding in 1933, but that will change on the 5th of December, 2019. Aramco is now preparing for its upcoming IPO, which has been postponed on more than one occasion. They will sell 1.5% of their total stocks. But why would the government and the company change their business plans all of a sudden?

"Vision 2030" was first announced by the Crown Prince Mohammad bin Salman on the 16th of April, 2016. It is an extensive plan about the actions their government will take by certain checkpoints until 2030. It is mostly due to the very oil-dependent economy of Saudis, and the Crown Prince is trying to change that. The plan's objective is to reach and exceed world standards socially, economically, and culturally.

To achieve this, they will require the funding and investments of other nations as well, although the social changes in Saudi Arabia helped with easing the investors. The murder of Jamal Khashoggi inside the Saudi Arabian Consulate in Istanbul has shifted the lately positive views towards the Crown Prince and Saudi Arabia. Also, following this, the economic growth rate took a hit in 2018, and Saudis still haven't been able to recover. Saudi official unemployment rate for Saudi citizens is 12.3% as of the Second Quarter of 2019.

There are currently 1.5 million workers in the retail industry, among which only 0.3 million are Saudi nationals. Even though the 2019 budget was the highest ever, Saudi Arabia will grow 1.9% in 2019, close to predictions of IMF. According to Business Insider, foreign investment is now a twelfth of what it was before. Although with a GDP of 640 billion USD, Saudi Arabia is the largest economy in the Middle East, investors don't seem convinced because of the shaky economy and poor ethical standards.

Vision 2030 has a variety of branches to stabilize their economy without the dependency on the oil. As we know, when Aramco sustained substantial damages after the drone attack in September, their oil production was reduced by 50%, and 9 dollars increased oil prices in a day because of the monopolistic effect of Saudi oil. To prevent that from happening again, Crown Prince's plan to diversify the economy will help them and the rest of the world. To achieve this, investment gained from the IPO (approx. 25 billion dollars) will be used for various markets countrywide.

Among the proposed programs, ones related to the economy look very promising if it can be met. The Fiscal Balance Program pledges to remain the current tax levels and not to impose any more financial impositions to its citizens or the private sector, not to impose income taxes on its citizens and not to impose corporate income tax on its corporations.

Their Privatization Program hopes to unlock state-owned assets for the private sector and privatizing some of the government services. According to Saudis, this will contribute to the GDP by 3.2 billion USD and create 10.000-12.000 jobs. Their Public Investment Fund aims to be the largest sovereign wealth fund in the world, which will be, of course, funded by the government. As part of their 2020 commitments, the Public Fund will generate 20.000 direct jobs and contribute to the GDP by 49 billion USD.

As part of their Financial Sector Development Program they are hoping to achieve; increasing the share of capital markets assets from 41% in 2016 to 45%, opening the Financial Services sector to emerging players (i.e., FinTechs) to spur innovation and growth, fully comply with international standards related to financial stability, increasing the share of non-cash transactions from 16% in 2016 to 28% by 2020, to raise the share of non-oil exports in non-oil GDP from 16% to 50% and lastly, to increase non-oil government revenue from USD 43 billion to USD 270 billion.

These innovative approaches have immediately eased investors. They have helped with growing their economy in the short run, but with the constant political tensions in the Middle East and diplomatic crisis, it's hard to maintain the trust in the long term. That is why the Aramco IPO will be speeding up the funding of Vision 2030. Instead of expecting foreign investors to fund their efforts, they will be using the biggest company in the world. Al-Falih, Minister of Energy, Industry and Mineral Resources, and Chairman of Saudi Aramco's Board of Directors noted that Saudi Aramco would take center stage in helping to implement Vision 2030. Al-Falih described the transformation taking place in Saudi Arabia as being both bold and visionary, and in step with a changing world, an evolving global economy and said as Saudi Arabia diversifies, so will Aramco.

This is a win-win situation for both the investors and Saudi Arabia because investors are rewarded with an annual 75 billion USD in dividends which is subject to increase after the IPO, and Saudi Arabia is given a chance to diversify their economy for the long run after the precious natural resources run out, better be safe than sorry.

Canberk Taze

BRENT OIL

61.81 \$/BL

GASOLINE

6.94 ₺/LT

USD/TRY

5.76

DIESEL

6.53 ₺/LT

EUR/TRY

6.34

FUEL OIL

3.85 ₺

Oil Dependence and Transmission to Renewable Energy

With the increasing concerns on the environment, the governments are looking for the energy resources that harm the nature less. While the oil consumption levels in the developed countries are beginning to decline, the investments are more directed in the renewable energy sector. Of course, this shift, whether it is real or it is an intention, has impacts on the way if we think about geopolitics, economics, and international relations. In this paper, first, we will focus on the declining oil dependence and its implications on both political and business level and then analyze the transmission process to renewable energy by providing real-world examples.

In the article, *The challenges of decreasing oil consumption*, Yettiv, and Fowler claim that in 2009, the Obama administration in the United States had decided to act more responsibly towards the global warming problem. Of course, the price of oil, that was around \$145 and the burden of the Global Recession, also might be motivating this policy, but the official concern was the environment.

The problem of oil dependence in the United States had different dimensions. One of them was the excess usage of personal vehicles that increased U.S. oil consumption enormously. To solve this problem, the United States invested in hybrid cars that can use both gasoline and electricity as fuel. Introduction of Tesla to world played an exciting role in this transmission, and many major car companies such as Toyota, Volkswagen, BMW began to produce hybrid cars. However, the transmission process is not as easy as it seems because, as the number of hybrid vehicles grows, the electricity demand also rises. The existing infrastructure of the electricity capacity is not ready to support this transmission alone. So, significant renovations policy in the electricity sector is also required for Americans to use more environment-friendly vehicles. When it happens, the primary concern will be the source that is used for generating electricity. If they choose to use coal plants for electricity production, which is a growing sector in the United States since the Trump administration took office, then the transmission would not generate the expected outcome.

Furthermore, even though the United States decreases oil or other carbon fuel consumption, other countries will still use these products in their vehicles. The growing demand for cars in China might eliminate American efforts to decline pollution levels as well. In 2009, these two countries signed an agreement on cooperation in electric vehicles. The U.S.-China Electric Vehicles Initiative aims at accelerating the deployment of electric vehicles to reduce oil dependence, cut greenhouse gas emissions, and promote economic growth. However, the approach to environmental concerns of these two countries is slightly different. For China, the main goal is to build and sustain the biggest economy in the world. Therefore, any additional cost that would



Lithium Mine In China

slow down this mission is unacceptable for them. In that period, their loan agreements with countries that are oil exporters like Russia and Venezuela provided them high amounts of oil. As the oil prices declined, they received even more oil and fed their economy by building industrial zones, highways, and other significant infrastructures. Therefore, they established their dependence on oil. On the other hand, investments in different oil fields around the world decreased the economic burden of this dependence. Of course, the Chinese government also made significant investments to renewable energy in this period as well. Some parts of the economic surplus spent in this area to ensure alternative energy sources for the Chinese economy. Despite the accusations, Germany, for technical information theft on these products, by 2016, China managed to control the renewable energy sector by becoming the primary producer, consumer, and exporter of the wind turbines and solar panels. China also has a clear lead in terms of the underlying technology, with well over 150,000 renewable energy patents as of 2016, 29% of the global total. The next closest country is the U.S., which had a little over 100,000 patents, with Japan and the E.U. having closer to 75,000 patents each.

The main advantage of China is to have critical material sources in their lands. Since they have environmental and labor laws that are less concerned with human life compared to the developed countries, they can extract these mines comfortably, and it affects their production capacity. While it increases their power in the global energy sector, it also creates negative externalities on the environment. Therefore, even though renewable sources such as wind turbines or solar panels offer environmental-friendly energy, the production of these products is another concern for nature. Today, the main interest in





renewable energy is decreasing the cost, and from 2011, the prices declined more than 50%, and it is expected to go down in the upcoming years as well. In the future, decreasing the negative externalities on the production of these tools will be the main problem.

Among China and the United States, many other countries are also working on developing renewable energy technologies as well. According to Bayülgen and Ladewig's study, political systems that have fewer political constraints have fewer access points through which powerful status-quo veto players can slow the progress of clean energy reforms. Therefore, the stance of the governments and the major companies of the country play a significant role in determining the incentives for renewable technologies. For example, in Germany, between 2005 and 2015, investors poured over €150 billion into renewable energy. Energy companies and utilities, households, farmers, energy co-operatives, municipalities, banks, and institutional investors all provided capital to renewable energy projects, relying upon a policy that offered reliable revenues, attractive returns, and certainty. Since the cost of renewable energy was often higher than energy from more conventional energy sources, the policy was needed to plug the gap between renewable energy costs and the prevailing market price for electricity. However, the German economy was in good condition, and the government was able to finance the project. In 2012, they were giving a solar subsidy of 55 Eurocents per kilowatt-hour, which was way above the actual cost, and it helped companies to work comfortably on developing their technologies. As the prices began to decline and the structure of each renewable sector began to shape, the subsidies began to decrease, and it is now 12 Eurocents per kilowatt-hour. Therefore, the lack of political constraints helped Germany to become a key actor in renewable energy.

China also used the advantage of less bureaucracy in this area. They used their comparative advantage in the manufacturing sector and became the critical producer country in the world by developing many technologies, as we discussed above. These two were the supporting examples for the Bayülgen's approach. However, one additional element would be supportive of developing the strategy from a political level. It is that being able to do reforms is not the guarantee of developing effective policies. For example, in Turkey, the Turkish government that ruled by one dominant political party implemented an incentive mechanism called YEK-DEM to support the producers. Like Germans, the Turkish government also gave incentives well above the market price, and many companies decided to go to this sector. The profit was highly expected, and even textile companies that suffered low profits chose to go in geothermal and wind turbine businesses. However, they were not working efficiently, and most of the Turkish companies used the capital to import the materials from countries like Germany and China and implemented their system to Turkey. With this operation, the role of renewable energy in Turkey increased, but when we think about the decreasing costs of producing these tools, we spend much more than we should. In the next year, according to the agreement, like Germany, Turkey will also decrease the incentive amounts, and now the companies are eagerly demanding to extend the current conditions for a few years more. According to their statement, many of them will be out of business if

the government would not continue to support at the current level.

On transmission to renewable energy, I will lastly discuss the geopolitics side of the story. According to Paltsev, the rise of renewable energy may also create new centers of geopolitical power. He claims that as renewable resources become widely distributed, the supply-side of geopolitics is expected to be less influential than in the fossil-fuel era. From my perspective, this argument can be both right and wrong. First of all, if the world can build an energy grid system that connects every country, then we would be able to buy our energy from any selling country and sell if we have excess supply to one that needs. However, this can only happen if there won't be any power struggle between states, and that has never occurred in history before. Paltsev approaches to issue from the following way: instead of focusing on oil and natural gas, low-carbon energy geopolitics may depend on many additional factors such as access to technology, power lines, rare earth materials, patents, storage and of course unpredictable government policies. Here, I think the rare earth materials will be as much necessary as oil and natural gas in the future. The countries that they have these materials will have leverages against the buyers. As it is stated in the article, lithium prices increased from \$7000 to \$20000 in one year countries that can provide these materials will have the upper hand and geopolitical importance. Even though after implementing the system, it would provide clean energy but, the maintenance of these tools will create additional costs and demand for these products so that it will be a different type of energy dependence.

Overall, we see that with the growing concerns on the environment, the countries perceive oil as a problematic product for nature and try to direct their sources to renewable energy materials. However, the political, economic, and technical aspects of this transmission create new problems and questions for humanity. I believe that this progress will have a massive impact on 21st-century politics, and the technological improvements will determine which location to be geopolitically important.

Gökberk Bilgin

References

- Bayulgen, O., & Ladewig, J. W. (2017). Vetoing the future: political constraints and renewable energy. *Environmental politics*, 26(1), 49-70.
- Bazilian, Morgan D. "The mineral foundation of the energy transition." *The Extractive Industries and Society* 5.1 (2018): 93-97.
- China Is Set To Become The World's Renewable Energy Superpower, According To New Report. Accessed November 7, 2019. <https://www.forbes.com/sites/dominicdudley/2019/01/11/china-renewable-energy-superpower/#6680197a745a>.
- Colgan, J. D. (2014). The emperor has no clothes: The limits of OPEC in the global oil market. *International Organization*, 68(3), 599-632.
- Paltsev, S. (2016). The complicated geopolitics of renewable energy. *Bulletin of the Atomic Scientists*, 72(6), 390-395.
- Nelson, David, Matthew Huxham, Stefan Muench, and Brian O'Connell. "Policy and Investment in German Renewable Energy," 2016, 12.
- Yetiv, S. A., & Fowler, E. S. (2011). The challenges of decreasing oil consumption. *Political Science Quarterly*, 126(2), 287-313.

Operation Mediterranean Shield – Part III: The Hellenic Navy and Eastern Mediterranean in-depth

For Greek national security authorities, the development of a robust naval power is a principal defense planning objective. If not, it's already the primary one. Historically over the last three decades, the air forces and navies of Greece and Turkey periodically engaged in dogfights and naval escalations over the enormous Mediterranean basin on the military control of some geographical regions disputed by both parties. And at times, these escalations transformed into crises pushing the two NATO allies on the brink of war, as seen in the Kardak (Imia, for Greek) islets in 1996 which the crisis was defused with the United States stepping in.

To get a full glimpse of the day-to-day activities of the Hellenic Navy in the region, it is crucial to understand the naval inventory. Especially in regards to hull design and equipment used by both states are almost identical, which renders both sides from technological superiority and using this as an advantage. Therefore, two important aspects come forward. One being the modernization programs of both states and the force composition and formation of Greek Navy to understand what particular military importance is given at strategic and operational levels to counter Mediterranean Shield which had gained international recognition just recently when the Turkish Navy (DZKK) announced on November 24 that Jordanian and Pakistani navies joined the Operation Mediterranean Shield as observers. It comes as a surprise to many states in the region because although observant participation in military exercises is quite frequent and encouraged, this is the first time two friendly countries actively provided personnel to observe an ongoing operation underway by the Turkish Navy.

Now back to our primary topic on the nature of force composition concerning activities in the Eastern Mediterranean. Within the Ministry of National Defence, structurally both in terms of resources and workforce, the Navy ranks as the second-largest service branch after the Land Forces. There are four main strategic-level commands in DZKK; Turkish Fleet Command, Southern Sea Area Command, Northern Sea Area Command, and Naval Training and Education Command. Hellenic Navy's strategic-level command functions, however, differ from that of DZKK's by having its regional commands at the operational level, not as strategic-level commands subordinate to central headquarters.

In diplomatic situations that require military power to support foreign policy objectives, a state needs to have an excellent military picture of the geographical area in question, which for the energy crisis in Cyprus island, is an essential requirement that we have discussed at our previous issues.

Greek Navy has three regional commands subordinate to its Fleet Headquarters which is one of the three main command posts of Greek Navy. Within that structure, the authorities mentioned above are designated and given responsibility for the following regions; Northern Greece, Aegean, and Ionia. So there is one command assigned for the western shores of the country, including the Corfu Channel near Albania, and the remaining two are given jurisdiction on the Aegean Sea, including areas that Turkey recognizes as international waters. DZKK, on the other hand, basically has two regional commands; Southern Sea Area for the Mediterranean and the Aegean Sea and Northern Sea Area for the Black Sea and Turkish Straits. Regional authorities in the Turkish Navy are kept at strategic-levels, to begin with, meaning that unlike the Greek Navy they are not subordinate to any existing strategic-level command such as fleet command or logistics command, and they are directly subordinate to Commander of DZKK.



Additionally, there are no existing task group formations for specific regions apart from the assets of regional commands in the Greek Navy, which relies on its Hellenic Frigates Command for that purpose. In DZKK, however, also within the Turkish Fleet Command, there are small fleet commands such as the Task Group-North, Task Group-South, and Task Group-West, which together constitute the Surface Action Group of Turkish Navy. Compared to the capabilities of Greek forces, this provides an additional workforce to DZKK and augment its ability to quickly reinforce its assets in the region by having high readiness task groups explicitly assigned for the given areas.

Having no regionally assigned task units independent from its zone commands, Athens relies on the Hellenic Frigates Command (HFC) for attempts to counter Turkish naval presence in Eastern Mediterranean. HFC is the only military leadership in the Greek Navy, which openly outlines having a presence in the Eastern Mediterranean is among its tasks. HFC has three support ships to provide logistical support to overseas naval presence.

The areas contested for natural gas exploration near the island of Cyprus are very far from the home bases of these frigates. In contrast, the Turkish ships enjoy proximity to naval bases in the Turkish mainland along with a vast and newly modernized auxiliary support fleet. Greek frigates have to rely on a small number of logistical support ships to extend the durability of its presence or have to sail back to the closest base, which is at Souda Bay in Crete Island. But it is essential to remind that when compared to other naval bases in the region, including that of DZKK's, this base has a higher capacity in terms of supply and port services to support warships. It is the only deep-water port in the entire Mediterranean Sea that is capable of hosting huge ships, including the largest classes of aircraft carriers. For this reason, the US Navy also is based on the installation, which makes it one of the three bases of such kind in the world that the American aircraft carriers use for porting.

It poses a threat to Operation Mediterranean Shield because both France and Egypt are taking more active stances in the region, supporting Greek claims in the region not only politically but also by military means with participating Greek exercises in the area having an active naval presence near the island. And both France and Egypt operate a total of six Mistral-class amphibious assault ships.

For non-military folks, these are carrier ships that operate several transportation and attack helicopters along with a battalion-level marine force, armored vehicles, and several landing crafts, such vessels are known as landing helicopter docks (LHD). France, whose relations with Turkey today is seemingly

uncooperative and opposite in several areas, also possesses a nuclear-powered aircraft carrier, the Charles De Gaulle, which has a history of having ported at Greece's Crete Naval Base before. Since later 2018, France launched a naval presence in Eastern Mediterranean in support of Greece and foreign oil companies with its Ministry of Foreign Affairs citing Turkish activities in the region as the reason for deploying ships.

Long-distance to home ports significantly decrease Greece's sustainability of operations in the region because it is not a blue-water navy. Neither is Turkey meaning that they do not possess capabilities to project power and presence far away from mainland ports. It either has to allocate more resources to maintain its presence or decrease the number of frigates it operates in the region. And as mentioned above, both surface and sub-surface platforms of both navies are almost identical. Especially their submarines and frigates, this would help the Turkish Navy to have fewer Greek ships to monitor or deny access to contested gas exploration fields if the necessity arises.

To conclude, Greek Navy not only has to allocate more resources for a presence in Eastern Mediterranean, but it also has to establish supply lines to support its naval presence here which Turkey can easily cut and demobilize it due to close geographical proximity and having a sizeable fast attack craft fleet, should a military crisis escalate. But when we question Greece's supply capability for HFC, a danger for Turkey is revealed from an unexpected domain. In the foreseeable future, France and Egypt would increase its naval activities to counter Turkish efforts in the region. And if one were to comment on Turkey's relations with the two, it would be defined as hostile and increasingly getting worse and crisis-prone.

Although Egypt is as close as Turkey to the island, enjoying a quick reaction time for force presence; its fleet is aging but it has launched an extensive modernization plan over the last years by procuring from France with Saudi financing and as we mentioned it operates two Mistral-class LHDs which can be a launching point for several reconnaissance helicopters that can be used to support Greek Navy on formulating a naval picture, including the east of Cyprus and as well expanding Greek Navy's search grids for tracking down Turkish submarines operating in the region. France, on the other hand, has a more advanced navy than Turkey, and in addition to LHDs, with its aircraft carrier, it can drastically increase the scope of Greek naval operations in the region. But for French Navy, De Gaulle is the flagship of France and its only aircraft carrier, at least on short to medium terms, it might not be considering to deploy it on Eastern Mediterranean as it is often used on either combat deployments such as fighting the Islamic State or overseas deployments as those in the Indian Ocean or the Atlantic.

Another valuable asset for any navy is its naval infantry arm, known as its marines, which can be used in Eastern Mediterranean to seize and board civilian research and drilling ships and as well as taking control of offshore oil platforms. Greece has a brigade-level marine force, the same as DZKK's. But unlike the Turkish Amphibious Naval Infantry Brigade, the Greek 32nd Marines Brigade is part of the Hellenic Army, not the Navy, and it lacks armored units such as tanks and rocket launchers allocated for its use for which it relies on army resources. In contrast, the Turkish Naval Infantry Brigade also has an armored unit. But it is important to note that its armored battalion consists of the aging M-60 Patton tanks. Still, being subordinate to Navy as a historical naval force within the amphibious task units, it has better response time, more diverse and more interoperable resources. But in this case, given the diplomatic sensitivity of such mission scopes, having a long-distance to home ports and lacking large hulled transportation ships, Athens might opt for its naval special forces for such options rather than its marines.

Turkish Navy maintains nine Naval Special Operation Task Units, publically known as Underwater Assault (SAT) under the umbrella of SAT Group Command, led by a rear admiral, which is directly subordinate to the commander of the Turkish Navy. In comparison, the Greek Naval Special Forces, however, is led by an officer at the rank of captain who is equivalent to colonel in army and when we took a look on the biographies of the current and past commanders of this unit, each of them have also received training in US naval institutions and have the US Navy SEALs trident, meaning that they are trained by the American naval commandos which Turkish Navy's SAT also has a close working relationship with.

Greek Naval Special Forces are also subordinate to Hellenic Fleet Command instead of being directly subordinate to naval headquarters, as is the case in Turkey. In the history of military confrontations between Turkish and Greek navies, naval individual operation units (SOF) often took part in almost each of them. Therefore, both Greek and Turkish naval SOFs would indeed be in the front-lines if a military crisis occurs.

Our general conclusion on the force structure of Greek Navy, its activities in the region and how it compares with DZKK shows that the Greek Navy has a more decentral and bureaucratic structure with a smaller fleet with the exception of its frigates and submarines and as well as a somewhat distant proximity to the region when its naval basing is mapped. It leaves the Greek Navy as more time and resource prone force giving Greece two options to fulfill these demands. First one is to establish and expand its political relations and military cooperation with neighboring friendly states who do not have close ties with Turkey to solve the time factor by encircling the Operation Mediterranean Shield's jurisdiction and Turkish presence in the region and to find alternative forms of intelligence support to support the efforts to formulate a maritime picture in the region. And these moves are taking place as over the last years, Greece has secured many military cooperation deals and closer diplomatic ties with Egypt and Israel.

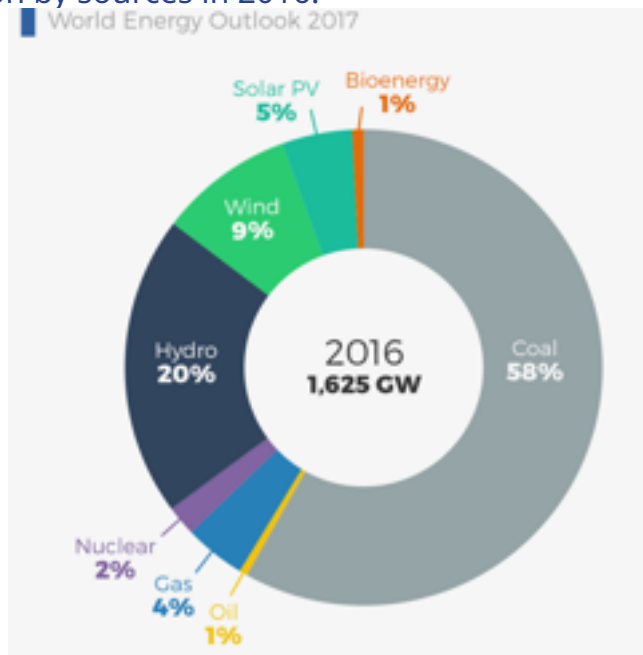
The second issue is resources. To increase its resources, and by that word, we also include military logistical resources operational levels such as having an advanced logistical fleet, the Greek Navy has to push forward a large modernization plan to counter the Turkish Navy, which has an extensive and robust modernization program on its own. For this aspect, Greece has sought the support of France on multiple forms such as defense contracting, military financing, and naval support from the French Navy with a presence in the region. It has also recently acquired light attack and reconnaissance helicopters with a lease from the US Army and last year it secured a deal to upgrade its Air Force's fleet of F-16s fighter planes with which will increase the range and scanning capability of its aircraft with the induction of conformal fuel tanks and AESA radars. This upgrade is scheduled to be for the half of the entire F-16 fleet of Greek Air Force is due to be completed on 2027. With the US decision to halt Turkey from the F-35 program, this would indeed give Greece an upper hand in air superiority unless an alternative source of supply is found to meet the modern aircraft needs of the Turkish Air Force.

On the next issue, we will be covering Greek military modernization plans to catch up with Turkish defense procurement, which has increased over the last years with many platforms such as UAVs and imperial warships not only becoming operational but also put in use to support Operation Mediterranean Shield.

Dragon's Hunger: China's Need for Energy Diversification

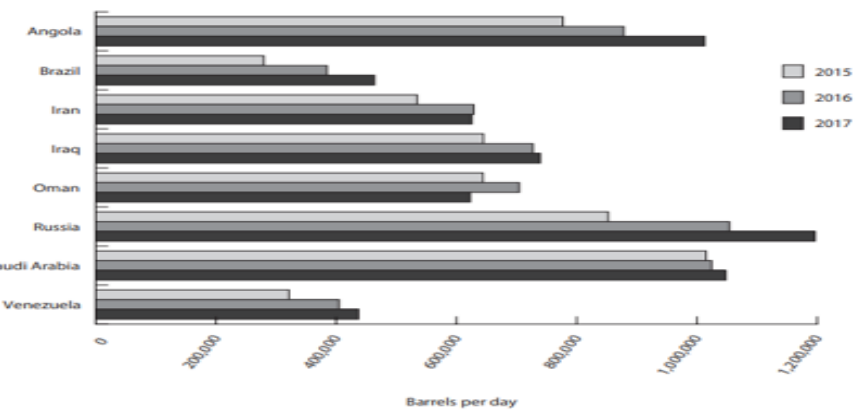
Chinese leader Deng Xiaoping's famous quote, "No matter if it is a white cat or a black cat; as long as it can catch mice, it is a good cat" marked the opening of the Chinese economy to the non-Communist world. Since the early 1980s, China's economy has grown at an unprecedented rate, with a concomitant increase in energy consumption. When we consider the limited domestic resources of fossil fuels, these transformations resulted in the PRC becoming a net importer of oil in 1993, after years of being a net exporter. The gap between China's domestic energy production and rapidly increasing consumption is expected to expand even further in the next two decades, as industrial production grows and more Chinese consumers become wealthy enough to afford energy-consuming products. According to BP Energy Outlook, China, by 2019, is the largest energy consumer in the world (22%) and the largest energy-demanding economy (in the last 22 years, with a growth rate of 5.9 per annum). However, we need to take a closer look at the supplier side of this energy consumption. I argue China's need for energy diversification in three categories, namely, in terms of sources, suppliers, and transportation routes.

Beginning with the diversification of sources, China's energy consumption heavily rests on coal, which has devastating impacts on its environment and population. At this point, China's need for energy mix comes to light, to reduce the nation's dependence on fossil fuels and contain pollution. The graph below demonstrates China's energy consumption by sources in 2016.



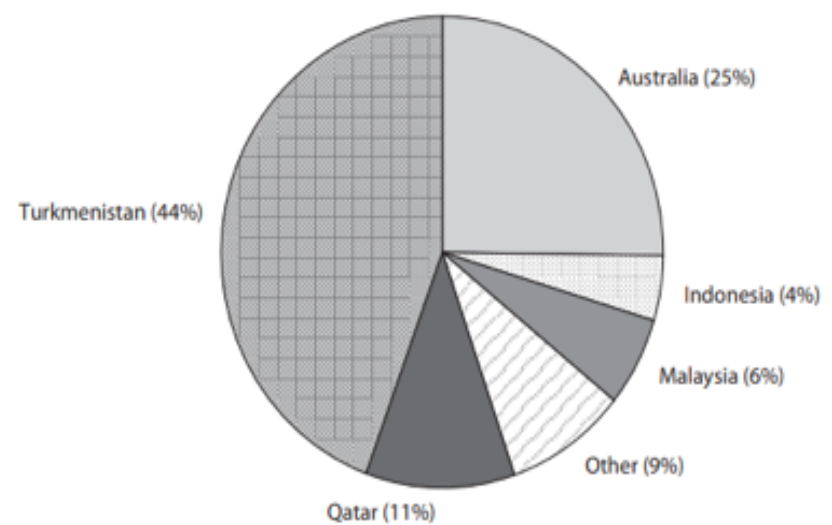
According to the Energy Information Administration (EIA), China's energy resources do not cover the PRC's growing demand, particularly for oil and natural gas. Although China has substantial coal reserves (33 percent of global supply and the third-largest reserves in the world), its reserves of fat (2 percent to 3 percent of global supply) and gas (1 percent of global supply) are extraordinarily small. In 2018, China had record oil and gas imports and remained the number one crude oil importer in the world after surpassing the United States in 2017 and is the number two natural gas importer, behind Japan. Overall, China's reliance on oil importation in 2018 accounted for 69.8% of consumption and gas imports for 45.3%, according to a report released by China National Petroleum Corporation (CNPC). The need for supplier diversification arises mainly from oil and to some extent, gas imports. China imports at least 51% of oil from the Middle East. When ongoing conflicts and their destabilizing effects considered (e.g., chronic instability in Iraq, Saudi-Persian rivalry), dependence on Middle Eastern oil may threaten China's energy security. The US sanctions on oil-rich Iran and Venezuela also narrow down the spectrum of China's oil import diversity. The graphs below show China's oil and gas imports by countries.

FIGURE 1 China's top oil suppliers, 2015–17



SOURCE: China's General Administration of Customs, reported by Dow Jones.

FIGURE 2 China's natural gas suppliers, 2017



SOURCE: "Table of China December Data on Oil, Oil Product, LNG Imports," Dow Jones Institutional News, January 25, 2018.

Finally, according to the Pentagon report, China imports at least approximately 43% of this oil has to pass through the Strait of Hormuz, and 82% of all Chinese maritime oil imports must pass through the Strait of Malacca. The map below demonstrates China's energy import routes.

From a geopolitical perspective, this overwhelming dependence on maritime transportation, and specifically on the Strait of Malacca, threatens the energy security of the country for the following reasons. China has an ongoing conflict in the South China Sea, and activities of the US Pacific fleet bear the potential of interception.

Besides, the Strait of Malacca itself presents some risks, due to intense piracy activities within the waterline and geographical setting that pose a risk of shipwreck. When relatively high costs of transporting oil and gas (LNG) through maritime routes added, China's need for route diversification, primarily through the land, appears more transparent.

Having looked at the data presented, China's need for energy diversification -by sources, suppliers, and transportation routes- appears genuine. For a country that seeks for a super-power status, by courtesy of its vast population, military, and enormous industrial capacity, energy security is of vital importance for its ambitions to come true.

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