



Effectiveness of the U.S. Sanctions on Iran

Last week, the Iranian president Hassan Rouhani announced that Iran would take another step in reducing its commitments to the 2015 Joint Comprehensive Plan of Action (JCPOA) nuclear deal by restarting its nuclear development. This statement brings new questions on the effectiveness of the U.S. sanctions on Iran. Although the limitations on exports, Iranian government displays an indifferent attitude against the sanctions. So what makes a sanction successful? Why is the United States failing to get the expected results from Iran?

According to the article, "Why Sanctions Do Not Work?", we view the sanctions as the liberal alternative to war since the First World War. However, the analysts are remaining skeptical about the effectiveness of this foreign policy tool. Many argue that the outcomes that the sanctions offer are not as decisive as the military force. Furthermore, the definitions are mostly confused by general readers.

Today, there are three main strategies of international economic pressure economic sanctions, trade wars, and economic warfare.

An economic sanction is a policy to decrease the economic welfare of a state by reducing international trade to coerce the target government to change its political action. By looking at the change in the Gross National Product (GNP) of the sanctioned country, we can see whether the policy succeeded or failed.

A trade war occurs if a state threatens to inflict economic harm or inflicts it to persuade the target state to agree to terms of trade more favorable to the coercing state.

Finally, economic warfare is a tool to weaken adversary's total economic potential to undermine its military capabilities, either in a peacetime arms race or in an ongoing war. Since the overall productive capacity creates a possibility for the military size, the policymakers use this tool to prevent possible threats. By looking at the change in the military production of the sanctioned country, we can see whether the policy succeeded or failed.

For example, if the U.S threatens Iran with economic punishment if it continues to develop a nuclear program, then it is an economic sanction. If the threat comes because of copyright infringement, then it is a



trade war. Finally, if the U.S. conducts a cyber attack on Iranian nuclear facilities, then we consider it as the economic warfare.

Robert Pape states that economic sanctions can be successful if they meet three criteria.

1. Target state conceded to a significant part of the coercer's demands.
2. Economic sanctions were threatened or applied before the target changed its behavior.
3. No more-credible explanation exists for the target's change of behavior.

Of course, applying a sanction to a country has its consequences. One of the most important of these consequences is that it triggers the nationalistic movements in the sanctioned state. Rather than undermining the government, society can tolerate the damage. In the Iranian case, public opinion shows that there is a significant resistance against U.S. policies.

Another critical issue is that economic adjustment also buys time to seek alternatives, such as other trading partners or smuggling opportunities. According to Bloomberg news, despite the sanctions, Iranians continue to supply oil to China both directly and indirectly. In the direct method, tankers are offloading millions of barrels of Iranian crude to Chinese storage tanks located in the Chinese ports. On the other hand, they also send their petroleum

by mixing it with other countries crude so it cannot be recognized. Furthermore, Iran and China agreed on developing the Iranian oil fields with the Chinese investment of \$280 billion. Another \$120 billion will also be spent on Iran's transport and manufacturing infrastructure.

With the Chinese deal, the first criteria, conceding to coercer's demands, becomes automatically violated. Moreover, Iran gained the support of China and Russia, two permanent members of the United Nations Security Council.

The announcement on restarting the nuclear development plan violates the second criteria. We see that by complying with the U.S. sanctions initially, the Iranian government bought time to adjust its economy and political situation. As they get support from other sources, they immediately returned to follow their former policies.

Alongside the economic sanctions, the military threat in the Strait of Hormuz is still a problem for the Iranians. To balance the situation, they also added military involvement to their deal signed with China. According to that, 5,000 Chinese security personnel will be located in Iran that creates a basis for the broader engagements.

Overall, the results show that the effectiveness of the U.S. sanctions remains far away from the theoretically expected outcome.

Are Algorithms the Next Gas Guzzlers?

First trains arrived then the cars. Mobility completely changed civilization, and the way energy is used. Before there were horses, afterward engines, oil companies, price volatilities, mechanization of war and soon, just as the cars pushed the human race into an era of dramatic change, algorithms may be the next “cars” or “mobility” in terms of energy usage, dramatic change and the power to shape the future. But like cars, they may be substantial energy consumers. A research claims training a single artificial intelligence (AI) system can be as five-times more polluting as the lifetime emissions of an average vehicle.

Algorithms are no stranger to us. By definition, an algorithm is “a list of rules to follow to solve a problem.” Its original roots extend to 9th-century scholar Khwarizmi from Central Asia. Today the algorithms are closely associated with computers. From video files to messaging platforms and servers, the whole internet is powered by algorithms. It is expected that by the year 2025, the communication industry alone will consume 20% of world electricity.

In the past, algorithms were mostly synonymous with efficiency, compression, and processing. But not algorithms were the same. Some algorithms just do not simplify life, and they sacrifice efficiency for other goals, such as anonymity, networking, or pattern recognition. The best example of such an algorithm is a hashing algorithm that is powering the Bitcoin and other blockchain protocols. Bitcoin alone is responsible for 66.7 terawatt-hours of global energy consumption. It is nearly 22% of Turkey’s electricity consumption.

Bitcoin algorithm is a poster child example of how algorithms can turn into energy hogs in a brief period. The core algorithm is used for solving a puzzle. When the first solver is granted with virtual mints, it becomes a race against time. As the software is run on the millions of computers and terashashers, the scale makes the innocent algorithms into energy guzzlers.

The story is not limited to blockchain or hashers. Recent AI algorithms consume increasing amounts of energy. According to the chief executive of Applied Materials, data centers’ AI workloads could account for 10% of world electricity consumption by 2025 if no innovation or efficient designs appear. Strangely enough, AI can also cut energy usages by cutting the cooling bill by 40% for data centers.



Just as the cars changed the wars performed, AI is changing not only the entertainment and financial sectors but defense and surveillance. This part of the story is not as transparent as the other parts. The massive surveillance networks, automated weapons, autonomous technologies should also be accounted for as essential energy consumers. The face recognition systems, continually optimizing surveillance algorithms, navigation systems are the known ones.

Algorithms do not only compete with cars or other sectors, but they became rising energy consumers. Recently published research claims that as vehicles become more autonomous, their energy consumption will increase. The estimate claims 10% range reduction on a highway and 30% range reduction in a city. The more autonomous driving cars appear in the cities, 30% higher gas bills are not a far fetched reality.

Optimist narrative of the story is that: There is still room for improvement. Recently the biggest carbon nanotube chip has reached 14000 transistors. In theory, these chips can be ten times more efficient. There are also improvements in the way AI algorithms work.

Is there any room for efficiency? Jevons paradox claims as to the efficiency increase, the consumption also increases. A particular example is mobile phones. The more efficient the algorithms and chips became, more power and features are embedded in these devices. So will it be the same for algorithms?

Bariş Sanlı & Ezgi Avci

Recent News on Energy Sector

Americas

- Venezuela’s oil exports fell in August to their lowest level in 2019, internal reports and Refinitiv Eikon data showed, hurt by a halt in purchases by the nation’s second largest customer, China National Petroleum Corp (CNPC), following tougher U.S. sanctions. (Refinitiv)
- Last week U.S.’ commercial oil stocks declined by 1.1% to 423 million barrels. (Bloomberg Turkey)
- Tullow makes first oil discovery on Orinduik License offshore in Guyana (Energy News)
- Thousands of people fled devastation in the Bahamas on Saturday as conditions grew increasingly desperate nearly a week after Hurricane Dorian made landfall, reducing many homes to rubble and knocking out water and power. (Reuters)
- Mexican company Nopalimex is making biofuel from cactus plants. (World Economic Forum)

Asia

- OPEC increased the oil production for the first time in 2019 by 200,000 b/d with the collective production of Saudi Arabia and Nigeria. (Bloomberg Turkey)
- Shenzhen is first city in the world with an all electric bus fleet (16,000 buses). Soon all 20,000 taxis will also be electric. (World Economic Forum)
- The world is investing less in clean energy. China, which accounted for almost half of all investment in renewables, has seen the biggest drop. (TheEconomist)
- Asia has been the last bastion of building mega oil refineries for years, but overcapacity in the near term and the decarbonization of

transportation fuels in the longer term have raised questions over the need for more large-scale refining projects. (Platts)

- Cosmo Oil, Japan’s third-largest refiner, has started building stocks of very low-sulfur fuel oil (VLSFO) that can be supplied to domestic marine fuel markets from October ahead of IMO 2020. (Reuters)
- Saudi Arabia has named Prince Abdulaziz bin Salman, a son of the king, as energy minister replacing Khalid al-Falih, state media reported. (AA)
- The Adrian Darya 1, an Iranian tanker held by British authorities in Gibraltar for five weeks, has offloaded its cargo to a Syrian port. (Middle East Eye)
- India is now producing the world’s cheapest solar power. (World Economic Forum)

Europe

- EU CO₂ prices fall in week 36 as supply rebounds. (Platts)
- The Dutch government on Thursday said construction has been completed of the first large offshore “socket”, or substation, that will connect 700 MW of energy from wind turbines in the North Sea to the mainland. (Reuters)

Turkey

- Turkey’s liquefied natural gas (LNG) imports reached a historic record high at 7.14 billion cubic meters (bcm) in the first half of 2019, according to Turkey’s Energy Market Regulatory Authority’s (EMRA) data. (AA)
- Fatih Dönmez, the minister of Energy and Natural Resources of Turkey said that small-scale renewable energy support mechanisms will be available in 40 cities of Turkey. (Dünya)

Yuan Might Be What You Don't Expect

Would you like to give your Turkish Lira, Euro or Dollar to me, so that I give you the Chinese currency, Yuan? Why not?

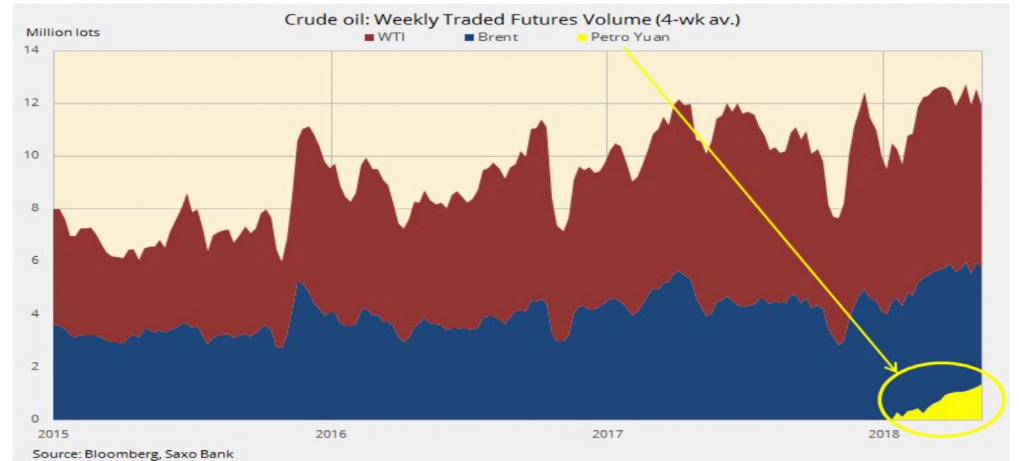
Another question, would you like to get paid in Yuan (Chinese currency again), for your hard work at your job, internship (if you are even getting paid) or any business you are currently doing? Again, why not?

The Chinese government thinks it could be a good idea to pay for your oil, in its currency, Yuan... Why would somebody say yes to this, and refuse the payment in Dollar, where Dollar is globally accepted as the payment for black gold (oil or petroleum)? China even made a market for you to quickly give your precious oil, in exchange for barely international Yuan. This market is called Shanghai International Energy Exchange (INE).

Whether you know what is going on with all of these, or you have no idea about what even Yuan is, know that there is no proper consensus on what to do with this Yuan based oil market.

We could summarize the possible positive sides of receiving Yuan as your payment as:

- Do you trust USA and Western powers overall? Maybe not for every one of us, but it is in a good location if you live near Shanghai and want to sell your oil (physically) to authorities in Shanghai. Because it is even annoying to think about the troubles you are going to face when you literally carry your barrels of oil from, say, Japan, to all the way to, say, England (another market for crude).
- Shanghai International Energy Exchange is a very rapidly growing market.
- China wants to have a bigger and louder say in World economy by putting its own money on the showcase. So, it will do anything to have a good impression and a fully working market.



If you want to have better relations with China, this big country of East will maybe like your gesture of accepting its currency over Dollars.

Side effects?

- The Chinese government likes controlling Yuan very much. So, if you get 10 Dollars' worth Yuan for your goods, you might not have the same 10 Dollars' worth of Yuan after a while.
- This is a pretty new market. Not everyone knows it, yet...
- Though it is growing fast, it is not as popular as WTI or Brent, however...
- Trading hours are a little different than trading hours of WTI or Brent
- Do you trust China overall?
- Are these reasons good enough to keep Dollar and shoo away Yuan?

Are you convinced that you should use Yuan for your transactions, investments, or for the looks of it?

Whatever your answer is, a yes, a no, or an I don't know, just know that people, still, struggle to find a good yes or no excuse...

Umur Sarp Ünsal

Efficiency to Save The World

Waste-to-energy (WTE) plants are facilities that burn household and even factory garbages that are not recyclable or hazardous to generate heat or electricity. This process is done by burning the garbages to generate steam enough to turn a series of windmills to create power finally.

It is a great way to dispose of garbage considering the other way that the countries more often do, landfilling. Landfilling is to gather large quantities of waste to bury them underground. While these garbage decay, they become exposed to biological, physical, and chemical transformations and release greenhouse gas that is destructive to the environment. They could also affect the groundwater and soil itself. But by burning the garbage, not only we are less damaging, we also gain land space. While 80 to 90 percent of the trash, in volume, is incinerated, the remaining dust can be sold to the construction industry if they are clean enough. On the downside, burning trash also leaves behind fly ash and bottom ash. Fly ashes are tested if they are hazardous and if they are, it will be buried in a landfill. Bottom ashes, on the other hand, should always be kept in safe facilities for containment.

According to the United States Environmental Protection Agency (EPA) and Department of Energy's National Renewable Energy Laboratory (NREL), WTE plants are the only electric generating technology that reduces Greenhouse Gas emissions as it makes power. WTE plants also cause lesser air pollution than coal plants, but more air pollution than natural gas plants.

Sweden's waste management system is what all countries should be trying to achieve. According to Avfall Sverige's report, half of Sweden's household waste is recycled or processed. The remaining close to half of the household waste is burned in WTE plants. These plants provide heat for 1.2 million Swedish households and electricity to 800,000 thousand more. Considering Sweden's population is 10 million, that's a considerably high rate. There are currently 34 WTE plants operating in Sweden. Each plant requires 440 million USD initial investment and



35 million USD a year for maintenance of the facilities.

Sweden also burns trash from other countries, but not only they are not paying to generate electricity and heat from that trash, but they also get paid for it. Reportedly, in 2014, the country received 800 million dollars to dispose of 2.3 million tons of other countries waste. It means Sweden makes money for generating electricity and heat for themselves. Some EU countries have no choice other than to give their non-recyclable trash to Sweden because the EU is starting to ban landfilling practices altogether.

Not only they are managing their wastes this efficiently, Sweden even turned exercising into an environmentalist activity. They are the creators of the term "plogging." The word is a combination of jogging and Swedish for picking up, "plocka upp." "Ploggers" go jogging with a pair of gloves and a garbage bag, and while they are running, they are picking up litter such as cigarette buds or plastic along their route. They have proven that it burns more calories since its like doing squats while running. The environmental awareness of Swedes is enviable.

Canberk Taze

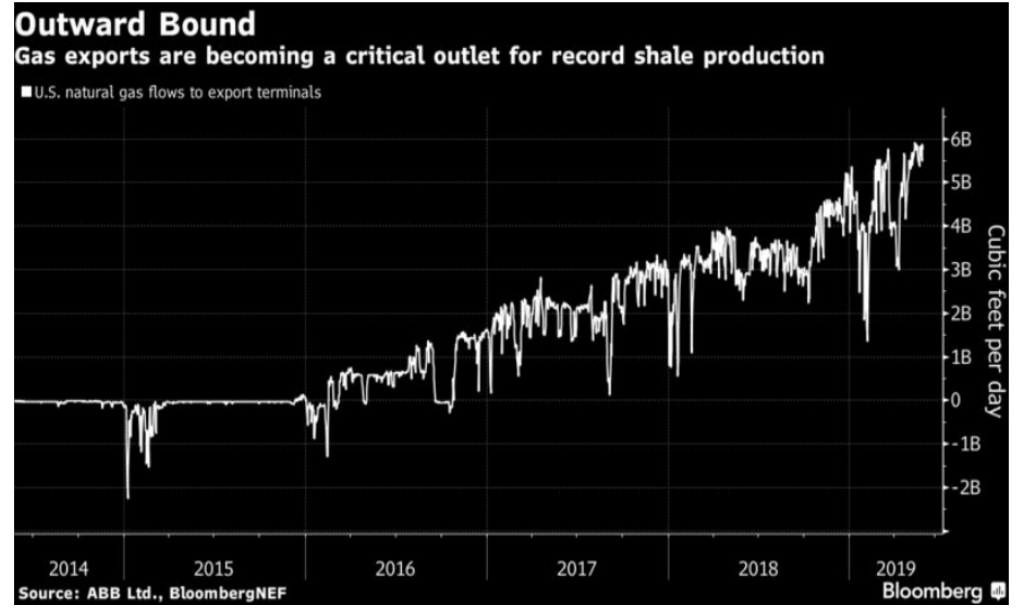
American Freedom Gas or the Cost of Liberty?

According to an article published by the Bloomberg, a new leap in the oil market called "Freedom Gas" was announced by the Department of Energy with the approval of liquefied natural gas exports from the Freeport facility in Texas. This newly introduced pipeline dam is not only said to be an economic boon at home but also a foreign policy tool.

Increasing export capacity from the Freeport LNG project is critical to spreading freedom gas throughout the world by giving America a diverse and affordable source of clean energy. The construction for the Quintana Island terminal facilities, Texas started in 2014 with the expected number of 15 million metric tonnes per year of nominal liquefaction capacity affirmed by Freeport authorities.

The nation's oil extrudes likewise extending, lifted by rising crude oil in the Permian Basin of West Texas and New Mexico. The American financial sanctions on Iran and Venezuela maintained by the restricted access to the debt and equity markets became an essential indicator of the need for a new potential energy source. By so, the future demand for the secondary supplier will have been met. Since the oil market is currently a unipolar dimension, when the Iranians put up quite a challenge for the U.S. firstly by producing more for less and secondly with the likelihood of cementing relationships with China and Russia which would result in the rising oil prices; the sanctions on Petroleum Exporting Countries left American's hands tied. That's why other than having the perks of clean energy, the government needed this national facility immensely.

"I am pleased that the Department of Energy is doing what it can to promote an efficient regulatory system that allows for molecules of U.S. freedom to be exported to the world," Assistant Secretary for Fossil Energy Steven Winberg said in the statement.



For global progress, energy experts gathered in Corpus Christi, Texas and embarked on deepening the port which is believed to promise more shipments to overseas.

On the other hand, a mass group of antipollution announce this facility as an abomination in the name of humanity. Because to be blunt, the natural gas formula is a mixture of organic compound that is methane and carbon dioxide, both greenhouse gases and are dangerous for the planet. As said by environmentalist/journalist Brian Kahn in his anti-thesis "Natural Gas Is Now Called Freedom Gas, According to the Department of Energy."

Consequently, this two-edged sword is indeed a hot topic between the good Americans and the energy policies workers.

Denis Gürbüz

Is Turkey Going Nuclear, Or Should It?

On the 5th of September, during the Central Anatolian Economic Forum President Erdoğan made vital remarks on arming the country with nuclear weapons. "Some countries have missiles with nuclear warheads, not one or two. But (they tell us) we can't have them. This, I cannot accept," he said during the forum.



Turkey has been part of a nuclear-sharing program among NATO allies and historically had been hosting U.S. nuclear weapons, but it does not have any nuclear weapons of its own. In the past, Jupiter medium-range ballistic missiles with nuclear warheads were deployed in various bases throughout Turkey. After their removal as part of the US-Soviet deal to ease tensions in Cuban missile crisis, the U.S. Air Force has deployed B-61 gravity bombs to Incirlik Air Base which are a type of tactical nuclear weapon launched by combat aircraft such as the F-16 and F-35.

Erdoğan did not specify whether Turkey would start trying to develop its own. However at the end of his speech, according to D.W. and

many national media outlets, he has reportedly said "There's Israel at our doorsteps, do they have it? Yes. And it uses its nuclear deterrence to scare off everyone. (My fellows) We are working on it at this stage." Almost minutes after his remarks, many foreign media outlets and international scholars who study Turkey made an extensive coverage of this statement and its possibility on whether Turkey can make it.

Legally at this moment, this cannot happen as Turkey is one of the signatory parties for the Treaty on the Non-Proliferation of Nuclear Weapons which prohibits it from acquiring weaponized-grade plutonium. For such a policy on arming one's country with the deadliest weapon the humankind has ever seen, it must be foreseen that the country would face a wide variety of sanctions on many domains such as the economy, financial system, trade, and military-industrial sector.

However, when we take a look on the current and long-term threat perception Turkey faces, aside from the fact that whether Turkey is capable of developing the A-bomb with its future nuclear energy infrastructure, it is also questionable that does Turkey actually need it given that Turkey enjoys an immense, deterrent military power in the greater Middle East region and the level of actual conventional threats to its sovereignty are close to zero.

Ercan Emre Çelik

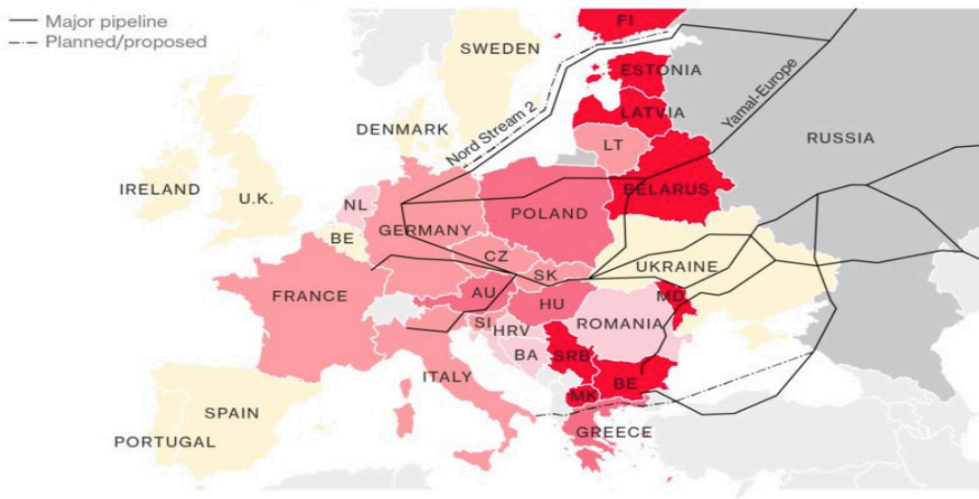
BRENT OIL	62.23 \$/BL	GASOLINE	6.83 ₺/LT
USD/TRY	5.71	DIESEL	6.37 ₺/LT
EUR/TRY	6.30	FUEL OIL	3.58 ₺

Nord Stream II Dispute: More Russian Gas to Europe?

Who's Dependent on Russian Gas?

About a third of Europe's gas comes from Russia

Share of gas from Russia 0% Less than 20% 20-49% 50-74% 75-100% No data



Source: ACER

BloombergQuickTake

Nord Stream II is a pipeline project that is planned to supply gas from Russia to Europe. Recently, Gazprom, which is Russia's state-owned company on the gas market, declared that the Nord Stream 2 (NS2) project has almost been completed. The pipeline will run across the Baltic Sea and reach to Germany in order to increase the gas supply of Europe. However, the NS2 has not been welcomed by other states like the US and Ukraine.

Ukraine is the most important gateway for Europe's gas exports. In 2017, nearly 40 percent of Europe's total gas supply was transited by Ukraine from Russia. Russia wants to decrease the role of Ukraine in the market and transit its gas to Europe by NS2 pipeline. According to Forbes (2019), Ukraine is strategically and economically dependent on Russia's gas transit actions because Ukraine buys gas and coal from Russia despite the conflict between two states. On the other hand, Russia is dependent on Ukraine to deliver its gas to Europe, which makes Ukraine geopolitically important.

Nevertheless, when the Nord Stream II pipeline is completed, the situation will change for Ukraine. Since its importance on the area would be diminished, and its economy would be affected, unsurprisingly, Ukraine has become opponent to NS2.

The President of Ukraine Vladimir Zelenskiy claimed that NS2 pipeline is a threat for Europe because it will increase Russia's influence on the region. Likewise, the US and some EU states like Poland, are asserting that increasing Russia's presence on the energy supply of Europe may cause problems for Europe's Energy Security. Donald Trump even blamed Germany as being 'captive' of Russia, because of NS2 increasing its energy dependence on Russia.

United States implemented sanctions on the companies working on Nord Stream II (and Turk Stream project, which will bring gas from Russia to Turkey and eventually Europe.) The bills remove the US assets to these companies.

According to Foreign Policy (2019), Washington aims to limit Russia to be able to sell US liquefied natural gas to Europe. Because Russia sells gas cheaper, the US wants to keep Russia outside of the market. However, the sanctions do not bring the US to reach its aims. Even though sanctions can cause harm to the project, it can only delay the construction plans, nor kill the project. (Forbes, 2019)

Although Ukraine and US want to isolate Russia from the gas market and Europe to preserve their interests, Russia is still and will continuously be an important gas supplier for the European continent.

Feyza Ünal

Is Turkey Dependent to Russian Gas?

Turkey and Russia have close ties in the energy industry, started after Russia's invasion of Georgia in 2008 and annexation of Crimea in 2014. The Russian company Gazprom, the biggest oil and natural gas producer of both in Russia was founded in 1989. The company was belonged to the government when it was first established, and known as the Ministry of Gas Industry. It took crucial roles in Russia's diplomatic efforts, setting of gas prices and access to pipelines. According to Wikipedia, if to imply this large company's position with numbers in 2011. The production is approximately 513.2 billion cubic meters of natural gas, more than seventeen percent of global gas production.

Gazprom's 2nd largest exporter is Turkey, after Germany. Therefore, the ties between Turkey and Russia are significant for Turkey due to its dependency on natural gas. Turkey is dependent on Russia for its 55% of its natural oil and 58% of Russia's oil.

For Turkey, Russia is not only a supplier which has a capacity large enough to meet the needed amount of energy in Turkey, but also a reliable partner for this purpose. Through the Cold War to the Ukrainian crisis that took place in 2006, when considered that Russia used its power in the energy field as a tool of political pressure (Gerebi of 2013; Stegen, 2011), it is crucial stability exhibited by the supply of Russian gas to Turkey. While Russia is a reliable supplier for Turkey, Turkey is an important market which it's demand is rapidly increasing for natural gas in Russia. In 2017, Gazprom exported 29.03 billion cubic meters of gas to Turkey, where Germany imported 53.44 billion cubic meters so that Turkey has been the second-largest customer after Germany. (Gazprom, 2018).

It is clear that cross-cultural relationship between Turkey and Russia is essential for both sides; there is a robust import-export dependency, especially in the energy field, natural gas is a crucial energy source for Turkey. As important as it is, Turkey is a strategic market for Russia since Turkey is its second-largest market in that area.

Alara Naz Özdicke

News From Us



- Last week our research team paid a visit to Gülçimen Aspava. We gained many calories that will be spent on ongoing and upcoming projects.

- Eight of our interns completed their internship for the summer period. We thank them for their valuable contributions to our center and wish them luck in the rest of their lives.

- Three of our projects has been completed, and one new project has started. Soon we will begin to publish our work. Keep in touch with our social media accounts for the updates.

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Contact: eeps@bilkent.edu.tr

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