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Contributing Editors: **Michael Burns & Julia Derrick**

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Turkey

Melis Öget Koç, Ece Nur Yıldız & Duygu Derelioğlu
Kolcuoğlu Demirkan Koçaklı Attorneys at Law

Overview of the current energy mix, and the place in the market of different energy sources

Electricity

Turkey's electricity market is partly liberalised. The liberalisation continues progressively, and electricity generation, distribution and supply activities are now carried out in both private and state-owned companies.

Three state-owned companies are active in the electricity market: Elektrik *Üretim* A.Ş. ("**EÜAŞ**," *Electric Generation Corporation*), which is the state generation entity; Türkiye Elektrik *İletim* A.*Ş*. ("**TEİAŞ**," *Turkish Electricity Transmission Corporation*), which is the state transmission entity; and Türkiye Elektrik Dağıtım A.Ş. ("**TEDAŞ**," *Turkish Electricity Distribution Corporation*), which is the state distribution entity.

As of October 2021, Turkey's installed electricity power reached 99,050 MW.[1] Following the COVID-19 pandemic, in 2021 electricity demand in Turkey has increased. According to TEİAŞ data,[2] solar power plants ranked first in terms of the number of power plants generating electricity, while natural gas power plants ranked first in installed capacity. As of November 2021, 8,265 solar power plants generate electricity in Turkey, and the installed power capacity of these plants is 7,745 MW, while 350 natural gas power plants generate electricity, with a total installed power of 25,547 MW.[3]

Oil

The petroleum market in Turkey has been liberalised since the enactment of the Petroleum Market Law in 2003 and the Liquefied Petroleum Gas Market Law ("**LPG Market Law**") in 2005. The main importer of crude oil and petroleum products is Türkiye Petrol Rafinerileri A.Ş. ("**TÜPRAŞ**," *Turkish Petroleum Refineries Corporation*). Turkey meets more than 90% of its oil needs through imports. The majority of Turkish oil fields are aging and well yields are progressively decreasing. It is, therefore, crucial for Turkey to take advantage of modern technologies and techniques to increase production efficiency. TÜPRAŞ's four oil refineries produced 11.1[4] million tonnes of oil products in the first half of 2021. Although Turkey's crude oil production has increased over the years, the ratio of production-to-demand still remains low due to the exponential increase in demand.

Gas

The total number of natural gas consumers in Turkey increased to 17.5 million in 2021.[5] Gas comes second after oil in Turkey's total energy consumption. However, as a result of insufficient natural gas sources, Turkey largely depends on gas imports. Natural gas is imported from the Russian Federation, Iran and Azerbaijan through pipelines in addition to

liquefied natural gas ("**LNG**") from Nigeria and Algeria under long-term agreements and spot LNG from several countries under agreements of less than one year. Boru Hatları ile Petrol Taşıma A.Ş. ("**BOTAŞ**," *Petroleum Pipeline Corporation*) is the key player in the market, as it owns and operates the gas transmission network and imports more than 80% of Turkey's imported natural gas.

There are two underground natural gas storage facilities, *i.e.*, the Silivri Underground Natural Gas Storage Facility and Tuz Gölü Underground Natural Gas Storage Facility. Both of these facilities are owned and operated by BOTAŞ. The capacity of the Tuz Gölü Underground Natural Gas Storage Facility is planned to be increased to 5.4 billion cubic metres ("**BCM**") by 2023. There are also two LNG terminals, the BOTAŞ Marmara Ereğlisi LNG Terminal in Tekirdağ and the Ege Gaz Aliağa LNG Terminal. The Energy Market Regulatory Authority ("**EMRA**") also categorised floating liquefied natural gas ("**FLNG**") activities as storage activities and issued the first FLNG license to Etki Liman İşletmeleri A.Ş. for an FLNG terminal in Aliağa, İzmir and the second FLNG license to BOTAŞ for an FLNG terminal Dörtyol, Hatay.

Nuclear Energy

Nuclear power continues to be a crucial aspect in Turkey's aim for economic growth. Turkey had taken important steps for the construction of two nuclear power plants and for the required legal framework. One of the projects, however, was later abandoned.

Turkey's first nuclear power plant project is the Akkuyu NPP. In May 2010, the Russian Federation and Turkey signed an intergovernmental agreement to build, own and operate the Akkuyu NPP, composed of four 1,200 MW units. The plant's contribution to Turkey's GDP is estimated to be USD 50 billion. When in operation, the plant is expected to meet 10% of Turkey's overall electricity needs. According to public statements, the COVID-19 pandemic did not decelerate the construction of the Akkuyu NPP, and the plant's first unit is expected to be commissioned in 2023.

Renewable Energy

Turkey's primary renewable energy sources are (i) solar power, (ii) hydroelectric power, (iii) wind power, (iv) biofuel and (v) geothermal energy. Installed renewable energy power capacity has increased over the years. Currently, 53%[6] of Turkey's installed electricity power is generated by renewable energy-based power plants.

Changes in the energy situation in the last 12 months which are likely to have an impact on future direction or policy

Effects of COVID-19

In December 2020, the International Energy Agency ("**IEA**") published the 2020 Energy Efficiency Report. This report stated that the COVID-19 pandemic had reduced the already weak progress in energy efficiency to its lowest level in the last decade, and that this situation would threaten international climate targets. The report further stated that energy efficiency investments had also slowed considerably due to the pandemic.

In contrast to that report, Energy and Natural Resources Minister Fatih Dönmez issued a statement on 21 April 2021, stating that while the global economy was experiencing a serious bottleneck amid the COVID-19 pandemic, one of the rare sectors that had blossomed during the pandemic-ridden environment was the renewable energy sector in Turkey. Minister Dönmez noted that renewable energy would grow well above the IEA's expectations. He explained that the demand for renewable energy was quite high, and that electricity derived

from renewable energy sources was expected to surpass electricity derived from coal in the next 5 to 10 years.

Natural Gas Discoveries

On 20 August 2020, President Recep Tayyip Erdoğan announced that "*the largest natural gas discovery in Turkey's history"* was made in the Black Sea. Turkey's famous drilling ship, Fatih, discovered 320 BCM of natural gas in the region. President Erdoğan stated that the drilling of wells would begin immediately, and that Turkey's goal would be to make this gas available for the use of the nation in 2023.

Following this announcement, President Erdoğan issued another statement in October 2020. This announcement stated that an additional 85 BCM of natural gas had been located in the same region, bringing Turkey's 2020 natural gas findings to a total amount of 405 BCM.

2021 harbored further good news for the natural gas sector. In June 2021, President Erdoğan made yet another announcement that another natural gas reserve of 135 BCM had been discovered again in the same region, which lead Fatih to make a discovery of 540 BCM of natural gas in one year.

In November of 2021, Saipem S.p.A. ("**Sapiem**"), an Italian multinational oilfield services company, undertook to lay subterranean pipelines to transport the 540 BCM of natural gas found in the Black Sea. The contract signed with Sapiem to lay the mentioned pipeline also sets out Sapiem's transportation and installation obligations. Sapiem's offshore operations are to begin in the spring of 2022.

Developments in government policy/strategy/approach

The Ministry of Energy and Natural Resources' Strategic Plan For 2019–2023

Six main objectives are laid out in the Ministry of Energy and Natural Resources' ("**MENR**") strategic plan for 2019–2023: (i) to ensure sustainable security of supply; (ii) to prioritise and increase energy efficiency; (iii) to strengthen institutional and sectoral capacity; (iv) to increase regional and global presence in the field of energy and natural resources; (v) to develop and transfer technology in the fields of energy and natural resources; and (vi) to increase foreseeability in the markets and production capacity through sustainable mining.

The actions to be taken to ensure sustainable security of supply by 2023 include:

- increasing installed solar-power capacity from 5,063 MW to 10,000 MW;
- increasing wind-power capacity from 7,005 MW to 11,883 MW;
- increasing hydroelectric-power capacity from 28,291 MW to 32,037 MW; and
- increasing geothermal capacity from 2,094 MW to 2,884 MW.

The actions to be taken are not limited to increasing installed capacity of renewable energy generation facilities. These actions also include increasing the installed electricity capacity based on local coal from 10,204 MW to 14,664 MW, which complies with Turkey's strategy concerning energy prioritising security of supply through variation and the use of resources available in Turkey, rather than decarbonisation.

Presidential Program for 2022

The Presidential Program for 2022 (the "**Program**") includes key strategies for the energy sector. According to the Program, renewable energy sources will have the primary focus to increase capacity in the areas as defined below:

- increasing installed electricity power capacity up to 102,423 MW by the end of 2022;
- increasing hydroelectric power capacity up to 32,228 MW by the end of 2022, which is already beyond 2023 targets;

- increasing wind power capacity up to 10,900 MW by the end of 2022; and
- increasing solar power capacity up to 8,750 MW by the end of 2022.

Smart Metering

Within the scope of the "Turkey Smart Grid 2023 Vision and Strategy Roadmap Summary Report", published by the Association of Distribution System Operators ("**ELDER**") and EMRA,[7] Turkey aims to set up a nation-wide smart metering infrastructure, which is expected to cover at least 80% of the distributed electricity in the country by 2025. These smart meters measure the use of electricity on a three-phase basis, based on specific time intervals. To promote smart metering, EMRA obliged distribution companies to submit a cost-benefit analysis and conduct pilot schemes in pre-determined regions of Turkey.

Renewable Energy Certificate Schemes

Since 1 June 2021, two renewable energy certificate schemes became available in Turkey. The first scheme is the International Renewable Energy Certificate ("**I-REC**"). The International REC Foundation ("**Foundation**") is a non-profit organisation that provides an attribute tracking system based on the I-REC Code rules and regulations. In Turkey, the Foundation has authorised Foton Yazılım Teknolojileri ve Enerji Danışmanlık Hizmetleri A.Ş. ("**Foton**") to register and issue an I-REC. The owners of electricity generating facilities can register their facilities with the I-REC system. Foton issues I-RECs based on reported generation from these electricity generating facilities (one I-REC per MWh of electricity production). Accordingly, end-users can purchase and redeem I-RECs. They can do this through their accounts in the system or through market players *(e.g.*, generators of renewable energy and suppliers). Using I-RECs, end-users can prove their renewable energy use.

The second scheme is the Renewable Energy Guarantee of Origin ("**YEK-G**") scheme, which EMRA introduced in 2021. The legal framework governing the YEK-G entered into force on 1 June 2021 and the first day of trading was 21 June 2021. The system is similar to the I-REC. Under this scheme, the Turkish energy market operator, EPİAŞ, issues the YEK-G certificates. This is a blockchain-integrated certification system designed to monitor all processes of the electricity production, so as to expand the use of renewable energy sources, protect the environment and generate clean electricity from renewable resources. Owners of electricity generation facilities can register their facilities with the YEK-G system (if not already registered with the I-REC system). The YEK-G certificates are traded in the YEK-G market.

Introduction of New Drilling Ship

On 17 November 2021, President Erdoğan announced that Turkey has added a new, seventh generation drilling ship to its fleet of three drilling ships and two seismic research ships. The fourth drilling ship will be able to contribute to the natural gas search in the Black Sea region by 2023.

Green Deal Action Plan

The Green Deal was initially declared by the European Union ("**EU**") on 11 December 2019, and Turkey has followed suit in similar ways. The Green Deal was ratified by the European Commission on 24 June 2021, and EU countries are seeking to reduce their carbon emissions by 55% by 2030 and to be carbon neutral by 2050. Following the plan's ratification, the Turkish Ministry of Trade announced an action plan to comply with the Green Deal. The plan focuses on (i) developing a national carbon pricing mechanism to avoid any additional fees for its EU exporters, (ii) establishing green investments through green funding, (iii) integration with the EU's ecological legislations and (iv) embracing clean energy power overall.

Hydrogen Strategy

Turkey's roadmap concerning its hydrogen strategy was initially penned in a "white paper" published by MENR in January 2020. The "white paper" is followed by a "red paper", which includes MENR's developed strategies for the establishment of a hydrogen market. MENR is expected to draft a "green paper" to lay out the applicability and the implementation of Turkey's hydrogen strategy, as well as the need to establish a regulatory framework for hydrogen.

MENR stated on 2 April 2021 and specified its goals in this statement as (i) implementing more renewable power into the system, (ii) producing hydrogen from local coal, (iii) decarbonising the heating sector and (iv) using boron for hydrogen storage. MENR also expressed that its main strategy is to introduce hydrogen into the existing natural gas grid in 2021. Turkey has tested hydrogen combined with natural gas in an effort to measure the potential distribution of a hydrogen-natural gas mix through its national distribution network. Turkey's ratification of the Paris Agreement is an indicator that hydrogen will find its place as a significant clean energy resource in Turkey's prospective strategical development plans.

Ratifying the Paris Agreement

The Turkish Parliament ratified the Paris Climate Agreement on 7 October 2021. This latest development implies that Turkey will follow a more ecological plan. It is, therefore, anticipated that Turkey may update and resubmit its national contribution statements within the scope of this agreement.

Energy Summit Between Turkey and Azerbaijan

The first Energy Summit took place between Turkey and Azerbaijan on 21 and 22 December 2021. All forms of energy, from hydrocarbon to renewables, were discussed. A cooperation protocol was signed at the Summit, under the co-chairmanship of Minister Fatih Dönmez and Azerbaijan's Energy Minister Perviz Şahbazov. The ministers signed various agreements within the scope of the Summit, to develop cooperation on mining and natural gas issues.

Combat Against Climate Change Declaration

On 17 February 2021, the Minister of the Turkish Environment and Urbanization announced the "Combat Against Climate Change Declaration," which involves a set of measures to reduce the impact of climate change in Turkey. According to the minister, a report is in the making regarding the combat against climate change and it will be presented to the Turkish Parliament soon.

In line with this development, MENR will create the National Climate Change Platform, where studies and data on climate change will be accessible to stakeholders and institutions. MENR will also establish the National Climate Change Research Center, wherein scientific research will be conducted, and regulations will be determined.

Developments in legislation or regulation

The Omnibus Law

The most impactful, energy-related regulatory action of the near-past was taken on 2 December 2020: the Law Amending the Electricity Market Law and Certain Other Laws ("**Amendment Law**"). The omnibus Amendment Law brought significant changes to the sector with a specific focus on the electricity and natural gas legislations, simplified certain bureaucratic procedures with the aim to provide sustainability and feasibility in the energy market.

The electricity sector went through perhaps the most resonating of updates among the sectors with the Amendment Law. The Amendment Law introduced changes to Electricity Market Law No. 6446 ("**Electricity Market Law**") as well as the Turkish Renewable Energy Resources Support Mechanism ("**RERSM**"), a successful scheme regulated by the Renewable Energy Resources Law ("**RER Law**"), designed to promote and endorse renewable energy source investments.

By amending the RER Law, the Amendment Law envisaged important changes regarding the RERSM. The revised RERSM provides renewable-energy-based generation facilities that were commissioned prior to 30 June 2021 with a US Dollar feed-in tariff, along with a purchase guarantee period of 10 years following the commissioning date. Further, any such facilities are now provided with additional, five-year incentives denominated in US Dollars if they utilise domestically manufactured equipment.

If the generation facilities were commissioned after 30 June 2021, however, they are governed by the Presidential Decree dated 29 January 2021 ("**Presidential Decree**"). The Presidential Decree provides that generation facilities, which started their operations after 30 June 2021, will be entitled to (i) a Turkish Lira feed-in tariff for a period of 10 years, indexed to inflation and FX rates and subject to pre-determined monetary caps in terms of US Dollars and (ii) five-year incentives denominated in the Turkish Lira, as above, for the use of domestically manufactured equipment. The Turkish Lira-based tariff is indexed to inflation and FX rates and is subject to pre-determined monetary caps in terms of US Dollars.

Introduction of the Electricity Storage Facilities Regulation

In January 2021, EMRA published a draft regulation regarding electricity storage activities and requested opinions from the electricity market stakeholders regarding the draft regulation. Subsequently, the Electricity Market Storage Activities Regulation ("**Storage Regulation**") was published in the Official Gazette dated 9 May 2021.

The Storage Regulation introduced numerous developments to the energy sector, although the most significant development was the possible integration of storage facilities with generation and consumption facilities. This possibility gave incentives to market players. The aim of these incentives is to entice market players to build more storage facilities, so as to escalate the efficient use of their generated electricity and pave the way for the integration of storage facilities into the power grid without a licence requirement. The Storage Regulation also determines installation capacities. As such, the capacities of the storage facilities cannot be higher than (i) the installed capacity specified under the relevant company's generation license (for storage facilities integrated with generation facilities), and (ii) the power capacity of the relevant consumption facility that was specified under the connection agreement (for storage facilities integrated with consumption facilities). Further, supply licence holders are permitted to establish autonomous storage facilities that have not been integrated into a generation or consumption facility, provided that their installed capacity is higher than 2 MW.

On 7 October 2021, EMRA published its decision regarding Preliminary License Periods and the Reference Construction Periods for Determining Facility Completion Dates ("**Decision**"). This Decision regulated the electricity storage facilities' completion periods that had been set out by the Regulation above. According to the Decision, a construction period of 18 months is granted to (i) electricity storage units integrated with generation facilities, and (ii) autonomous electricity storage facilities. The 18-month period of the latter is set to be applied separately for each electricity storage unit.

Judicial decisions, court judgments, results of public enquiries

Pecuniary Penalties

In January 2021, EMRA imposed major penalties on two fuel dealer companies and two distributor companies due to breaches identified in their audit investigations. The total amount of the penalties imposed on these companies was 18,301,933.41 Turkish Liras. The following breaches were found during the investigations:

- notifications regarding the petroleum market had not been made within the time limit;
- fuel trade between distributors had been made without EMRA's permission;
- selling or filling fuel had not been reflected in the automation system;
- fuel supplies did not contain national markers at sufficient conditions and levels, in violation of the relevant technical regulations; and
- fraudulent/false statements on several matters.

Major events or developments

The Privatisation Trend

Since 2013, Turkey has been privatising its electricity generation assets owned by EÜAŞ. It has also privatised all of its state-owned electricity distribution companies.

With the Presidential Decree dated 2 July 2021, TEİAŞ was included in the privatisation programme. TEİAŞ's privatisation is aimed to be completed by the end of 2022 through a public offering.

The plan is for the majority of TEİAŞ's shares to remain in the public domain, thus allowing public control to continue unequivocally.

Proposals for changes in laws or regulations

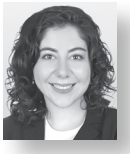
This is not applicable.

* * *

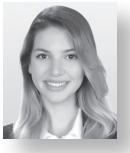
Endnotes

1. See https://www.solar.ist/wp-content/uploads/2021/11/Ekim-2021-Kurulu-Gu%CC%88c%CC%A7-Raporu.pdf.
2. *Ibid.*
3. *Ibid.*
4. See https://www.tskb.com.tr/i/assets/document/pdf/enerji-sektor-gorunumu-2021.pdf.
5. See https://www.epdk.gov.tr/Detay/Icerik/3-0-23/aylik-sektor-raporu.
6. See https://www.tskb.com.tr/i/assets/document/pdf/enerji-sektor-gorunumu-2021.pdf.
7. See http://www.elder.org.tr/Content/yayinlar/TAS%20EN.pdf.

Melis Öget Koç
Tel: +90 212 355 99 69 / Email: mokoc@kolcuoglu.av.tr
Melis Öget Koç is a KDK partner.
Melis advises clients on regulatory matters on energy and infrastructure as well as M&A transactions involving major players in heavily regulated sectors including the energy sector. With broad experience in the energy and infrastructure projects, she also advises clients on several EPC contracts and ancillary documents.



Ece Nur Yıldız
Tel: +90 212 355 99 06 / Email: enyildiz@kolcuoglu.av.tr
Ece Nur Yıldız is a trainee associate at KDK. She is a member of the Firm's Dispute Resolution and Energy and Infrastructure teams. She assists the Dispute Resolution team in litigation and arbitration cases. Ece is gaining experience in commercial and criminal law-related disputes as well as energy law.



Duygu Derelioğlu
Tel: +90 212 355 99 04 / Email: dderelioglu@kolcuoglu.av.tr
Duygu Derelioğlu is a trainee associate at KDK. She assists the Firm's Dispute Resolution team in litigation and execution proceedings as well as the Firm's Energy and Infrastructure team. Duygu is increasing her experience in commercial and employment law-related disputes, private international law as well as energy law.

Kolcuoğlu Demirkan Koçaklı Attorneys at Law

Sağlam Fikir Sokak Kelebek Çıkmazı No. 5 34394 Esentepe, İstanbul, Turkey
Tel: +90 212 355 99 00 / URL: http://www.kolcuoglu.av.tr

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