



April 2019

#11

Monthly Energy Bulletin

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TSKB Economic Research

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Nine companies applied in the tender for the second Wind Power Renewable Energy Resource Zone (YEKA RES-2)

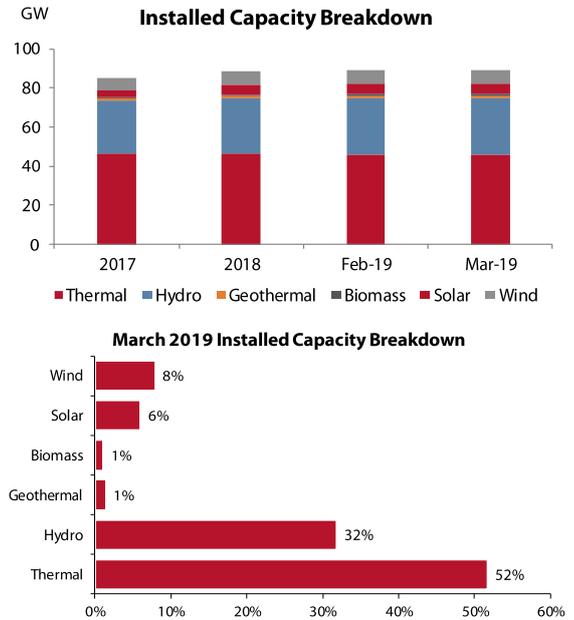
The tender involves wind farms with a total installed capacity of over 1,000 MW to be located in 4 distinct regions. A total of 22 applications were filed for connection areas with four in Aydın, eight in Balıkesir, six in Çanakkale and four in Muğla, with one billion USD to be invested in the power plants. The price ceiling per kWh was determined at 5.50 USD in the tender. The wind farms will have a license period of 49 years. The plants will provide electricity to 1.2 million households. A list of the applications by region is provided in the table below.

Applicant	Aydın	Balıkesir	Çanakkale	Muğla
Enercon Rüzgâr Enerji Santrali Kurulum Hiz. Ltd. Şti.	X	X	X	X
EnerjiSA Üretim Santralleri A.Ş.	X	X	X	X
Eze İnşaat A.Ş.	X	X	X	X
İklim Elektrik Yatırım San. Ve Tic. A.Ş.	X	X	X	X
Beyçelik Elewan Yenilenebilir Enerji Üretim A.Ş.		X	X	
RES Anatolia Holding A.Ş.		X		
B. Ergünler Yol Yapı İnş. Taah. Mad. Nak. San. Tic. A.Ş.		X		
GEM Wind Enerji Sanayi Ticaret A.Ş.			X	
Çinili RES Enerji Üretim Sanayi Ticaret A.Ş.		X		

Installed Capacity Analysis

After reaching 88,551 megawatts (MW) at the end of 2018, Turkey's total installed capacity increased further to 89,132 MWs by the end of March 2019. A 0.1% increase was realized in the third month of 2019, with renewable power plants accounting for the entire increase. During this period, licensed and unlicensed solar power plants with a total installed capacity of 77 MW were commissioned while hydroelectric power plants with a total capacity of 14 MW were commissioned. Coal power plants did not record any change in their total installed capacity, whereas natural gas plants recorded a decrease of 58 MW. The total installed capacity of wind farms increased by 47 MW, while there was no increase recorded in the installed capacity of geothermal power plants.

Of the power plants in operation in March, 48% were renewable electricity generating power plants, with hydroelectric power plants accounting for 32% of the total installed renewables capacity. Wind power and solar power plants, which had a 13.5% of total share in capacity at the end of 2018, raised their share to 13.9%.

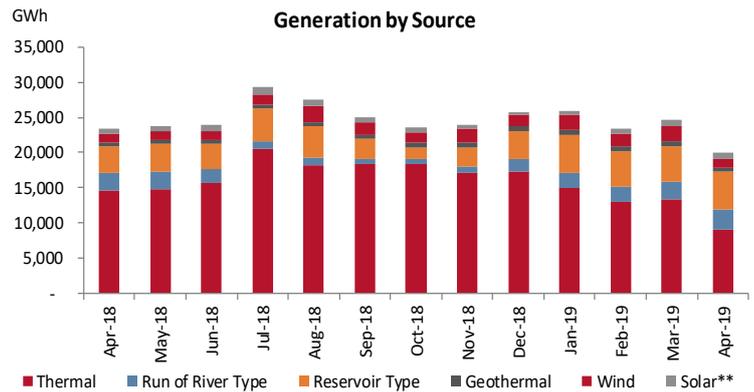


Electricity Generation Analysis

Approximately 20.01 terawatt-hours (TWh) was generated in the first 25 days of April 2019, while the total generation had reached 24.63 TWh by the end of March. There was a 0.7% increase in electricity generation in April 2019, when compared to March.

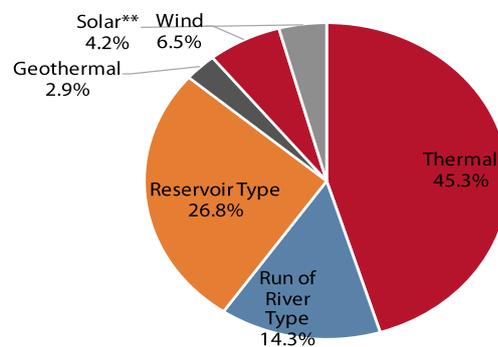
Thermal power plants, which had supplied 54% of the total electricity in March, generated 45.3% of the total electricity generated in April 2019, with the increase in the electricity generation through hydropower likely to have been the main reason for the 8.6 point decline.

Accounting for 8.5% of electricity generation in March, wind provided 6.5% of the total electricity generated in April. Another noteworthy development was that run-of-river type power plants, which had a 30.7% share in February, saw an increase in their share in the third and fourth months of 2019, to 31.3% in March and 41.1% in April.



Source: TEİAŞ, YTBS Daily Reports, TSKB Economic Research

**Since April unlicensed solar power plant generation data has not yet been released by TEİAŞ, the total energy generation by unlicensed solar power plants in March was accepted as same as the total generation of March 2019.

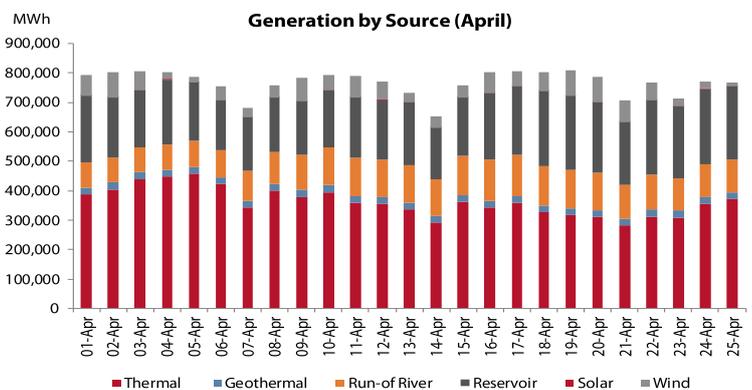


Source: TEİAŞ, YTBS Daily Reports, TSKB Economic Research

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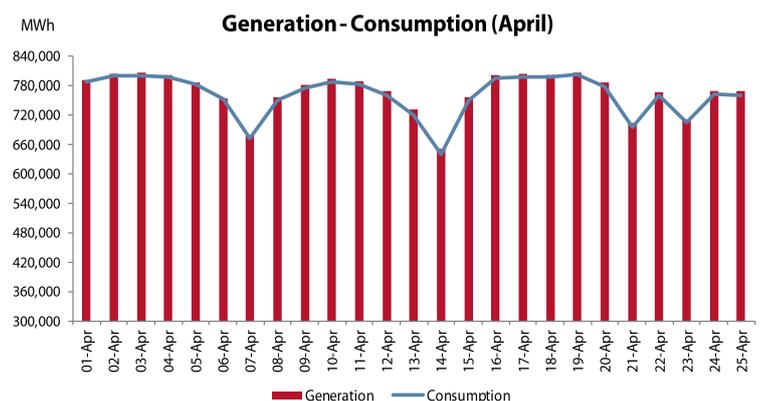
The average daily generation of licensed power plants in April 2019 stood at 767,133 megawatt-hours (MWh), marking 0.1% decline compared to March.

The highest electricity generation from licensed power plants was realized on Friday, April 19 with 807.350 MWh and the lowest was realized on Sunday, April 14 with 650,738 MWh.



Source: TEİAŞ, YTBS Daily Reports, TSKB Economic Research

Daily consumption averaged 761,266 MWh in April 2019, peaking at 802,421 MWh on Friday, April 19, while the lowest electricity consumption, of 641,148 MWh, was recorded on Sunday, April 14.



Source: TEİAŞ, YTBS Daily Reports, TSKB Economic Research

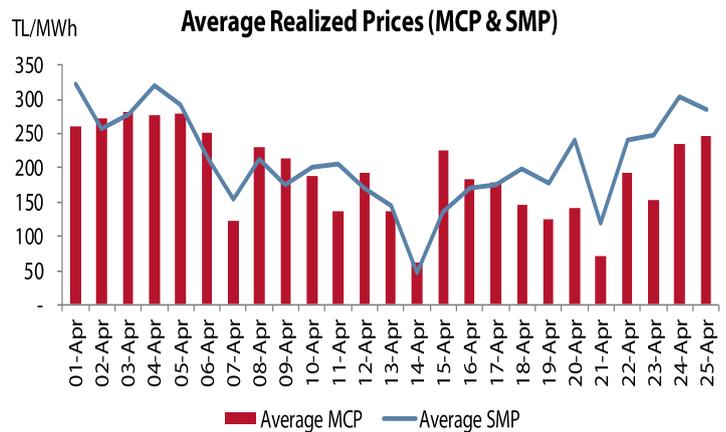
Electricity Price Analysis

The average market-clearing price (MCP) and system marginal price (SMP) fluctuated between 45 TL/MWh and 325 TL/MWh in April 2019. In April 2019, the average MCP stood at 192.20 TL/MWh, while SMP averaged 211.70 TL/MWh. The lowest average MCP, of 62.74 TL/MWh, and the lowest average SMP, of 46.43 TL/MWh were both recorded on Sunday, April 14.

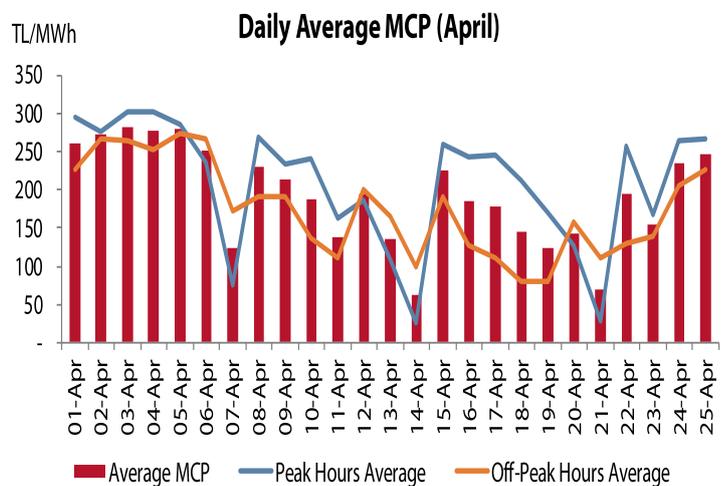
Compared to March average, the April MCP average was 23.8% lower.

An analysis of April's daily average MCP reveals an average tariff of 209.43 TL/MWh for peak hours (from 8AM to 8 PM), 9% higher than the daily average value. The highest peak-hour average recorded was 302.19 TL/MWh on Thursday, April 4, whereas the lowest peak-hour average was 25.36 TL/MWh on Sunday, April 14.

The average pricing in off-peak hours (from 8PM to 8AM) for the same period was calculated as 174.96 TL/MWh. The highest off-peak hour average was recorded as 273.10 TL/MWh on Friday, April 5, whereas the lowest off-peak-hour average was calculated as 79.22 TL/MWh on Thursday, April 18. A noteworthy point to mention in terms of the hourly SMP's was that on Sunday, April 14, the price was not determined for 15 hours.



Source: EXIST, TSKB Economic Research

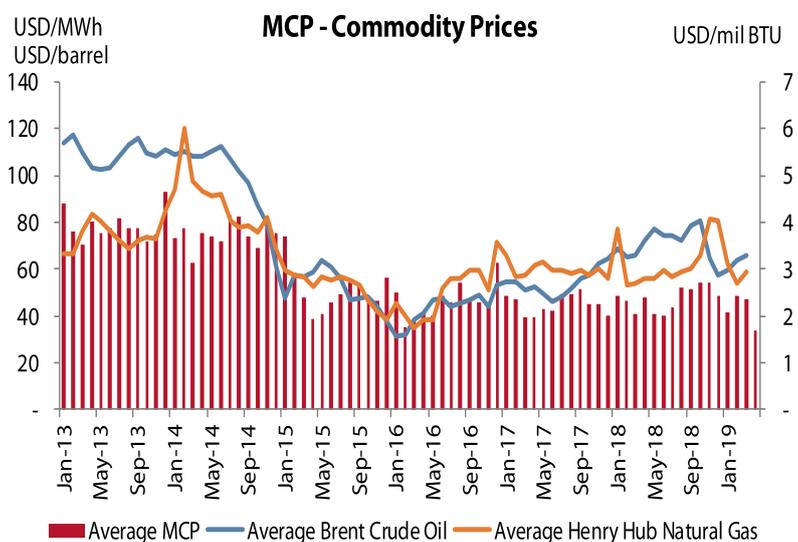


Source: EXIST, TSKB Economic Research

The annual average market-clearing price (MCP) in 2018 was 47.39 USD/MWh, while the average MCP in March and April 2019 stood at 47.05 USD/MWh and 34.14 USD/MWh, respectively.

The MCP declined by 27.4% in dollar terms in April when compared to March, mainly as a result of the 24% decline in electricity prices in Turkish lira terms.

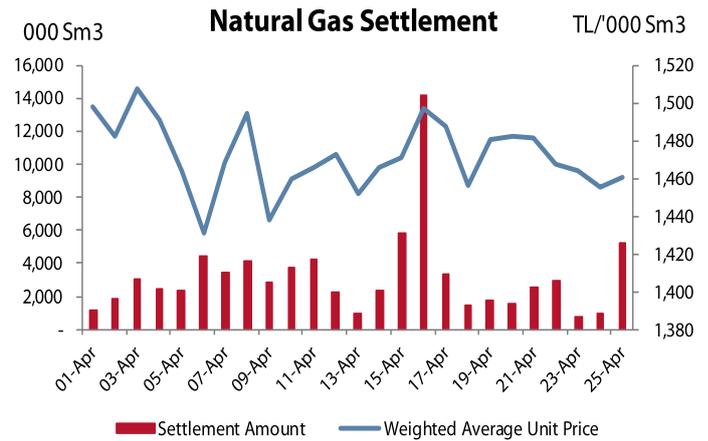
Brent crude oil prices averaged 57.36 USD/barrel in December 2018. In March 2019, the price of Brent oil averaged 66.14 USD/barrel, up by 3.4% compared to the previous month. In the same period, the average price of Henry Hub natural gas was 2.95 USD/mBTU.



Source: EXIST, CBRT, International Energy Agency (IEA), TSKB Economic Research

Natural Gas Settlements

According to natural gas coupling data published by the Organized Wholesale Natural Gas Market operated by EXIST, the daily average natural gas settlement was 79.77 million Sm³ in April. On Tuesday, April 23rd settlements for a total of 740 thousand Sm³ of natural gas settlement were recorded, while on Tuesday, April 16th settlements totaled 14.16 million Sm³. In April, the weighted average settlement unit price was calculated as TL 1,474.74 per 1,000 Sm³.



Source: EXIST Natural Gas Platform, TSKB Economic Research

Sector News

Local News

- Emil Alkhasly, the Director of the Turkey Energy project at the Azerbaijani public energy company, SOCAR, announced that BP and SOCAR planned to start construction of a new petrochemicals plant by the end of 2020.** Emil Alkhasly told Reuters that a tender was being held for design of the plant and three companies had applied, adding that the results will be announced within the next month. The 1.8 billion USD plant will have production capacities of 1.25 million tonnes of purified terephthalic acid, 840,000 tonnes of p-Xylene and 340,000 tonnes of benzene. (April 25, 2019)
- Sanko plans to increase capacity of Salihli Geothermal Power Plant (GPP).** The Salihli GPP will consist of three plants with a 50 MW capacity in total. Sanko is to increase the capacity of the third plant from 10.5 MW to 30 MW. Hence, the total installed capacity will be distributed as 15 MW+ 24.5 MW+ 30 MW. (April 25, 2019)
- China expected to invest significantly in Turkey's renewable energy sector.** According to a report in Habertürk, China will provide a substantial amount of financing to Belt and Road Initiative (BRI) countries. So far, the country has invested 600 million USD in Turkey's renewable energy sector. (April 24, 2019)
- "10 year" criteria for renewable energy support.** The Minister for Energy and Natural Resources, Fatih Dönmez, attended a meeting with the Energy and Mining Sector Council at the Independent Industrialists' and Businessmen's Association (MÜSİAD), where he had the following to say; "Among renewable energy projects which are recipients of electricity production grants, those which will cover their costs in 10 years and start generating income will sell electricity at market prices." Those projects not able to cover their costs within 10 years will receive guarantees on their electricity sales. (April 22, 2019)
- 390 million USD of investment into clean coal technology by Aksa Energy.** Speaking at a panel in the third Clean Coal Technologies Forum and Workshop, Aksa Energy Board member Mehmet Akif Şam stated that his company would invest 390 million USD on generating clean coal energy at the lignite power plant in Bolu, Göynük. (April 22, 2019)

- **USA to halt exemptions on Iranian oil imports.** According to a report on Bloomberg, the exemptions granted to eight countries, including Turkey, from sanctions on Iranian oil will not be renewed. The countries in the exemption list are Turkey, China, India, Greece, Italy, Japan, South Korea and Taiwan. Any shortage of supply occurring as a result of the sanctions will be met by Saudi Arabia and the United Arab Emirates. Following the leakage of the news, the price of Brent crude increased by 3% to reach 74 USD/barrel. İbrahim Kalın, the Presidential Spokesman, had earlier seemed confident that Turkey would receive a renewal of exemptions from sanctions on Iranian oil. Turkey's oil imports from Iran in January stood at 381,000 tonnes. (April 22, 2019)
- **Work on boron-based fuel cells continue.** The Minister for Energy and Natural Resources, Fatih Dönmez, stated that development and commercialization of boron products was continuing, saying the following; "we achieved a considerable success in producing boron based local fuel cells which would be used for electrical cars as well as aircraft", adding that the government was worked on establishing a "Boron Research Center" to produce boron based products with high value added. (April 18, 2019)
- **Tüpraş to supply 60% of fuel demand at Istanbul Airport.** Tüpraş won the tender for jet fuel supply to IGA Istanbul Airport, which enable the company to supply 1.8 million tonnes of petroleum products per year for 5 years. The General Manager of Tüpraş, İbrahim Yelmenoğlu, had the following to say about the tender: "We work very hard to meet demand for petroleum products in our country. We are delighted to be contributing to closing Turkey's current account deficit by meeting a substantial portion of the demand for petroleum products at Istanbul Airport." (April 18, 2019)
- **Gasification of second phase of Trans Adriatic Pipeline (TANAP) underway.** The pipeline will carry natural gas from Azerbaijan's Şahdeniz-2 field to Europe, crossing Turkey. The second phase of the project, which lies between Eskişehir and Edirne's İpsala district, started to receive gas. The commercial supply of gas to Europe through TANAP is expected to start by mid-2020. (April 18, 2019)
- **Record high oil supply.** The Batman-Dörtyol Crude Oil Pipeline carried 14.8 million barrels of oil and 14.6 million barrels of loading in 2018, breaking a 16 year record. In the first 3 months of 2019, 4.3 million barrels were transported, while 4.1 million barrels of crude oil were loaded in tankers. (April 15, 2019)
- **Energy Efficiency Forum and Fair held.** Speaking at the opening ceremony of the fair, the Minister for Energy and Natural Resources Fatih Dönmez announced that USD 10.9 billion of investment was planned until 2023 as part of the Energy Efficiency Action Plan. According to Dönmez, the plan will save 1 million tonnes of oil equivalent with a 1.2 billion USD investment in all sectors in 2017 and 2018. "We will reduce our primary energy consumption by 14% and greenhouse gas emissions with a reduction in our CO₂ emissions of 66 million tonnes. After his speech Dönmez also spoke to journalists saying that price reductions and flexibility of quantity in natural gas had been discussed with the Russian government. The Vice General Manager of TSKB, Hakan Aygen moderated in a panel on "Financing Energy Efficiency Projects through the Perspective of Project Finance". Panelists cited opportunities for sustainable financing in energy efficiency while also offering suggestions. They further emphasized the USD 1 billion in investment potential for energy efficiency of public buildings. (April 12, 2019)
- **Aunde Teknik, COYS Textile and Acarlar plan to buy shares in the Evrencik Wind Power Plant (WPP).** The consortium applied to the Competition Authority to acquire a 100% stake in the Evrencik WPP, which belong to STFA and RES Anatolia. The Evrencik Wind Power Electricity Generation Company, with 48 million TL of capital is known for its Evrencik WPP project, with has an installed capacity of 120 MW. (April 11, 2019)

- **Sixth Istanbul Carbon Summit by Association of Sustainable Production and Consumption (SÜT-D) held at Istanbul Technical University.** The General Manager of Escarus, Kubilay Kavak, moderated in a panel on the Climate Financing and the Carbon Market in the Green Economy, while Kadir Sancar, Head of Engineering and Technical Consultancy at TSKB, spoke about TSKB's experience in sustainability, climate financing and suggested resolutions for carrying out the transition into low carbon economies. Also speaking at the summit, the General Manager of Investment, Management and Maintenance at Zorlu Energy, Ali Kindap, stated their goal of zero emissions in geothermal energy generation. Kindap added that Zorlu Energy had invested 2.2 billion USD in the last 6 years, with more than 80% of this amount directed to renewable energy, adding that geothermal power plants only emit a small amount of carbon dioxide and that this project involved capturing these emissions and storing them underground, which would enable the zero emissions goal to be realized. (April 10, 2019)
- **All units of STAR Refinery brought onstream.** The STAR refinery completed tests and started production at full capacity. The refinery is expected to process 8 million tonnes of crude oil in the remaining 9 months of the year. (April 8, 2019)
- **Capital adequacy requirement for licenses to be renewed for activities in natural gas market.** Energy Market Regulatory Authority (EMRA) released the Amendment to the Law on License Regulation in Natural Gas Market. According to regulation, the renewal of licenses require a certain level of capital adequacy. (April 8, 2019)
- **Electricity consumption in Turkey declines by 1.5% YoY in March.** According to data released by the Turkey Electricity Distribution Inc. (TEİAŞ), electricity consumption stood at 23.79 terawatt-hours (TWh) in March 2019, compared to 24.145 TWh in March 2018. (April 5, 2019)
- **Adjustments in electricity prices.** According to amendments announced in the Official Gazette, the active electricity wholesale price increased by 37% with effect from 1 April, 2019. The Energy Market Regulatory Authority (EMRA) announced that changes were applied only to the components of electricity price and that the increase in the wholesale price would not be directed at the final price paid by consumers. (April 3, 2019)
- **Seven textile manufacturer firms located in Denizli achieve water savings of 1.5 million cubic meters, investing 6.5 million EUR as part of the clean production movement.** The Vice Chairman of the Executive Board of the Denizli Chamber of Industry, Selim Kasapoğlu, said that 3 million EUR of additional investment was planned and that a total of 19 firms were expected to participate in the "Büyük Menderes Clean Production Movement", which had been initiated two years ago with the cooperation of textile manufacturers, public administration and local partners. (April 2, 2019)
- **Turkey releases Global Environment Fund Agreement with International Bank for Reconstruction and Development (IBRD).** Under the agreement, the IBRD will provide a loan of 222.3 million EUR to Turkey, as part of the Irrigation Modernization Project. (April 2, 2019)

- **Iraq's electricity infrastructure needs investment.** The Minister of Electricity, Luey el-Hatib, said Iraq's electricity infrastructure needed 20 billion USD of investment. According to an official report on electricity shortages in Iraq, 40 billion USD have been spent on the country's electricity infrastructure in the last 12 years but added that in spite of the investments, some cities were still without electricity for more than 12 hours a day. (April 2, 2019)
- Kadir Sancar, Head of Engineering and Technical Consultancy at TSKB, spoke to Dünya News. Sancar mentioned that TSKB had provided loans for firms investing in unlicensed energy plants under the Renewable Energy Resources Support Mechanism (YEKDEM), adding the following; "We expect an increase in investments into licensed solar power plants. Because of the fall in the value of the local currency against the dollar, monetary supports has remained low. When we consider incentivized sales prices, we can conclude that projects have become more applicable. Given that YEKDEM will terminate in 2020, we predict that solar power investments will continue for the next 2 years and that licensed solar power investments will increase." Pointing to the sectoral importance of YEKDEM, the 10-year incentive program which would end in 2020, Sancar added, "The Post-YEKDEM trajectory in 2021 will be a very important turning point in the sector." (April 1, 2019)

News From Abroad

- **Gazprom planning to increase its natural gas reserves in Russian seas by 2 trillion cubic meters.** The Company's statement is as follows: "In 2019-2022, seven wells are expected to be completed on the Kara Sea shelf, with more than 10,000 km² of 3D seismic exploration in the Nyarmeisky, Skuratovsky, Amderminsky, Beloostrovsky and Zapadno-Sharapovsky areas. Reserves of gas are planned to increase by more than 2 trillion cubic meters in 2019-2022" (April 24, 2019)
- **65 billion EUR invested in wind farms in 2018 throughout Europe.** According to the "Finance and Investment Trends" report published by WindEurope, investments in wind power in Europe increased by 26%. The United Kingdom and Sweden became the largest investors in wind power in 2018, accounting for 35% of new investments. (April 24, 2019)
- **Brent crude oil price exceeds 70 USD/bbl.** The price of a barrel of Brent crude oil has increased by 30% since the beginning of the year. Any further increases in oil prices could lead OPEC members to consider revoking the quota on production. Whether the quota continues will be clear in the OPEC meetings to take place on 25-26 June 2019, according to a report in the Dünya Newspaper. (April 15, 2019)
- **Daily average global oil supply drops to 99.26 million barrels in March 2019.** According to the April report prepared by the Organization of Petroleum Exporting Countries (OPEC), global oil supply declined by 140,000 barrels per day in March compared to the previous month. OPEC's crude oil production also dropped by 534,000 barrels to 30.02 million barrels in March. Saudi Arabia's production declined by 324,000 barrels per day and oil production in Venezuela decreased by 289,000 barrels per day while oil production in Iraq was down by 126,000 barrels per day. Libya, on the other hand, increased its production in March by 196,000 barrels per day. OPEC revised its estimates for global oil demand down by 20,000 barrels per day to 1.41 million barrels per day. (April 11, 2019)
- **European Union fines General Electric (GE).** The European Union (EU) fined GE a total of 52 million EUR on grounds of misinformation during M&A activities. (April 9, 2019)

- **China plans to trade carbon by 2020 as part of its national emissions program.** The Deputy Director General of the NDRC Climate Change Department, Jiang Zhaoli, stated that China would speed up its national carbon trading plans and would begin trading carbon among coal-fired power plants by 2020. (April 5, 2019)
- **Global Wind Energy Council (GWEC) expecting annual increase of 55,000 MW in global installed capacity of wind power by 2023.** According to the GWEC's Global Wind Energy Report for 2018, new additions to the world's total installed capacity for wind power reached 51,300 MW in 2018, with China being the highest contributor. (April 5, 2019)
- **Decline in oil production at the Ghawar oil field – the largest in Saudi Arabia.** According to a report prepared by Aramco, the Ghawar field has been supplying 3.8 million barrels of oil per day, down from 5 million barrels per day previously. The US based Energy Information Association (EIA) had announced Ghawar's daily oil production as 5.8 million barrels in 2017. According to data released, Saudi Arabia has a maximum capacity of producing 12 million barrels per day. (April 4, 2019)
- **United Nations (UN) issues warning about climate change.** The Secretary General of the United Nations, Antonio Guterres, said that the alarm bells were ringing for climate change, pointing to the devastating results of Hurricane Idai which hit Mozambique. Hurricane Idai caused 1 billion USD of damage to infrastructure. (April 3, 2019)
- **Global demand for water increasing on the back of an increasing global population and rising average per capita income.** According to the study carried out by the Barilla Center for Food and Nutrition (BCFN), 1.6 billion people in the world face water shortages with the average daily water use per capita reaching 2 thousands liters. This figure reaches 5 liters when water used for production of food consumed in one day is included. Researchers expect the global population to reach 9 billion by 2050 and necessitate changes in food production systems. (April 1, 2019)



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