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## **ENERGY STRATEGIES**

### ***Abstract***

*Energy is a life-sustaining global commodity having the quality of bringing prosperity. There is a strong mutual affinity between the availability of energy supplies and opportunities for growth, innovation, and increasing prosperity. In the last decade, the biggest change in energy was how and where hydrocarbons were removed from the earth in the lead of The United States. For instance hydraulic fracturing, or “fracking,” which allows natural gas to be collected from shale rock formations indicate that, the next decade will be about how energy already removed from the earth is moved across it while the last decade was about the energy buried in the earth and how to get it out. Recent advances show that the shale gas and solar energy promise as alternative energy sources for future. In that article, we aim to question energy strategies based on the future economic and geopolitical effects.*

**Key Words:** *energy, shale gas, solar energy, oil, gas*

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## **MAKALE GEÇMİŞİ**

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# **ENERJİ STRATEJİLERİ**

## **Öz**

*Enerji, zenginlik getiren yaşamsal bir küresel emittir. Büyüme, inovasyon ve zenginliğin artması için enerji arzları ve fırsatlarının elverişliliği arasında güçlü bir karşılıklı ilişki vardır. Son on yılda, Birleşik Devletler'in öncülüğünde hidrokarbonun yeryüzünden çıkarılmasının nasıl ve nerede olacağı, enerjideki en büyük değişimdir. Son ilerlemeler göstermektedir ki, kaya gazı ve solar enerji gelecek için alternatif enerji kaynakları olma noktasında umut vadetmektedir. Bu makalede enerji stratejilerinin gelecekteki ekonomik ve jeopolitik etkileri yeniden sorgulanmaktadır.*

**Anahtar Sözcükler:** enerji, kaya gazı, solar enerji, petrol, gaz

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## Introduction

The beginning of new century has been set off by new course of actions in world politics. Following the collapse of the USSR, huge changes in international politics and international relations occurred. Primarily, the process of formation of multipolar world started when the USA aimed to dominate over the world. Over the last decades there are changes in the importance of regions in the world politics. Energy politics and energy security has been the most popular item in the world agenda in recent years. Energy, for example, is one of the reasons of economic warfare. As the nations' entire economy is dependent on reliable and affordable energy sources such as crude oil and natural gas, they are particularly after acquiring energy sources. Also, in the world hydrocarbon reserves are diminishing at some rate. Scientists and explorers are working on finding abundant and cheap alternative energy sources. However, abundance of energy options does not lead to neglect the search for alternative, sustainable and renewable energy resources. Once an alternative energy source is extensively put to use rather than any diminishing energy, then the disagreement between nations is relieved in the circulation of commerce.

In this study, we focus on the global competition on energy resources by considering alternative energy sources as well.

### Energy Geopolitics

The energy geopolitics of Eurasia has a huge hydrocarbon resources. The world's largest reserves of natural gas is in Russia, and it takes the second place in coal and eighth in oil. Russia produces almost one fifth of global gas, and the second largest amount of oil, after Saudi Arabia. Almost one third of oil and gas consumed in Europe is from Russia. The Caspian Sea region reserves are also abundant: Azerbaijan is a large supplier of oil to Europe and will also despatch gas soon, the newest global "super-resource" to produce oil is Kazakhstan's Tengiz field and outside the Middle East Kashagan is the largest oil field, besides Turkmenistan, with the world's

fourth-largest reserves of gas.

Russia is a crucial energy supplier to Europe, recently providing about 29 percent of Europe's natural gas and 37 percent of its oil needs (Bhalla, 2015). Because of the low operational and transport costs of Russian natural gas, even an additional 50 billion cubic meters of LNG (Liquified Natural Gas) reserved for export from the United States within the next five years may not be compatible with Russia on price.

But, the future of Eurasian energy is weakened by politics. Russia is dependent on a state-controlled gas export monopoly, particularly Gazprom and Rosneft. As its productivity is slow-moving, Europe intends not to be dependent on it. Due to oil-price-indexed contracts with European customers, Gazprom profits will fall. Oil production by state-controlled Rosneft is at a peak by making use of other Russian companies' producing assets—but the company has difficulty.

In Southern Europe, Russia depicts a more complicated output but still afflicting. Acting upon the issue of cost, the energy companies are minimizing their capital expenditures. Besides, Turkey's veto on the transit of LNG tankers through the Bosphorus has a nullifying affect on LNG import facility project on the Black Sea. Europe, however rapidly carry on a much more economically agreeable alternative of setting a pipeline interconnector across Southeastern Europe. This does little to reduce Russia's control over energy supply, but it relieves Moscow of its interference to politicize pricing in Europe. The outcome of this pipeline politics in Europe enabled Russia both to reward and punish its Eastern European neighbors through pricing contracts.

The Turkish Stream pipeline would probably cause landfall in Turkey on reaching the Black Sea Coast, before using the Trans-Adriatic Pipeline and the Trans-Anatolian Pipeline to feed Southern Europe through the web of interconnectors and pipelines already in progression (See Map 1).

**Map 1: Post-South Stream Options** (STRATFOR, 2014)

Seemingly, Moscow's plan appears quite intelligent: Use the very infrastructure that Europe was already considering to disinclude Russia and then, when the political altercation over Ukraine eventually stabilizes, reactivate itself into Europe's energy merge via a willing partner like Turkey. But there are gaps in the plan. An investor is needed to take steps for the main pipeline expansion of Russia and Turkey, and in this geopolitical and pricing conditions both Russia and Turkey will fight for a private investor. Yet, as there is a well-running pipeline from Russia to Eastern Europe already exists, it is vague that a newly built Turkish Stream of The Russian natural gas is necessary (Bhalla, 2015).

Azerbaijan as the primary supplier of the southern corridor to Europe evading Russia and is further bringing natural gas from its Shah Deniz II offshore fields online for export. Turkmenistan is still subject to Russian intrusion but has been inclined to welcome Turkish and European investors interested in building a pipeline across the Caspian to reach Europe. The interpretation of these ideas depend on how the Turkmen government's political

will resist to Moscow, beside the legal controversies over the Caspian Sea. While on one hand the West carries out advances to Ashgabat, on the other, a reformed Iran also joins the southern corridor.

### Russian Energy Strategies

One of the critical points empowering Putin is Europe's dependence on Russian natural gas about the issue of western leaders' considering economic and diplomatic sanctions. Russia, to strengthen its position concerning its Western energy customers in Europe is trying to act out on a complicated strategy. The first step of the strategy is to increase its ownership of other natural gas-related assets in addition to its primary role of natural gas supplier. The second step is to ensure many of Moscow's customers contacts to 10-to-15 years by offering natural gas at a discount, making it more endearing.

Most of Russia's traditional export routes have been connected to Europe. For the last decade, to give Moscow more flexibility in exporting and more enlargement in supply bargain, Russia has been working on projects that will expand its export routes and expand its energy

markets. Accordingly, two of the largest export development projects will appear online. One of which is the Baltic Pipeline System-2 and the other the Eastern Siberia-Pacific Ocean oil pipeline expansions.

Moscow and Beijing put the Eastern Siberia-Pacific Ocean oil pipeline (ESPO) into service. It operates more than 3,000 miles from Russia's central Siberian oil fields to China and the Pacific coast. Russia is transforming its customer foundation in case demand in Europe falls, or if Russia and its European customers find themselves in a politically insupportable situation, to have a large market to its east. The target of Russia is to fold its production into two in Central and Eastern Siberia to provide for East Asia.

Russia is bargaining with Germany to purchase electricity networks, with Greece to run natural gas distribution networks and also in Italy electricity and its distribution networks, and Moscow is also aiming to run the natural gas distribution networks in the Czech Republic. Russia also stretches its aim to building natural gas storage facilities in Turkey's Thrace region in connection to developing its European strategy.

Siberia (i.e. western Siberia), which once discarded as remote and frozen wasteland is now the land where Russia's most oil production (10,3 million barrels per day) comes from (Noel, 2017). Sakhalin oil fields in the Far East and areas outside of Siberia (Tatarstan, Bashkortostan and the North Caucasus) also contribute to Russian oil production.

Two propensities in Europe have given Russia the motive of building closer energy ties with East Asia. The first is that European energy consumption, for demographic and economic reasons, is reaching its peak. The second is that many European countries are expanding various energy inputs, to damage Russian energy exports.

Following the crisis in the Ukraine there

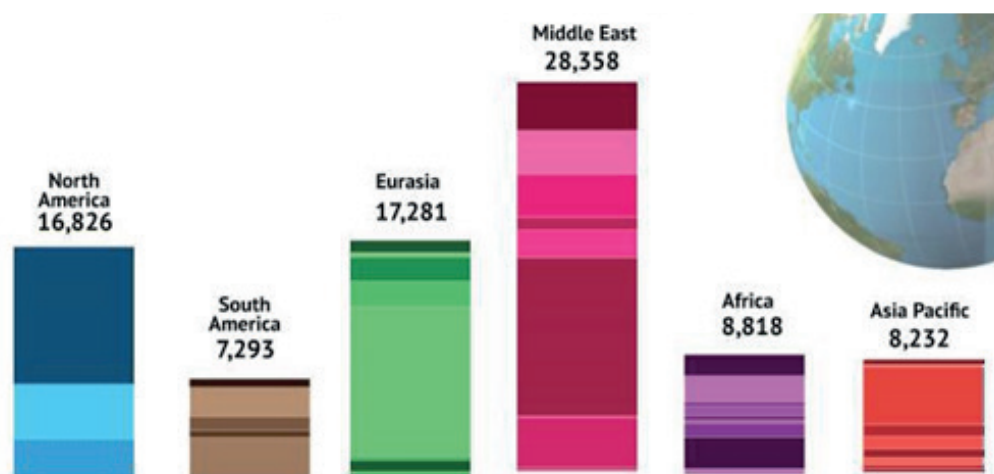
occurred concerns that the Russian natural gas to Europe may drop. Russia not only supplies 30 percent of the gas Europe receives, but also half of the Russian natural gas delivered to Europe goes through Ukraine. This issue had to be quickly sorted out. The European leaders wanted to lessen the long term loss of Russian supplies, and back Turkey and Azerbaijan, which stand out as prominent partners for Europe's demand for energy security.

#### Oil Prices and Energy Politics

Such fall in oil prices has been unprecedented since the recession of 2008-09 and an incessant effect is observed globally. In the last twenty years the price of a barrel of oil has moved more than 15 percent. A geopolitical outcome of oil's current low price results in less revenue as the exporting countries adjust their budgets accordingly. This also triggers coal production. Coal production fell about 11 percent owing to the increase of the share of natural gas on electricity generation<sup>1</sup>.

The effect is plain for the countries that excessively rely on oil imports, that is: a massive stimulus for their economy. But for those who have economies run by oil production, such as Russia and Saudi Arabia, there are problems in the future. Russia's pricing authority will scale down in Europe over the long term, and its effect on Europe's energy supply will also fall over the longer run (Stratfor, 2012). The producer nations, like Russia, are effected by much losses by falling oil prices. Russian and Caspian energy's future is imperiled by cheaper oil, government interference and changing market strategy. Eurasian governments should give more opportunity to foreign and private energy companies.

Outstanding oil companies like: the Exxon-led Sakhalin 1 oil project, which does deep drilling in extreme sub-Arctic conditions; the Chevron-led Tengiz oil Project in Kazakhstan, which extracts oil below a deep salt dome in the world's deepest onshore operation; and BP-led gas and oil projects in the Caspian Sea off Azerbaijan have paved the way to run Eurasia's

**Figure 1: Oil Production By Area** (BP, 2014)

most successful and difficult undertakings (Courtney, Kauzlarich, & Yalowitz, 2015).

Four big producers –Azerbaijan, Kazakhstan, Russia and Turkmenistan– should allow the private sector to play a larger role on making decisions on commercial issues, instead of the political leads to be more competitive.

Saudi Arabia, having a considerable foreign exchange reserves on which it can rely in the short term and low production costs that will enable them to stay outside the other global producers is ready to sustain its global market share. The most strategic resource of Riyadh and the one that the government can use to its benefit is its oil supply. As the temperatures are getting cooler and the regional consumption is diminishing, it is possible that Riyadh can allow larger capacity of oil, to lower prices.

Meanwhile, for developed significant oil importers namely Japan, China, India and the European Union low oil prices will give some adjournment to weighty import payments (Geopolitical Diary, 2014). Though lower energy prices are beneficial for Europe in the long run, they also raise the threat of deflation and intensify friction between the European Central Bank and Germany. If the United States tries to enlarge energy for political benefits it will give rise to unacceptable consequences.

In 2013, including the European Union states, Switzerland, Norway, Turkey and the Balkan states consumed 18,7 trillion cubic feet (Tcf) of natural gas. According to the U.S. Energy Information Administration (EIA), Russia supplied 30 percent, or 5,7 Tcf, of this gas (Zawatsky, 2014).

Xi Jinping, President of China, has initiated a radical change by centering China on a consumer-led economic model, within which inefficient state-owned enterprises are imposed greater efficiency and flexibility. The radical fall of oil price gives Xi a seasonable opportunity as his government attempts to rehabilitate China's most energy-concentrated and unproductive state-owned enterprises.

Turkey has been in pursuit of becoming an energy hub for Caspian and Middle Eastern oil and gas to Europe for a long time. The secular Azerbaijan, besides having shores of the Caspian Sea, owns hefty hydrocarbon resources is also positioned between Europe and energy-rich Kazakhstan and Turkmenistan, both of which are landlocked. This makes Azerbaijan a natural conduit for oil and gas exports to Europe. In two strategic energy projects the Baku-Tbilisi-Ceyhan (BTC) oil pipeline and the Baku-Tbilisi-Erzurum (BTE) natural gas pipeline, Turkey and Azerbaijan has already reached agreement in these two strategic energy projects, as the outcome of

their mutual interests as exporting and transit countries (Tol & Vatanka, 2014). The fact that Turkey will be able to secure its energy through a multiplicity of energy supplies and routes and it will enhance its economic rise by reducing its expenses is a highly instructive key teaching for all.

### **Shale Gas & Solar Energy as Alternative Sources**

Those in search of enhancing the development of Central and Eastern Europe concentrated on importing energy from the east and not just from Russia. Natural gas production in the U.S. has annually increased over 40 percent in the last decade, as a result, the EIA expects that the United States will become an exporter of natural gas soon. Japan is an example of why LNG is equalised to be global. Japan increased the import of LNG by a quarter after the Fukushima misfortune, to replace nuclear power in producing electricity. As a consequence, Japan is the largest LNG importer in the world and the indications show that it will remain on top of the list of LNG importers. Building specialized infrastructure to transport natural gas is on the rise across the world. LNG is likely to become a revolution in the movement of energy similar to what once hydraulic fracturing has been for the collection of energy.

America, currently being in the midst of an energy revolution, is moving to become a top gas producer, from being a major oil and gas importer (Miller, 2015). The news is that domestically, horizontal directional drilling and “fracking” in oil and natural gas production industry have changed a generation of production declines in the United States. Although Russia’s production technology has been considerably modernized its reserves are often in the regions of Siberia where it is hard and expensive to acquire.

The American energy “change” went mainstream around 2010, yet, it is about a decade old and the transformation has been fast and noteworthy. It has reached a new

record each year since 2011: from the bottom to peak oil production has gone up to 50% between 2008-2013 and natural gas by 34% between 2005 – 2013. In contrast to gas, in the power sector, coal has lost its market share and fallen by 16 % (Tsafos, 2014). Although the energy use went up to the peak in 2007, it has declined since then. The fact is that America is dramatically using less oil and coal and more gas and renewable energies.

The fact is, a different kind of energy development will take place between now and 2025. Instead of focusing on the energy buried in the earth and the question of how to get it out in the last decade; in the next decade it will be on how to circulate the already removed energy across the World (Cookson, 2015). The United States engender a vast deposits of shale gas in all around the U.S, like Texas, Louisiana, North Dakota, Pennsylvania, Ohio, New York. The United States wary to be an energy titan of the 21<sup>st</sup> century (Kaplan, 2012). Particularly, the Gulf Coast, centered on Texas and Louisiana ventured a shale gas and impervious oil reserves. The United States still has some potentiality to export shale gas to Europe. It will need to build new liquidization facilities to do that. To enable the transport by ship across the Atlantic it needs to erect plants on the Gulf of Mexico to convert the gas into liquid to transport and also regasification facilities there to reconvert it back into gas (Council on Foreign Relations, 2013). This is possible only by capital investment, expertise and agreeable legislation.

Donald Trump issued an executive order to remove Obama-era environmental protections (DiChristopher, 2017). This makes the environmentalist worry about the environment. The order will allow energy extraction on public lands and wipe out the Clean Power Plan of Obama administration. It aimed to reduce emissions from absobescent, extreme pollution creating power plants and enable businesses with financial incentives to broaden new technologies like wind and solar energy (Volfe, 2017). Trump administration prefers green energy policy but they are a nonbeliever

of renewable energy. Their opinion on climate and energy is founded on the unreal assumption that the economy will fail with environmental safeguards for clean air and water and stable climate. They seem to be scared of the change, rather than a worldview that try to turn their environmental challenges into economic occasions.

The emergence of the shale gas will create some problems for the hydrocarbon procurement and allotment. As a result, there is the possibility of the Middle East to lose its lead. China also has an abundant amount of shale gas deposits in its interior regions. The unconventional gas extraction technology will increase the value of some geography rather than decrease it.

The estimation that “solar power will become so cheap that energy will no longer be seen as scarce” is now more wide-ranging, which implies an excellent news for the warming planet. The price of solar energy will drop fifty percent in the next 20 years according to *the IEA (International Energy Agency)*. It is also estimated that by 2050 the solar energy will provide 16% of the world’s electric power, which was approximately 11% in 2010 (Roggeveen, 2015).

Solar energy will not take the place of hydrocarbons in the regions where it is the primary energy source, however it will help other countries to vary their power sources, when markets can encounter national goals and strategies. The region’s increasing energy requirement specify that interest and investment in solar energy development will grow in the near and medium terms. Deserts are obviously places where solar production can be placed. The desert areas lined from the Atlantic Ocean, across North Africa and the Arabian Peninsula, to the Persian Gulf is a wide solar energy region to implement. However, until recently this renewable resource has not been attempted for investment due to lack of economical feasibility or necessity.

In many parts of the desert areas, geographic

difficulties of landscape does not allow solar implementation easy. For now, the demographic difficulties, low oil prices and technological maturity prepared Middle Eastern and North African countries for more investment in solar layout. For countries like Jordan and Morocco, renewable energy paves the way to more energy independence. On the same direction, Saudi Arabia and the United Arab Emirates and others are keen on exporting renewable energy technology and giving financial support to solar projects abroad (Stratfor, 2016). Hydrocarbons still retain the primary place, however, solar energy is prepared to take its share as an equally prominent part of energy in the Middle East and North Africa.

The recent assessments has shown the limitations of renewable energy instead of a revolution of renewable energy near-at-hand. Solar and wind power together produces less electricity than power generated by hydroelectric power alone. The limitations of wind power have appeared in the news recently. When turbines are grouped it slows wind speed, and when wind farms are larger and denser it diminishes the yield. Turbines have to be spread out to attain the upper limit in power production, which is less than 1 megawatt per square kilometer.

## Conclusion

The future economic and geopolitical effects are not easy to interpret. Particularly, it is unknown how long the present trends will resume. But an energy transit transformation has started. However, it will be estimated with market demand and the release of each county’s interior politics towards its contacts abroad. The countries can aim to become pioneers of this innovation, like they did in extracting buried hydrocarbons, or they can assert to object. Whatever the option, the result of the coming energy innovation will be geopolitical and advantageous.

Cheap energy means growth but cheaper energy becomes a competitive advantage. Unfortunately in reality these views have no



ground. The idea brought forth in 1970s that economic activity is liable to changes in energy prices was refuted when two oil falls appeared to have initiated unemployment, inflation and weak growth. But just as with gas, oil and coal, the movement of energy to become the next big step will be with renewables. For now, it is reasonably cheap to produce renewable energy, but we have to build better and cheaper batteries to store it.

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