

9 MAY 2022

VOLUME 3 ISSUE 25

SYNERGY

BİLKENT ENERGY POLICY RESEARCH CENTER NEWSLETTER

Energy Markets: The Tortoise and The Hare

06 08 10

UNPREPARED
FOR THE CRISIS:
EUROPE'S RUBLE-FOR-
GAS CHALLENGE

THE DEFICIT OF THE
DIGITALIZED
ENERGY SECTOR:
CYBER THREATS

DEFORESTATION
AND
BIODIVERSITY

In This Issue...

04 Energy Markets: The Tortoise and The Hare

If demand is a hare, supply is a tortoise. Of course, energy market narratives cannot be compared to Aesop's stories, but sometimes analogies may help summarize the situation. This time, it is no different. The speed of demand and supply in the energy sector is quite different, and the race between the two looks still inconclusive...

06 Unprepared for the Crisis: Europe's Ruble-for-Gas Challenge

Ensuring a stable energy supply despite the current turbulent political conditions is one of the most important achievements that can make governments' energy policies successful. The decisions and choices of policymakers regarding the establishment of energy supply security will have long-term effects, especially when developments...

08 The Deficit of the Digitalized Energy Sector: Cyber Threats

Long-term global and regional energy perspectives conducted jointly by the International Institute for Applied Systems Analysis (IIASA) and the World Energy Council (WEC) indicate that an increase of almost 190% is expected in energy consumption in the next century...

10 Deforestation and Biodiversity

It is said that the Amazon rain forest, one of the most famous forests in the world, no longer produces oxygen as before, and the rate of carbon dioxide production is higher than the production of oxygen. The researchers noted that the Amazon forest was a carbon sink that previously absorbed emissions that caused the climate crisis but is now accelerating...

EDITOR:

GÖKBERK BİLGİN

CONTACT: gokberk.bilgin@bilkent.edu.tr

ABOUT US



Energy
Policy
Research
Center

Synergy is a weekly online newsletter published by volunteers on bilkenteprc.com. It welcomes feedback from readers. Please submit your letters to eeeps@bilkent.edu.tr. The Editorial Board will review the letters and print them as space permits. The contents of this newsletter are the author's sole responsibility. They do not necessarily represent the views of the Bilkent Energy Policy Research Center or any of its Members.

BRENT OIL

111,56 \$/BL

GASOLINE

20.44 ₺/LT

USD/TRY

14.98

DIESEL

22.18 ₺/LT

EUR/TRY

15.75

FUEL OIL

14.56

Energy Markets: The Tortoise and The Hare

Barış Sanlı 

If demand is a hare, supply is a tortoise. Of course, energy market narratives cannot be compared to Aesop's stories, but sometimes analogies may help summarize the situation. This time, it is no different. The speed of demand and supply in the energy sector is quite different, and the race between the two looks still inconclusive. But I bet on the tortoise.

In 2008, April Brent price was 109\$/barrel, in May, it was 122\$/barrel, and in June, it was 132\$/barrel. Then in July 2008, it hit 147\$/barrel. This was the highest we have seen in nominal terms. In the December of the same year, oil prices have seen 39\$/barrel on average. The whole narrative was about China's growth despite the start of a financial crisis. Will this year be a replica of 2008? I do fear that. However, there are also long-term trends we must be careful about.

First of all, a looming electricity crisis may be expected in developing countries. US, France, and other major markets may also face electricity problems. Last year it was drought; this year, it is a mixture of problems such as supply chain issues, nuclear discussions, sanctions, you name it, there is a headline for each of them.

Furthermore, Indian power problems are quite interesting. Everyone was aware of the problem that distribution companies cannot pay in full to generation companies. Indian power system highly subsidizes farmers and individuals against industrial consumers. There is a 5-fold difference between the prices. The critical problem this time is logistics. The coal stocks at the coal plants are the lowest on record. Rail freight is not catching up with the demand, and the heatwave is certainly possible. Yet, railroad issues are the only parameter you can control.



It is amazing that in dreaming of non-fossil fuel world, we end up with so many problems. If it is not mining or supply, it is logistics. If it is not logistics, it is price. So, the wheel of fortune/problems keeps rotating. OPEC+ cannot stick to its promise of increased oil production. Maybe the vantage point should be different.

In climate change, the supply side is fully aware of the problem, and the demand side is completely ignoring the issue in action. In terms of tweets and narratives, demand transfers the blame to supply and carries on with an enhanced status quo. More air travel, more A/C units, more meat consumption... Despite high oil prices, oil demand in developing countries is not cooling down.

Supply, however, is like a tortoise. I am neither an ethologist nor an animal psychologist, but the tortoise thinks a lot, moves slowly and can freak out easily. On the other hand, Hare may stop and run suddenly and can also freak out easily but does not disappear. It merely changes the direction. If a tortoise is a philosopher, a hare is the master of earth that doesn't like too much thinking.

This is not a race between the two. Yet supply is coming too slowly, and demand is unaware of the problems in detail and keeps running. This reminds us of the tale of Aesop. Shifting the blame is not a solution; it hits you back. It is hitting back now. The supply problems will start to hit demand until it slows down. The hare can run as fast as it can, but the tortoise is destined to be ahead of the hare.

Unprepared for the Crisis: Europe's Ruble-for-Gas Challenge

Erkin Sancarbaba 

Ensuring a stable energy supply despite the current turbulent political conditions is one of the most important achievements that can make governments' energy policies successful. The decisions and choices of policymakers regarding the establishment of energy supply security will have long-term effects, especially when developments in the field of energy are at the center of the multidimensional international crisis. It can be said that Russia's decision for "unfriendly countries" to make gas payments to Russia in Rubles has also driven European decision-makers to a crossroads. On the other hand, it has been understood that carrying out the necessary legal assessment in line with the sanctions imposed on Russia by the European Union and instituting a legal infrastructure that meets the needs are vital for establishing energy supply security.

To understand the importance of the decree put into effect by Russia for European states and companies, it is necessary to examine the content of the decision taken first. According to the decree signed by Russian President Vladimir Putin on March 31, 2022, the payment procedures for the natural gas purchased from Russia by the previously determined unfriendly countries and companies located in these countries have changed. Within the scope of the decree, a payment mechanism was envisaged in which companies from the countries mentioned above would open two bank accounts at Gazprombank. Companies must first transfer the payments to the first bank account in the currency stipulated by their existing contracts with Gazprom and

authorize Gazprombank to exchange these funds in Rubles on the Moscow Exchange. The payment transaction is accepted when Gazprombank transfers the amount in Ruble equivalent to the amount transferred to the first account.

European Union authorities state that Russia's new payment mechanism will be against the sanctions. Although Gazprombank is not included in the scope of the European Union sanctions applied to Russia, it is stated that the sanctions may be breached because the payment to be made in Ruble by opening a double account may include the Central Bank of Russia in the payment mechanism. In addition, it is interpreted by the European authorities that the sanctions will be breached because paying in rubles is against the sanctions provisions.

While it is known that most natural gas supply contracts are confidential, companies usually make payments in a specified currency under the contract. According to the data of the European Commission, 97% of the existing contracts of European companies with Gazprom require payment in Euros or US Dollars. Considering the ratio in question, it is seen that the decree enacted by Russia forced European companies to make decisions directly. In this direction, companies and governments request the European Union institutions to prepare a detailed guideline that gives clear answers to the questions regarding the payment mechanism.



Although the European Commission has published a guideline regarding this decree and tried to answer frequently asked questions, criticism has been made that the language of the published directive is not clear and does not offer a constructive solution to the complications that exist. As stated in the guideline, as an alternative to the payment mechanism determined by Russia, companies can open a Euro or Dollar account at Gazprombank and pay the payments stipulated in their contracts in Euro or Dollar currencies and submit a declaration to Russia that they have fulfilled their payment obligations. After this payment, it was stated in the European Commission's guideline that they should receive approval from the Russian side that the procedure was completed.

It is not difficult to say that the European Commission guideline does not solve the current energy supply problems. Because Russia has announced that it has stopped supplying natural gas to Poland and Bulgaria, the Bulgarian Energy Minister stated that they paid Russia in the currency determined in the current contract in line with the instructions in the guideline. The Russian authorities conveyed that the payment was deemed invalid because the transaction was not made in Ruble and returned the paid amount.

It can be stated that Russia's announcement that it has stopped supplying natural gas to Poland and Bulgaria is a warning to other European companies and governments.

It is obvious that there is a serious divergence between European Union governments and European companies. The inability to establish the legal infrastructure of the European Union sanctions imposed on Russia forces countries and companies to take the initiative and make quick decisions. Hungarian authorities stated that there is no problem paying in rubles for the natural gas purchased from Russia. In contrast, Italian government officials stated that Italian companies could pay in rubles to prevent a possible interruption in natural gas supply. In this direction, the Italian energy giant Eni has prepared to pay in Rubles.

The necessity of the governments to place energy supply security among the priority interests in the decisions to be taken in line with the political developments and to prepare a roadmap in this direction has emerged in the current process. Provisions that can endanger energy security should be evaluated while making sanction decisions and other arrangements to be made. The success of energy policies is directly related to the cooperation of legislators, institutions, and the private sector by determining the comprehensive strategies of the countries. In addition, the planning of the legal infrastructure, which is complementary to the sanctions packages and regulations that are planned to come into force, is vital for establishing and maintaining legal security and legal certainty.

The Deficit of the Digitalized Energy Sector: Cyber Threats

Büşra Öztürk 

Long-term global and regional energy perspectives conducted jointly by the International Institute for Applied Systems Analysis (IIASA) and the World Energy Council (WEC) indicate that an increase of almost 190% is expected in energy consumption in the next century. This means that the energy demand will nearly double the current situation. The most important item of this consumption increase is expected to be renewable energy. In addition, a serious increment is expected in nuclear and natural gas. Moreover, to the increasing trend of primary energy sources, electricity consumption is expected to triple. The reason for this is the increase in the use of electrical devices, in other words, the widespread use of electrification systems, which means the usage of electricity as an energy source.

While the energy demand and consumption trend are increasing, the digitalization in energy is also on the rise with the use of various emerging technology systems such as artificial intelligence, IoT, and blockchain. For example, the increasing necessity for integrated technology is essential to meet the need for oil and natural gas demand by providing efficiency in fields that are difficult to produce,

such as heavy oil fields and deep-sea fields. On the other hand, the request to increase efficiency and performance in energy and develop green energy technologies on the verge of environmental concerns leads to more digitalization in energy. The expected extraordinary increase in electricity consumption means further digitization of grid systems. In this sense, models with more automation supported by artificial intelligence are becoming widespread.

One of the biggest risks of digitalization in energy is increasing vulnerability to cyber-attacks. Cyber security is an issue that draws attention as the place of digitalization in our lives grows day by day. Since the energy sector is directly related to many sectors, it takes great attention to security. IBM Security Report represents that the sector that suffers the most cyberattacks in 2021 is the energy sector, specifically the electricity and oil industry. Attacks such as unauthorized entry, sabotage and blocking, data theft, locking the system, disrupting the flow, and theft with finance are organized in these areas.



Energy systems are critical systems that must be kept in balance. When some data structures are intervened, there are possible dangers such as malfunctioning the systems and crashing the entire network. This is because current systems are built with emergency closing mechanisms to prevent further damage in case of a possible earthquake. For example, the Shamoon virus infiltrated an oil refinery in Saudi Arabia, and the emergency shutdown button was activated. The spectrum of cyber-attacks is also expanding day by day. Nowadays, instead of a direct system shutdown attack to stop production, it is aimed to weaken the product quality by changing production software and recipes. It is observed that this decrease in quality causes more financial damage than stopping production because it affects international trade agreements.

To provide cyber security in energy projects, there exist some strategies. First, a safety culture must be established to ensure that the steps taken during production are periodically reviewed and that the change in the resulting tests is detected. To achieve this, the information can be exchanged with stakeholder companies doing business in

cyber security. As a result of the implementation of this strategy, it is expected that there will be a synergy between all energy sector stakeholders in the field of cyber security applications. Another strategy is to improve incident management, developing detection, remediation, and recovery activities. Implementation of this strategy allows rapid return to normal activities and minimizes the impact of the attack on energy distribution and transmission systems.

In summary, energy is a major infrastructure that rapidly develops and digitizes with advancements in technology. With the help of digitalization, it is aimed to meet the increasing energy demand in an environmentally friendly and more profitable way. However, combining energy systems with digitalization easily brings various attack risks. In this sense, it is important to cooperate with other institutions working in energy and cyber security to protect production systems and minimally affect distribution systems in case of attack. Especially since the energy sector is directly related to many industries and is one of the most fundamental areas of a country, it is critical to be resilient to cyber threats.

Deforestation and Biodiversity

Nur Durmaz 

It is said that the Amazon rain forest, one of the most famous forests in the world, no longer produces oxygen as before, and the rate of carbon dioxide production is higher than the production of oxygen. The researchers noted that the Amazon forest was a carbon sink that previously absorbed emissions that caused the climate crisis but is now accelerating. There seems to be a paradox because this increased carbon dioxide level is due to the excess heat caused by the climate crisis. Considering that one of the causes of the climate crisis is the decreasing forest areas, the cause of the carbon crisis created by this giant forest is connected to a vicious circle. Most of the emissions were caused by fires, many of which were deliberately prepared to clear land for beef and soybean production. But even without fires, higher temperatures and droughts have shown that the Southeast Amazon has become a source of CO₂.

According to World Wildlife Foundation (WWF) data, agriculture is the main cause of deforestation, and poorly

planned infrastructure poses a major threat. Also, the main cause of forest degradation is illegal logging. In 2019, the tropics lost 30 football fields worth of trees every minute. A researcher from the United Nations Educational, Scientific and Cultural Organization (UNESCO), Dr. Carvalho Resende, claims that agricultural activities and illegal logging are two of the biggest threats to forests. Still, he added that forest fires have a negative impact as well. UNESCO stated that forest fires that spread over large areas in Siberia, the USA, and Australia caused tens of millions of tons of carbon dioxide in the past years. Dr. Carvalho Resende said that this was a cycle. More carbon emissions mean more forest fires, and more forest fires mean more carbon emissions.

Between 2011 and 2020, 26,311 forest fires broke out in Turkey, and the number of fires in this period was 2,631. However, while an average of 20,760 hectares of land was exposed to fire every year between 2008 and 2020 in Turkey, this amount increased by 755% in the last 2021, and it was seen that the forest area was ash between January and



August reached 177 thousand 476 hectares.

When forests are cut down or burned, the stored carbon is released into the atmosphere, mainly as carbon dioxide. Between 2015 and 2017, the global loss of tropical forests released about 4.8 billion tonnes of carbon dioxide per year (or about 8-10% of annual human carbon dioxide emissions). The less forested areas mean an increase in greenhouse gases in the atmosphere, and global warming will be faster and more severe. The quickest and simplest solution to deforestation is to stop the felling and burning of trees.

Healthy ecosystems and biodiversity provide us with many essential features that we consider natural. Plants regenerate by making the energy from the sun available to other life forms. Bacteria and other living organisms break down organic matter into nutrients that provide healthy soil for plants to grow and ensure healthy food production. Woodlands and oceans act as major carbon sinks. In short,

biodiversity provides us with clean air, fresh water, quality soil, and crop pollination. It helps to fight climate change and take measures for it. It also reduces the impact of natural hazards. But for a healthy ecosystem, healthy forests are required. For this reason, deforestation is the enemy of biodiversity and ecosystems.

Despite continued efforts, biodiversity is deteriorating worldwide, and this decline is predicted to worsen. The UN Conference on Biodiversity will bring together governments worldwide to agree on a new set of goals for nature over the next decade, with the post-2020 Convention on Biological Diversity framework process. The Framework sets out an ambitious plan to implement broad-based actions to transform society's relationship with biodiversity and ensure that by 2050 the shared vision of living in harmony with nature is fulfilled.

The Ministry of Agriculture and Forestry of Turkey has published an important progress plan. The routes to be



followed in 2018-2028 are written under the "National Biodiversity Action Plan." This plan aims at the 14th goal for sustainable development: the conservation and sustainable use of the oceans, seas, and marine resources. In addition, the 15th development goal aims to restore and sustainably use terrestrial ecosystems as a whole, fight against deforestation, and prevent and improve land degradation.

According to the Biodiversity Congress, the main pressures on Turkey's agricultural biodiversity include "improper use of farmland, inappropriate irrigation and farming methods, unconscious use of agricultural inputs, the crossing of local breeds with foreign breeds with economic value, and deficiencies in land registry and cadastre." Furthermore, there are also threats to steppe ecosystems caused by the destructive effects of infrastructure and superstructure. These are over-collection of economically valuable plants and false and unconscious deforestation, and overgrazing. Turkey has participated in many strategic plans, such as Aichi Biodiversity Targets. Considering that Turkey is a country with goals such as the 2030 Sustainable Development Plan and what it should do as a candidate country for the

European Union, it is questioned whether enough efforts are made to increase biodiversity and forest area in Turkey. But unfortunately, due to the lack of awareness in Turkey and the world, most of these plans fell through due to forest fires, destruction of agricultural lands, and environmental pollution.

Many organizations, such as the United Nations, have tried to do their part. Still, as long as people's desire for consumption continues, it has become more difficult to make a sustainable plan with the increasing population. Already, Turkey's numerically increasing forest area data should only be seen as green areas because the numerically productive area rate is less than in previous years. At this point, the things to consider are fertile, fertile lands left for future generations and strategically thoughtful planning.



Energy
Policy
Research
Center

bilkenteprc.com