

THE EFFECTS OF COVID-19 CRISIS ON ENERGY
MARKETS OF THE WORLD AND TURKEY

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ABSTRACT

The Covid-19 pandemic has deeply affected many areas of life. Energy markets are one of the sectors that mostly suffer from this process. These markets faced serious shocks as a result of negative reflections of the Covid-19 epidemic. The decline in global oil demand in this period brought along a sharp decrease in prices in a very short time. During the pandemic period, the stagnation in economic activities caused a decline in electricity consumption as in the oil. In brief, many countries had to change their demand patterns on energy resources during the epidemic period. On the other hand, Turkey has experienced this process more positively compared to many countries. As being dependent on external suppliers in petroleum products, Turkey purchased the cheap oil from the market and stored this energy sources when the prices were low. Therefore, a significant advantage has been provided in terms of reducing the energy bill of the country. In addition, in the period of the epidemic spread around Europe and an important decrease to be seen in the electricity consumption of countries in here, Turkey has shown a good performance. The electricity consumption amount that is parallel with the increase in economic activities has indicated that industrial and commercial operations did not slowdown in Turkey as much as the European countries during the epidemic period. This study evaluates the developments in energy markets in the world and Turkey by discussing how the epidemic started to show its negative effects. In this sense,

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the study aims to analyze the energy markets in terms of consumption-price movements and develop policy recommendations for the post-crisis period.

Keywords: Covid-19, Energy Markets, Oil Prices, Turkey.

Jel Codes: D40, Q40, Q41.

120

İİBF Dergi
39/2
Aralık
December
2020

COVID-19 KRİZİNİN DÜNYA VE TÜRKİYE ENERJİ PIYASALARINA ETKİLERİ

ÖZ

Covid-19 salgını hayatın birçok alanını derinden etkilemiştir. Bu süreçten en fazla zarar gören kesimlerden biri de enerji piyasalarıdır. Söz konusu piyasalar Covid-19 salgınının olumsuz yansımaları sonucunda ciddi şoklarla karşı karşıya kalmıştır. Bu dönemde küresel petrol talebinde yaşanan daralma çok kısa süre içerisinde fiyatların sert bir şekilde düşmesini beraberinde getirmiştir. Pandemi döneminde ekonomik faaliyetlerin durağanlaşması petrolde olduğu gibi elektrik tüketiminin de azalmasına neden olmuştur. Kısacası, salgın sürecinde birçok ülke enerji kaynaklarına olan talep alışkanlıklarını değiştirmek zorunda kalmıştır. Öte yandan, Türkiye ise bu süreci birçok ülkeye göre daha olumlu geçirmektedir. Petrol ürünlerinde dışa bağımlılığı bulunan Türkiye, fiyatların düşük olduğu dönemde piyasadan ucuz petrol satın alarak depolama imkanını kullanmıştır. Böylece enerji faturasının azaltılması noktasında önemli bir avantaj sağlanmıştır. Ayrıca salgının Avrupa'yı etkisi altına aldığı ve buradaki ülkelerin elektrik tüketimlerinde önemli azalmalar yaşandığı bir dönemde Türkiye, söz konusu alanda iyi bir performans sergilemiştir. Ekonomik faaliyetlerdeki artışla paralellik gösteren elektrik tüketim verisi Türkiye'nin salgın dönemindeki sanayi ve ticaret aktivitelerini Avrupa ülkeleri kadar yavaşlatmadığını göstermektedir. Bu çalışma Covid-19 salgınının olumsuz etkilerini göstermeye başladığı dönemi ele alarak, dünya ve Türkiye'nin enerji piyasalarındaki gelişmeleri değerlendirmektedir. Çalışmanın amacı enerji piyasalarını tüketim-fiyat hareketleri ekseninde analiz etmek ve kriz sonrası için politika önerileri geliştirmektir.

Anahtar Kelimeler: Covid-19, Enerji Piyasaları, Petrol Fiyatları, Türkiye.

Jel Kodları: D40, Q40, Q41.

INTRODUCTION

The Covid-19 epidemic, which was first seen in Wuhan, China, in December 2019, spread all over the world in a very short period and has brought several problems. In this process, activities in many areas ranging from tourism to social life, from the business world to countries' economies, were interrupted. In this context, the negative effects of the Covid-19 epidemic on energy markets has increasingly continued.

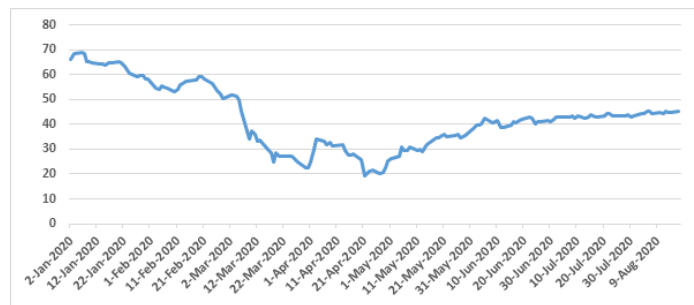
122

İİBF Dergi
39/2
Aralık
December
2020

Since the first days of this epidemic, approximately 3 billion people have maintained their lives in limited conditions. In other words, people changed their lifestyle habits. As a result of this, there is a considerable decline in global energy demand. Oil is one of the most affected energy resources from this situation. While the decrease in demand has reached about 25% in April and May, this status caused a rapid decline in global oil prices (IEA, 2020a).

It is the first time that the markets face a decrease in oil demand at this scale. Therefore, the oil prices fell dramatically to the level of \$20 (Nicola et al., 2020). As it can be seen in Figure 1, in the early of 2020, the approximate price of Brent oil per barrel dropped from \$65 to 35\$ on March 9 and 25\$ on March 18. Since then, while oil prices have fluctuated, it tested the bottom level with almost 19\$ on April 21. Thereafter, the oil prices entered into an upward trend again and increased to about 45\$ level. These movements in the oil price have affected not only the oil industry but also the whole energy markets deeply.

Figure 1: Brent Oil Prices (\$ per barrels)



Source: Bloomberg, 2020

*The Effects of Covid-19 Crisis on Energy Markets of the
World and Turkey*

These price movements are directly related to the decisions of the oil producer countries. At the beginning of the pandemic, there was an oversupply in the oil, and this situation caused a price war between the two top oil-producing countries; Russia and Saudi Arabia (Hauser et al., 2020). In April, the OPEC (Organization of Petroleum Exporting Countries) platform agreed to cut the global oil quantity supply to 9,7 million barrels a day (Khachirova and Shakhverdov, 2020). After then, the organization decided to extend this cut through July. As a result of this, the oil prices have been in a tendency to increase. Lastly, due to the world's growing demand trend, OPEC determined the current crude oil production cut level to 7,7 million barrels per day in August (Kutlu, 2020). In the near future, the effects of this decision will be seen on global oil prices.

This study aims to present the negative effects of Covid-19 in the context of energy markets in the world and Turkey. In this sense, first, the general status of the global energy market during the pandemic is introduced. After then, the second part examines the effects of Covid-19 on Turkey's energy markets in terms of consumption and price movements. The final part gives several policy recommendations for the post-pandemic period.

1. THE STATUS OF GLOBAL ENERGY MARKETS

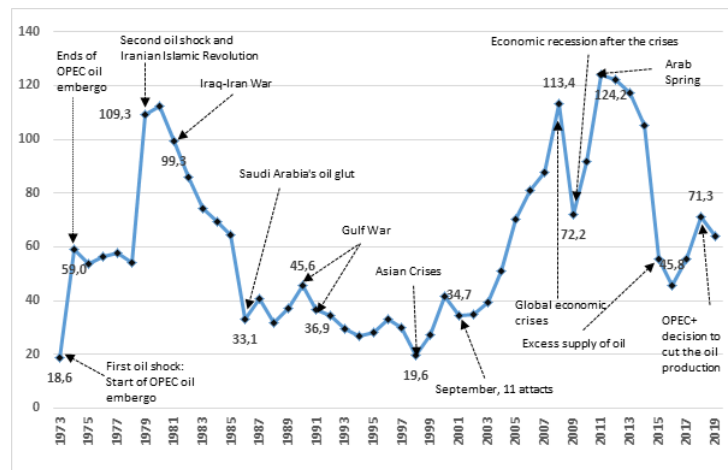
Energy markets have experienced a serious shock with the effects of the Covid-19 crisis. Due to the coronavirus pandemic, the decrease in oil demand in the first quarter of 2020 continued this trend in the second quarter. In this sense, the positions of the oil-producing countries will have a crucial importance.

Some of the actions to be taken by the dominant countries in the oil markets may adversely affect the other producer countries. In this context, countries such as Iraq, Nigeria, Algeria, and Oman may face several financial difficulties. Because these countries derive the vast majority of their incomes from oil sales. For instance, approximately 90% of the Iraqi central budget consists of oil revenues of the country (IMF, 2019). Therefore, it is possible that Iraq may face severe economic difficulties with today's oil prices. This circumstance may affect the country in a very negative way.

In the context of oil consumption, on the other hand, transportation is one of the primary sectors that the Covid-19 epidemic affects negatively. In the first days when the epidemic began to feel its effects, the activities almost came to a standstill in the sector. As a result of this, there was a significant drop in this sector's daily oil demand, where approximately 60% of daily oil production is used (IEA, 2020b).

In Figure 2, major political events and economic crises related to the oil markets are demonstrated for the period between 1973 and 2019. In the past periods, the downward movements in oil prices generally showed parallelism to the economic and political crises. Today, on the other hand, the fast variations in oil prices are not only from economic conditions but also due to the changes in humans' lifestyle. For instance, while the aviation industry constitutes approximately 3% of the global economy, the same sector occupies 10% in total oil consumption (BP, 2019a). In this sense, the restrictions on travel and trade have caused a slowdown in the activities of the aviation sector. Moreover, as a result of the decreases in oil demand, some countries are negatively affected. Therefore, the factors that being 'results' formerly are now able to be the potential 'causes'. In other words, the Covid-19 process has designed the oil market different from the other political or financial crises.

Figure 2: Crises and Price of Oil (\$, Real Prices, 2018=100)



Source: BP, 2019b

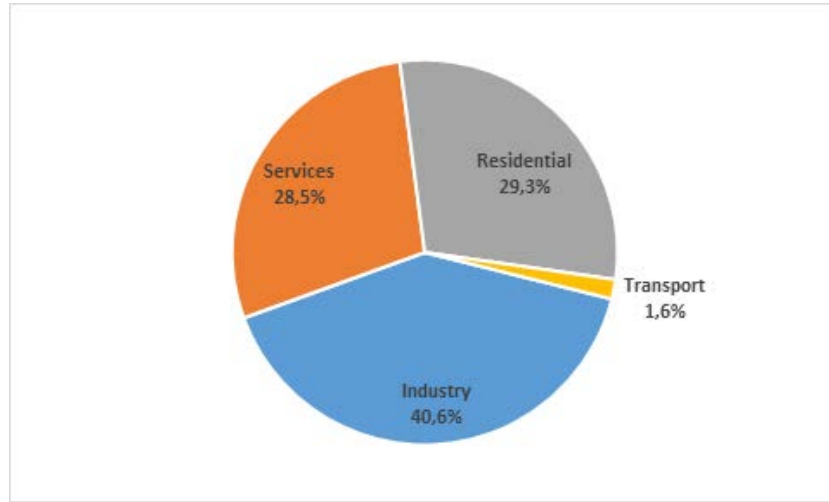
*The Effects of Covid-19 Crisis on Energy Markets of the
World and Turkey*

In addition, the negative impacts of the coronavirus epidemic will have indirect consequences on the oil industry as well. In the following periods, it is possible to be taken some cost-minimizing measures since the sector's profits will decrease in a considerable amount. This situation may result in many layoffs in the oil industry.

Electricity is another sector that has critical importance in terms of energy markets. As a result of the crisis caused by the epidemic, the significance of electricity markets was understood once again. Electricity is an essential energy type under the circumstances of today's world. Despite a serious restriction in people's living standards due to the epidemic, the demand for electrical energy has increased more than ever, especially at the household level. At this stage, electricity-based services such as communication systems, heating-cooling units, and lighting should continue without disruption. Therefore, the electricity supply security has critical importance in the process that we are experiencing today.

On the other hand, the substantial decreases in electricity consumption in the industry and service sectors have been taking attention since the beginning of the epidemic. In this sense, the decline in electricity demand is affecting the supply-side of the economies directly. For investigating the reasons behind the decline in global electricity demand, it would be useful to look at the sectoral electricity consumption data. The proportion of electricity used by the sectors is given in Figure 3. It can be seen from this figure, most of the electricity is demanded by the industry and service sectors (IEA, 2019). Moreover, almost 30% of the total electricity is consumed by the residential sector. Within this framework, in parallel with the increase in the Covid-19 epidemic, the industry and service sectors' activities have decreased. Hence, a downward trend has been observed in total electricity consumption. In addition to this, due to the restrictions applied, there has been a noticeable increase in the amount of electricity used in houses. However, since the residential sector's electricity consumption rate corresponds to almost one-third of the general demand, this trend has not caused a significant change in total consumption.

Figure 3: Global Electricity Demand by Sectors (% , 2018)



Source: IEA World Energy Outlook 2019

In addition to the electricity and oil sectors, it is also essential to follow the natural gas market developments during this process. It cannot be said that the decrease in oil demand in this period is valid for natural gas. However, the sharp decline in oil prices directly affects the global natural gas markets. As known, contracts made in natural gas markets are arranged based on global oil prices. Therefore, in general terms, the downward trend in oil prices also lowers the natural gas prices. While this situation is considered as an advantage for countries that are dependent on external suppliers in natural gas, it may present a disadvantage in terms of the countries that have the sources. Nevertheless, Russia has planned to increase its natural gas transfer capacity to the European zone despite the low prices (Paraskova, 2020). The country will likely experience a possible loss of income with this capacity increase. However, Russia can operate this process to increase its dominance in the European market in the long term.

Yet another fossil energy source, coal, on the other hand, the prices have moved horizontally despite the sharp decrease in oil and gas prices (Trading Economics, 2020). If the current downtrend continues for the oil and gas prices in the next periods, coal usage can decrease,

especially in the electricity generation sector. That is to say, in terms of power generation, there may be a tendency towards natural gas, which is presently cheaper than coal.

Perhaps the most positive aspect of the epidemic, based on energy consumption, will be the reduction of global carbon emissions. Today, the phenomenon of global carbon emission is one of the biggest problems caused by the usage of energy resources. Although countries' attitudes on this issue are mostly optimistic, the announced data indicate that the general situation is getting worse. On the other hand, due to the rapid decrease in fossil fuel demands in the first quarter of 2020, the global emission quantities were expected to fall. Actually, the CO₂ emissions declined by about 8% lower than the previous year during the last seven months of 2020 (IEA, 2020c).

Although the factors leading to the Covid-19 situation are negative, the decrease in emissions can be considered a positive process. Moreover, the developments in the fossil fuel markets will probably result in a global energy transformation action. In this context, using clean energy sources can be seen as an important option.

2. THE EFFECTS OF THE COVID-19 ON TURKEY'S ENERGY SECTOR

The Covid-19 crisis has shown its negative effects in Turkey as well as in the world. From transportation to tourism, from international trade to the energy sector, the undesired consequences of the epidemic were deeply felt. Therefore, the current crisis environment causes an unstable situation in the supply and demand equilibrium.

Energy is one of the most prominent sectors in this process. Furthermore, oil became the top of the agenda in terms of energy markets. In this context, firstly, sudden and sharp decreases were observed in the global oil prices. After that, the market seemed to have stabilized with OPEC's supply restriction. However, prices fluctuated again in a very short period, and this situation affected many countries all over the world.

Turkey, as one of these countries, is dependent on external sources in the oil and natural gas. The low price of oil refers to a situation in

favor of Turkey due to the reduction of energy expenditure. Besides, moving the oil and gas prices together is also a positive situation for Turkey since the country consumes natural gas intensively both in industry, electricity generation, and heating sectors. The majority of imported natural gas is transferred to Turkey by pipelines. Since this trade is based on long term contracts, it is not affected by price movements in the short term. Besides, Turkey is also importing liquified natural gas (LNG) from 11 different countries (EMRA, 2018). In this regard, Turkey has the highest share in LNG imports in the Europe zone after Spain and France, respectively (BP, 2019b). Moreover, Turkey has increased the LNG imports more than two times over the last decade. Therefore, Turkey has gained a significant advantage in LNG imports during the epidemic.

Turkey has taken some precautions for this period to overcome the Covid-19 crisis process with the least damage. Activities under the National Energy and Mining Policy that were shared with the public in April 2017, have been continuing for the last 3 years without interruption. This policy that prioritizes localization and supply security is strengthening Turkey's energy position (Karagöl et al., 2017). Especially in this period in which the global energy system is in trouble, the growth of local and renewable energy source rate in electricity production provides a notable advantage to Turkey. However, Turkey's energy sector's integrated structure to the global energy system has caused some negativity for the county.

2.1. The Overview of Energy Markets in Turkey during the Covid-19 Pandemic

It is obviously seen that the Covid-19 crisis deeply affected the economies and energy markets of the countries. In Turkey, on the other hand, the negative effects caused by the pandemic are controlled better than several Western countries. It is well known that this crisis primarily shows its impacts on the sectors such as tourism, trade, industry, and transportation in terms of energy consumption. In this sense, the decreases in oil and electricity consumption give clues about the general economic activities.

In Turkey, the activities, especially in airline and road transport, are interrupted in this period. As a result, the companies that operating in

*The Effects of Covid-19 Crisis on Energy Markets of the
World and Turkey*

these sectors have suffered significant profit losses and cost increases. In addition to this, the dramatic declines in energy usage in industrial and service sectors have attracted attention. Therefore, how the energy markets will change and what will be the results of these changes in Turkey are the main topics that debated over.

The general energy consumption is in declining trend in Turkey as it is in the world. This situation certainly impacts the local energy prices. The sharp falls in global oil prices provide some opportunities for the foreign dependent countries in this energy source like Turkey. In this period, importing oil from the global energy markets is a sensible option for Turkey. It is difficult to give the exact information about the fullness rate of Turkey's current storage facilities. However, some inferences about the storage capacities of the country can be made.

Turkey's current crude oil storage capacity is approximately 15 million tonnes (Kaya and Kutlu, 2020). However, since Turkey is a member of G20, the strategic reserve capacity should be 60 days of net consumption or 90 days of net import of the country (Haar, 2019). In 2019, Turkey's total crude oil import quantity was approximately 32 million tonnes (EMRA, 2019). In this context, 90 days of the country's net import capacity is about 7,5 million tonnes, and the crude oil stock amount of Turkey was 6,2 million tonnes in 2019. This calculation means that Turkey has reached over 80% of the required stock amount by the end of 2019.

Table 1 gives Turkey's monthly crude oil imports for the last 5 years. When these data are analyzed, it is obviously seen that the highest crude oil import amounts belong to 2020, especially for the first quarters of the relevant years. From this point of view, Turkey has implemented the policy of increasing crude oil imports and buying cheap oil from the markets while the oil prices in the global energy markets are low. In addition, Turkey's energy expenditures during the period mentioned above have drawn attention. Total energy import expenses, which are 18,4 billion dollars in the first 5 months of the last year, decreased by almost 30% in the January-May period of 2020 and are estimated as 12,7 billion dollars (TurkStat, 2020).

Table 1: Turkey's Monthly Crude Oil Imports Between 2016 and 2020 (January-May, Million Tonne)

	January	February	March	April	May
2016	1,91	1,91	1,66	1,94	2,09
2017	2,37	1,72	2,10	2,38	2,56
2018	1,47	1,31	1,34	1,47	1,80
2019	2,18	2,34	2,50	2,37	2,67
2020	2,68	2,33	2,69	2,35	2,33

Source: TURKSTAT Foreign Trade Statistics

130
İİBF Dergi
39/2
Aralık
December
2020

Along with the oil market, Turkey's renewable energy market is also affected negatively by the Covid-19 crisis. Especially the activities in the solar and wind power plants have been interrupted due to the failure of the supply chain as a result of the coronavirus epidemic. As it is well known, China leads to the production of solar energy equipment. The negative developments in China during the epidemic have caused delays in the production process. Similarly, serious declines in the wind turbine productions in China and Europe have led to the slowdown of ongoing projects in Turkey.

When the epidemic first started and showed its effect in Europe, Turkey's electricity consumption reduced remarkably. One of the primary reasons for this decline is the global economic slowdown. To understand the situation better, it is useful to examine the electricity consumption data of the selected countries compared to the previous periods.

In Table 2, the comparison of percentage changes in electricity consumption between 2019 and 2020 are given for some selected European countries and Turkey, correspondingly. The peak hour consumption (between 8:00 and 18:00) for working days is considered in this table. The first week starts on 2nd-6th March for 2020, which corresponds to 4th-8th March for 2019. The following weeks were reviewed with the same method.

According to the information from Table 2, since the middle of March, when the epidemic started to show its impact in the Europe zone, significant decreases are observed in the electricity consumption amounts of Italy, Spain, Belgium, Austria, France, and Portugal compared to the previous year. In April, May, June, and July, the electricity consumption of England declined dramatically. On the

The Effects of Covid-19 Crisis on Energy Markets of the World and Turkey

other hand, in general terms, there has been some improvement for the European countries as of June (13th week), but the downtrend in electricity consumption has continued.

Turkey is in a better position in electricity consumption and economic activities than the selected European countries. In Turkey, the electricity consumption in March was more than the same period of the previous year. However, starting from April, significant decreases were experienced in the country with increasing the spread of the epidemic. Moreover, the downward trend continued in May, June, and July. Currently, due to the consumption reached a positive level, it can be said that the recovery process started in Turkey. Therefore, the general situation in Turkey is better than many European countries.

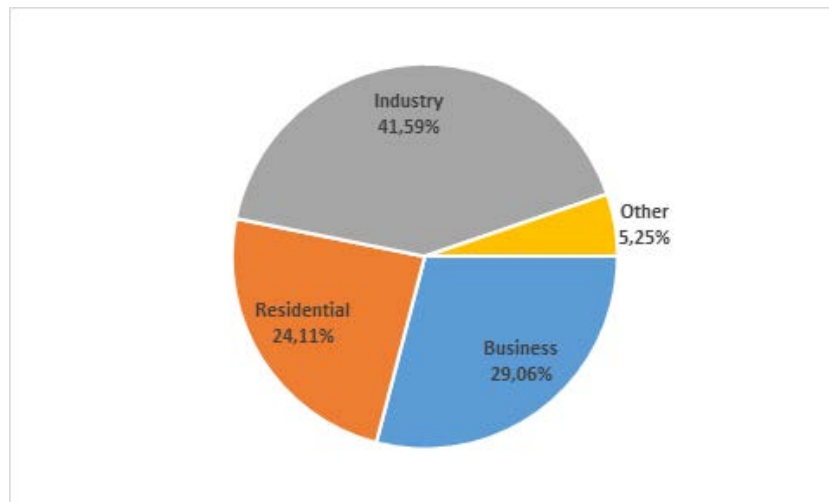
Table 2: Percentage Changes on the Electricity Consumption for Selected Countries Relative to 2019

Country \ Week	Italy	Spain	Belgium	Austria	France	Portugal	England	Germany	Turkey
1	+1	+2	-2	-3	+3	+13	-13	-3	+13
2	-6	+1	-4	-1	+2	+3	-2	+1	+3
3	-21	-9	-9	-6	-9	-4	+1	-1	+4
4	-30	-15	-20	-21	-21	-14	-14	-9	-4
5	-35	-24	-18	-20	-18	-14	-13	-12	-9
6	-30	-25	-16	-12	-10	-17	-11	-7	-12
7	-28	-11	-16	-15	-22	-16	-19	-13	-17
8	-15	-12	-14	-17	-7	-12	-20	-9	-11
9	-15	-15	-12	-10	-13	-16	-17	-7	-10
10	-15	-15	-11	-12	-10	-11	-16	-15	-3
11	-12	-13	-11	-14	-17	-15	-19	-11	-16
12	-11	-12	-8	-15	-9	-13	-15	-15	-20
13	-11	-8	-1	-14	-1	-10	-10	-9	-11
14	-15	-10	-4	-13	-5	-9	-12	-7	-12
15	-11	-9	-3	-13	-3	-15	-3	-14	-7
16	-16	-8	-5	-9	-8	-7	-16	-3	-7
17	-15	-5	-5	-8	-8	-6	-21	-8	-1
18	-11	-4	-5	-10	-10	-7	-19	-8	-11
19	-12	-4	-3	-8	-5	-4	-16	-4	-11
20	-6	-2	-1	-6	-6	-1	-16	-5	+2
21	-8	-4	-3	-4	+11	-2	-10	-4	-2
22	-6	-1	-5	-7	+1	+3	-7	-6	-1

Source: Author's calculation based on the European Network of Transmission System Operators for Electricity and Turkey Load Dispatch Center

Additionally, it will be useful to examine the sectoral electricity data to understand the causes behind the decreases in Turkey's general electricity consumption. The percentage distribution of the last five years' average electricity consumption by sectors is given in Figure 4. It can be easily observed from this figure that approximately 70% of the total electricity is used in business and industry sectors. Besides, the electricity consumed in the residential sector is around 25%. These percentages show a similar distribution in the world (see Figure 3 for the details). In other words, the majority of electricity is consumed in business and industry. From this aspect, due to the decreases in business and industrial activities due to the epidemic, a downward trend is observed in the total electricity demand in Turkey as well as in the world. Besides, the residential sector's electricity consumption amount increased within this period since more than 3 billion people worldwide and 35 million people in Turkey are forced to stay at home. However, the rate of electricity used in houses corresponds to 1/4 of the general demand, and it does not cause a significant change in the total consumption amount.

Figure 4: Turkey's Average Electricity Consumption by Sectors (% , 2015-2019)



Source: Author's calculation based on EMRA Electricity Market Development Reports

The measures taken by the governments to struggle with the pandemic also have an impact on the decline of energy consumption amounts in the world. In this context, starting from February, Turkey has taken some preventive precautions to decrease the pandemic's spread. Firstly, the flights between China and Turkey were cancelled. Then, the reciprocal flights between Iran, Italy, South Korea, Iraq, and Turkey were stopped. After the first official Covid-19 cases were announced in Turkey on March 11, 2020, the scope of the measures has started to expand across the country. Within this period, the sports competitions were played without spectators, the education services at all levels were interrupted, the activities of several companies in the service sector were stopped, the teleworking model in public and private sectors was adapted, and lastly, the intercity transportation service was temporarily suspended.

The precautionary measures mentioned above are directly related to the country's general electricity demand. In this sense, along with controlling the spread of the pandemic in the world, an increase in general electricity consumption can be expected. Yet, the course of the Covid-19 epidemic will be extremely important in the coming period. On the other hand, if the problems in the countries that Turkey has a large export volume continue, the country's production capacity and electricity consumption are possible to decline even if the economic activities get back to the normal.

2.2. The Reflections of Covid-19 Pandemic on Energy Prices in Turkey

In the period of the coronavirus epidemic, general energy prices have significantly declined all over the world. In Turkey, critical decreases were observed, especially in March and April. Table 3 presents the energy price changes or energy inflation rates in Turkey. According to these data, the prices increased by 1,11% in January on a monthly basis. After then they decreased by 0,63%, 3,12% and 4,99% in February March and April, respectively (CBRT, 2020). In May, the general energy prices have started to increase again in Turkey. Although the most important reason for the decrease in energy prices in March and April was the sharp decline in global oil prices due to the epidemic, the depreciation of the Turkish lira against the US dollar caused this decrease to remain limited. When the price movements

are analyzed on an annual basis, it is seen that there is a decreasing trend starting from January, and the most significant decline occurred in April.

Table 3: Changes in the Energy Prices in Turkey (% , January-July 2020)

Period	Monthly	Annually
January	+1,11	+17,14
February	-0,63	+15,54
March	-3,12	+9,81
April	-4,99	+3,30
May	+2,13	+5,23
June	+2,62	+9,12
July	+2,50	+8,57

Source: Central Bank Monthly Price Developments Reports

In Turkey, the most noticeable impact of the Covid-19 process on energy prices occurred in the field of retail fuel trade. Table 4 presents Turkey's fuel sales prices covering the period between January and August. According to these data, at the beginning of 2020, the gasoline and diesel prices were 6,99 TL and 6,52 TL, and then they started to rise again after seeing the bottom levels on April 23, with 4,81 TL and 4,77 TL, respectively (EMRA, 2020). As of May, the gasoline and diesel prices have started to increase and reached 6,33 and 5,91 in July, respectively. Although the prices matched the top level in August compared with March, they are still lower than the beginning of the year. As a result, in the early days that the pandemic started to feel its impact on energy markets, the fuel prices have fallen in Turkey parallel with global oil prices.

*The Effects of Covid-19 Crisis on Energy Markets of the
World and Turkey*

Table 4: Fuel Sales Prices in Turkey (January-August, Liter/TL)

Date	Unleaded Gasoline 95 Octane	Diesel Fuel
16 January 2020	6,99	6,52
31 January 2020	6,67	6,33
25 February 2020	6,83	6,31
29 February 2020	6,40	6,01
1 March 2020	6,50	6,12
3 March 2020	6,57	6,19
11 March 2020	5,98	5,64
14 March 2020	5,47	5,64
17 March 2020	5,54	5,64
18 March 2020	5,33	5,65
19 March 2020	5,30	5,38
20 March 2020	5,14	5,18
21 March 2020	5,18	5,31
26 March 2020	5,03	5,30
28 March 2020	5,14	5,30
31 March 2020	5,08	5,36
1 April 2020	4,97	5,28
3 April 2020	4,92	5,28
4 April 2020	5,11	5,28
7 April 2020	5,26	5,29
9 April 2020	5,22	5,44
10 April 2020	5,09	5,35
17 April 2020	5,09	5,07
18 April 2020	5,24	5,17
21 April 2020	5,19	5,17
22 April 2020	5,13	5,18
23 April 2020	4,81	4,77
25 April 2020	5,10	4,77
1 May 2020	5,18	4,77
5 May 2020	5,25	4,97
7 May 2020	5,50	5,21
9 May 2020	5,65	5,27
15 May 2020	5,40	5,15
16 May 2020	5,49	5,26

135

İİBF Dergi
39/2
Aralık
December
2020

Table 4: (Devamı)

19 May 2020	5,62	5,35
21 May 2020	5,82	5,47
4 June 2020	5,72	5,34
5 June 2020	5,69	5,31
9 June 2020	6,07	5,64
23 June 2020	6,33	5,88
25 June 2020	6,46	5,88
26 June 2020	6,24	5,88
30 June 2020	6,12	5,71
8 July 2020	6,33	5,91
12 August 2020	6,57	6,07

136
İİBF Dergi
39/2
Aralık
December
2020

Source: EMRA Fuel Prices

Notes: 1. The prices belong to 8 fuel companies with the highest transaction volume in Turkey.

2. The dates have been arranged based on the relevant month's price changes.

Another important energy market in Turkey is the electricity market. In the epidemic period, it was announced by the Energy Market Regularity Authority (EMRA) that the electricity price would not rise for the three months, including April, May, and June. Furthermore, there will be no changes in electricity prices for the third quarter of 2020 (Official Gazette of Turkey, 2020). Therefore, while this situation can be said to decrease the energy inflation even a little, the global price movements in the oil have affected the general energy prices in Turkey. Moreover, as it is known, Turkey's imported natural gas price indexed to the global oil prices. Therefore, the variation in the oil prices is expected to reflect on natural gas prices with a certain delay.

In terms of the electricity market, the renewable energy sector has been getting popular in Turkey, especially in the last period. However, some cost policies were applied in the renewable industry during the pandemic. Due to the negative impacts corresponding with the Covid-19 epidemic, EMRA announced a cost update in the Renewable Energy Resources Support Mechanism (YEKDEM) for the April-December period of 2020 at the beginning of the year. These costs are MWh based unit cost of produced electricity to the electricity

*The Effects of Covid-19 Crisis on Energy Markets of the
World and Turkey*

supply companies. According to the mentioned announcement, EMRA predicted that the previous year's costs would increase by approximately 10% for 2020. In Table 5, these costs are presented comparatively for 2019 and 2020.

However, the costs which are given in Table 5 were revised by EMRA as 228,12 TL/MWh, 216,89 TL/MWh, and 134,36 TL/MWh for April, May, and June, respectively. The main reasons behind the sharp increases in YEKDEM costs can be explained by the gradual increase in the exchange rate of dollar and the failure of the supply chain for renewable energy equipment such as wind and solar. Of course, there will be some reflections of these costs to the final consumers in the future. In other words, it seems likely that there will be some increase in electricity prices after the summer period.

Table 5: YEKDEM Costs

2019	YEKDEM Unit Additional Cost (Reference Price) (TL/MWh)	2020	YEKDEM Unit Additional Cost (Reference Price) (TL/MWh)
April	110,66	April	121,02
May	109,99	May	128,66
June	98,41	June	106,82
July	93,96	July	100,67
August	94,96	August	105,91
September	81,83	September	90,70
October	87,89	October	92,25
November	79,27	November	88,51
December	73,25	December	90,10

Source: EMRA

In general, the Covid-19 epidemic has affected Turkey's energy markets in many aspects. The two significant effects of this pandemic are observed in the consumption and price trend. As a result of the decline in oil consumption, the prices have decreased in Turkey as well as in the world. On the other hand, another significant impact of this process was seen in Turkey's renewable energy field. In this sector, the supply opportunities become difficult for Turkey, and as a

result, the costs have increased. Therefore, it can be said that Turkey's energy markets have faced many challenges during the Covid-19 pandemic.

CONCLUSION AND POLICY RECOMMENDATIONS

Today, as a result of the pandemic, the importance of energy security and the necessity of energy are understood better by the whole world. Furthermore, the demand and supply gap in this period makes it essential to restructure the energy markets. Therefore, managing the energy markets with usual methods can also be changed in the upcoming period. While the liberal policies are being discussed these days, the way can be opened for the state to take a more active role in the market. In other words, the efficiency and responsibility of the public sector in the markets can be increased. In this sense, while policymakers expect a rapid economic recovery after the epidemic crisis, it is quite apparent that this process will work in a different way than usual.

During the epidemic process, the low-income countries have suffered the heaviest damage among the oil-producing ones. Countries such as Iraq, Nigeria, Algeria, Gabon, Ecuador, and Oman are highly likely to face deep economic crises. Today's unstable oil prices have also given important signals for these countries to deepen the financial crisis. Because a large part of the national income of these countries comes from oil revenues. For this reason, during and after this pandemic period, international organizations should give priority to the aforementioned low-income developing countries. The balancing role of Saudi Arabia in this situation is crucial since she is a major oil producer and the term president of G-20.

On the other hand, the sharp price movements in the oil market in this process can accelerate the transition of countries to renewable energy. However, the global energy infrastructure is compatible with fossil energy resources in general. In addition, the most critical shortage in the field of renewable energy is the lack of a continuous production process. For this reason, countries should enrich their energy portfolios both with technological investments that can eliminate the deficiencies in the renewable energy field and by turning to alternative resources.

*The Effects of Covid-19 Crisis on Energy Markets of the
World and Turkey*

As a result of the Covid-19 epidemic that impacts all over the world, while the global oil prices fall, Turkey's energy bill has also declined. In this period, Turkey has bought cheap oil from foreign markets and stored this oil in the storage facilities of the country. This situation can be considered as an important opportunity for countries like Turkey that dependent on external suppliers, especially in the oil. However, there is a correlation between the decline in oil prices and the downturn of the world economy. Therefore, for Turkey, which is integrated in the global economic system, this situation's sustainability is a question of debate. Consequently, even though Turkey provides a short-term benefit from the decline in oil prices, these low prices can create risky results for the country's general economic structure in the long-term.

In the recent period, the coronavirus pandemic and the global economic situation seem to be the world's main problems. However, in general terms, one of the most critical issues in the energy markets is carbon emission and the phenomenon of climate change due to these emissions. Countries should undoubtedly draw attention to the problems that encourage the usage of clean energy resources while creating their measure packages for both economy and energy markets in the future. In this context, countries will face a critical test of whether to fulfill their commitments on carbon emissions. While a shift towards cleaner energy resources is expected, it is difficult to reach a certain conclusion about the size or extent of this transformation. Moreover, governments face a vital decision phase as the oil prices are changeable to such a degree. The main question here is whether the actors in the market will take a lesson from the fluctuations in oil prices and accelerate the clean energy transformation. In the upcoming period, the production of autonomous smart home technologies, electric cars, cost-effective renewable energy equipment, and energy-storing batteries stand out as fundamental issues than ever before.

139

İİBF Dergi
39/2
Aralık
December
2020

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140

İİBF Dergi
39/2
Aralık
December
2020

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*The Effects of Covid-19 Crisis on Energy Markets of the
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ÖZET

Bu çalışma Covid-19 salgını döneminde dünyada ve Türkiye’de enerji alanında yaşanan gelişmeleri ele almaktadır. Bu bağlamda öncelikle petrol fiyatlarında görülen sert düşüş ve sonrasında bu durumun enerji piyasalarına olan yansımaları analiz edilmektedir. Ayrıca küresel sisteme entegre bir yapıda bulunan Türkiye’nin salgın sürecinden nasıl etkilendiği incelenmektedir.

İlk olarak Aralık 2019’da Çin’in Vuhan kentinde ortaya çıkan ve yeni tip koronavirüs (Covid-19) olarak adlandırılan salgın, kısa süre içerisinde tüm dünyayı etkisi altına almıştır. Ekonomik olarak değerlendirildiğinde bu salgın üretimden tüketime, uluslararası ticaretten finans piyasalarına kadar birçok alanda olumsuzlukların yaşanmasına sebep olmuştur. Bu bağlamda Covid-19 krizinin en fazla etkilediği alanlardan biri de enerji sektörüdür.

Enerji, modern dünyanın vazgeçilmez unsurlarının başında yer almaktadır. Yaşamın tüm alanlarında kullanılan enerji, eski çağlardan günümüze kadar sosyal ve ekonomik gelişmenin ana bileşenlerinden biri olarak kabul edilmektedir. Gelir ve sosyal refah düzeyindeki artışa paralel bir gelişim gösteren enerji tüketimi, yaşanan koronavirüs krizi ile birlikte farklı bir boyuta taşınmıştır.

Covid-19 salgınının özellikle Avrupa ve Amerika kıtalarına sıçramasıyla birlikte küresel enerji tüketimi önemli ölçüde azalmıştır. Söz konusu talep hareketlerine ticaret ve ulaşım sektörlerinde yaşanan yavaşlamanın sebep olduğu söylenebilir. 2020’nin ilk çeyreğinde önemli ölçüde gerileyen petrol talebi ikinci çeyrekte de azalma eğilimine devam etmiştir. Bu süreçte küresel petrol talebi yaklaşık %20 oranında küçülürken, söz konusu durum petrol fiyatlarında sert düşüşlerin yaşanmasına neden olmuştur. 2020 başında 65\$ olan Brent petrolün varil fiyatı, Mart’ta 25\$ düzeyini test etmiştir. Nisan’da ise 20\$’la tarihin en düşük seviyelerine kadar gerilemiştir. Bu bağlamda, petrolde gerçekleşen aşırı fiyat hareketleri, küresel enerji piyasalarının ciddi bir biçimde etkilenmesi sonucunu beraberinde getirmiştir.

Koronavirüs krizinden olumsuz olarak etkilenen bir diğer alan da elektrik sektörüdür. Küresel elektrik talebi bu dönemde önemli ölçüde azalmıştır. Bunun sebebi ise salgın sürecinde üretim, ticaret ve hizmet sektörlerindeki faaliyetlerin adeta durma noktasına gelmesidir. Günümüz toplam elektrik tüketiminin yaklaşık %70’inin sanayi ve ticaret alanlarında yoğunlaştığı göz önüne alındığında bu azalmanın sebepleri daha iyi anlaşılmaktadır.

Tüm dünyada olduğu gibi Türkiye’de de Covid-19 krizinin olumsuz etkileri derinden hissedilmektedir. Bilindiği üzere Türkiye özellikle fosil yakıtlarda

neredeşye tamamen dışa bağımlı bir yapıya sahiptir. Başka bir ifadeyle, Türkiye tükettiğı petrol ve doğal gazın tamamına yakını dış tedarikçilerden temin etmektedir. Bu durum Türkiye'nin enerji harcamaları ve ekonomik dengesi açısından bir risk unsuru oluşturmaktadır. Ancak küresel piyasalarda düşen petrol fiyatları Türkiye'nin bu kaynağı düşük maliyetle satın almasına vesile olmuştur. Son 5 yılın ham petrol ithalat verisi incelendiğinde, Türkiye'nin en fazla petrol alımını 2020 yılında gerçekleştirdiğı görölmektedir. Ayrıca söz konusu petrolün geçen yıla kıyasla yaklaşık %30 oranında daha uygun maliyetle satın alınması dikkat çekmektedir.

Salgın döneminde Türkiye'de öne çıkan bir diğer önemli başlık elektrik tüketimi olmuştur. Çeşitli Avrupa ülkeleri ile Türkiye'nin 2019-2020 arasındaki aynı dönemleri kapsayan elektrik tüketim miktarları analiz edildiğinde, Türkiye'nin söz konusu alanda birçok Avrupa ülkesine kıyasla çok daha iyi bir konumda olduğı gözlemlenmektedir. Öyle ki salgının Avrupa'da etkilerini göstermeye başladığı Mart ayından itibaren birçok ülkede geçen seneye göre 5'te 1 oranında daha az elektrik tüketimi gerçekleştirilirken, Türkiye'nin bu süreci başarılı bir şekilde yönettiğı söylenebilir. Öyle ki, Türkiye'nin elektrik tüketim verileri bir önceki yıl ile kıyaslandığında 2020'nin ilk 6 aylık periyodunda 2019'a göre ortalama olarak %6,5'lik bir azalma yaşandığı görölmektedir. Bu bağlamda, Türkiye'de alınan tedbirlerin birçok Avrupa ülkesine göre daha dikkatli uygulanması ve ülkedeki üretim faaliyetlerinin sürdürölmesi söz konusu süreçten en az hasarla çıkılması noktasında etkili olmuştur. Ancak dünyada olduğı gibi Türkiye'de de toplam enerji talebinin önemli kısmının sanayi ve ticaret sektörlerinde gerçekleştirilmesi ve salgının bu alanlardaki faaliyetleri aksatmasından dolayı ülkenin genel elektrik tüketiminde geçen seneye oranla bir azalma yaşanmıştır. Bununla beraber, enerji fiyatları tarafına bakıldığında Türkiye'de aylık enerji enflasyonunun Şubat ve Mart aylarında azaldığı, Nisan'la birlikte yeniden artmaya başladığı görölmektedir. Söz konusu azalma ise yine küresel petrol fiyatlarındaki aşağı yönlü hareket ile paralellik göstermektedir.

Covid-19 salgınının Türkiye'deki enerji fiyatları üzerindeki en hissedilir etkisi perakende akaryakıt ticareti alanında gözlemlenmiştir. Ocak ayında benzin ve motorinin litre fiyatları sırasıyla 7 ve 6,5 TL sınırındayken pandeminin etkisiyle Nisan sonunda 4,8 TL seviyelerine kadar gerilemiştir. Öte yandan, elektrik piyasasındaki fiyat hareketleri petrolde olduğı gibi sert değışkenlikler göstermemektedir. Enerji Piyasası Düzenleme Kurumu (EPDK) 2020'nin ikinci ve üçüncü çeyreğinde elektrik tarifelerine zam yapılmayacağını duyurmuştur. Dolayısıyla ülkedeki enerji enflasyonunun elektrikten ziyade petrol fiyatlarında yaşanan artış nedeniyle yukarı yönlü hareket ettiğı sonucuna ulaşılabilir.

*The Effects of Covid-19 Crisis on Energy Markets of the
World and Turkey*

Diğer taraftan, Türkiye’de özellikle son dönemde popüler olan yenilenebilir enerji sektörü, salgın sürecinde bazı maliyet arttırıcı tedbirlerin uygulamaya konulması ile gündeme gelmiştir. Bilindiği üzere Türkiye’de kullanılan rüzgar ve güneş gibi modern yenilenebilir enerji ekipmanları yoğun olarak Çin ve Avrupa’dan ithal edilmektedir. Salgının etkilerini göstermeye başlamasıyla birlikte tedarik zincirinde birtakım aksamalar meydana gelmiş, döviz kuru artmış ve böylece maliyetler yükselmiştir. Bu nedenle yenilenebilir kaynaklar kullanarak üretilen elektriğin tedarik şirketlerine olan birim maliyetleri artmıştır. Söz konusu maliyetler bugün olmasa bile gelecekte tüketicilere yansıtılacak ve gelecekte elektrik fiyatlarının artmasına neden olacaktır.

Sonuç olarak Covid-19 salgınının Türkiye’nin enerji piyasalarını birçok yönden etkilediği görülmektedir. Bu salgının iki önemli etkisi tüketim ve fiyat eğiliminde görülmektedir. Tüketimdeki düşüşün bir sonucu olarak dünyada olduğu gibi Türkiye’de de özellikle petrol ürünlerinin fiyatları azalmıştır. Öte yandan, bu sürecin bir diğer önemli etkisi de Türkiye’deki yenilenebilir enerji sektöründe görülmüştür. Bu sektörde Türkiye için tedarik imkanları zorlaşmış ve bunun sonucunda maliyetler artmıştır. Dolayısıyla Türkiye’deki enerji piyasalarının Covid-19 salgını sırasında tüketim, maliyet ve fiyat anlamında birçok değişimle karşı karşıya kaldığı söylenebilir.

145

İİBF Dergi
39/2
Aralık
December
2020

