



March 2019

#10

## Monthly Energy Bulletin

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TSKB Economic Research



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## Natural Gas Storage Goal is 20% of Natural Gas Consumption

In ceremony to mark the start of the Lake Tuz Natural Gas Underground Storage Plant Extension Project, the Minister of Energy and Natural Resources, Fatih Dönmez, stated that the goal in natural gas storage was to be able to store up to 20% of the annual consumption need.

Adding that the gas storage and transfer would significantly improve with the USD 1.2 billion project, Dönmez declared

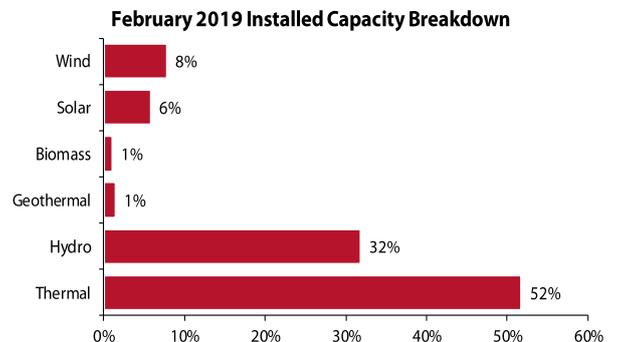
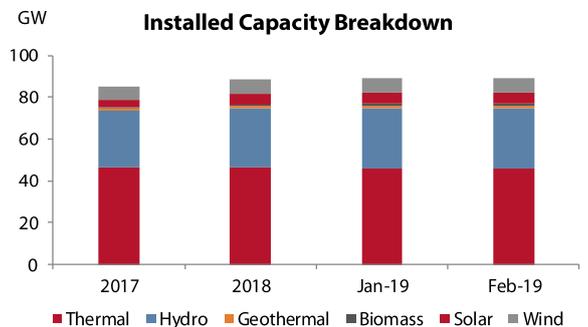
that once the project was completed, they would drill 48 new wells thereby increasing plant's storage capacity to 5.4 billion Sm<sup>3</sup>, adding that Turkey ranked 5<sup>th</sup> in terms of the number of planned natural gas storage projects, after Italy, the United Kingdom, Romania and Poland and 2<sup>nd</sup> after United Kingdom in terms of total capacity.

Dönmez also said that the project would support the livelihood of flora and fauna in Lake Tuz, adding that the number of flamingoes had quadrupled since the beginning of the project.

## Installed Capacity Analysis

After reaching 88,551 megawatts (MW) at the end of 2018, Turkey's total installed capacity had increased further to 89,047 MW by the end of February 2019. A 0.2% increase was realized in the second month of 2019, with coal power plants and renewable power plants accounting for all of the increase. During this period, licensed and unlicensed solar power plants with a total installed capacity of 59 MW were commissioned while hydroelectric power plants with a total capacity of 18 MW were commissioned. Coal power plants recorded a total increase of 145 MW in their total installed capacity, whereas local coal power plants recorded an increase of 654 MW. The total installed capacity of wind power plants increased by only 21 MW, with no recorded increase in total installed capacity among geothermal power plants.

Of all the power plants in operation in February, 48% (in terms of capacity) 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 held a 13.5% of total share at the end of 2018, raised their shares to 13.8%.



Source: TEİAŞ, TSKB Economic Research

## Electricity Generation Analysis

Approximately 22.05 terawatt-hours (TWh) was generated in the first 28 days of March 2019, while the total generation in February had reached to 23.34 TWh. There was a 5.5% decrease in electricity generation in March 2019 when compared to February.

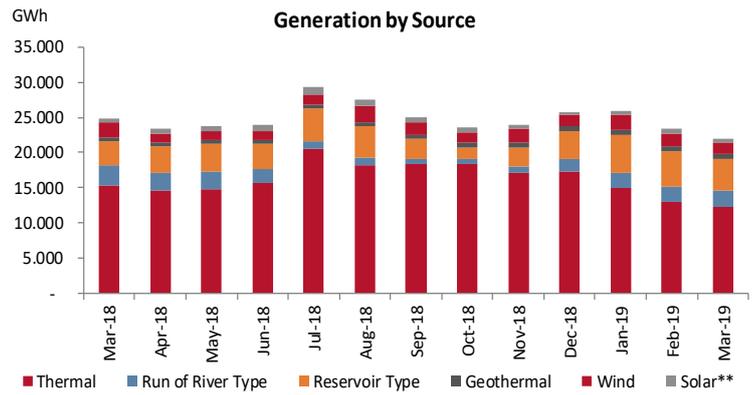
Thermal power plants, which had supplied 56% of the total electricity in February, generated 55.3% of the total electricity generated in the third month of 2019, with the increase in electricity generation through hydro-electric power likely to have been the main reason for the 0.7 percentage point decline.

Accounting for 8% of the electricity generated in February, wind accounted for 7.9% of the total electricity generated in March. Another noteworthy point was that run-of-river type power plants, which had a 29.6% share in January, witnessed an increase in their share in the second and third months of 2019, to 30.7% in February and 31.4% in March.

The average daily generation of licensed power plants in March 2019 stood at 767,672 megawatt-hours (MWh), marking 5.6% decline compared to February.

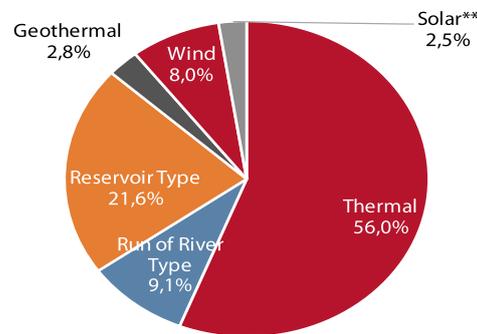
The highest electricity generation from licensed power plants was realized on Friday, March 15 with 825,534 MWh of generation, with the lowest level of generation realized on Sunday, March 10, with 644,463 MWh.

Daily consumption averaged 768,152 MWh in March 2019, peaking at 826,734 MWh on Friday, March 15, while the lowest electricity consumption, of 651,553 MWh, was recorded on Sunday, March 10.



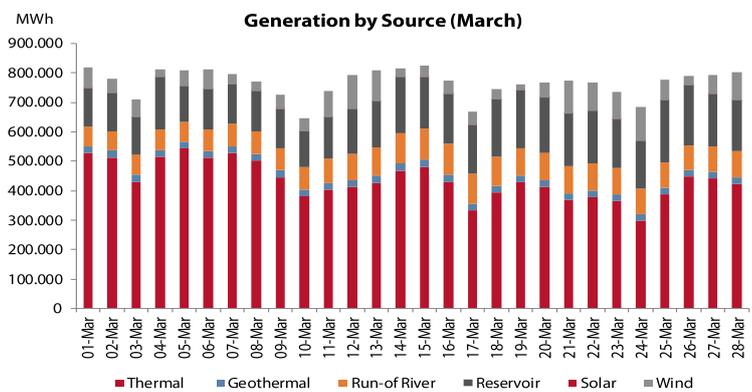
Source: TEİAŞ, YTBS Daily Reports, TSKB Economic Research

\*\*Since March 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 February 2019.

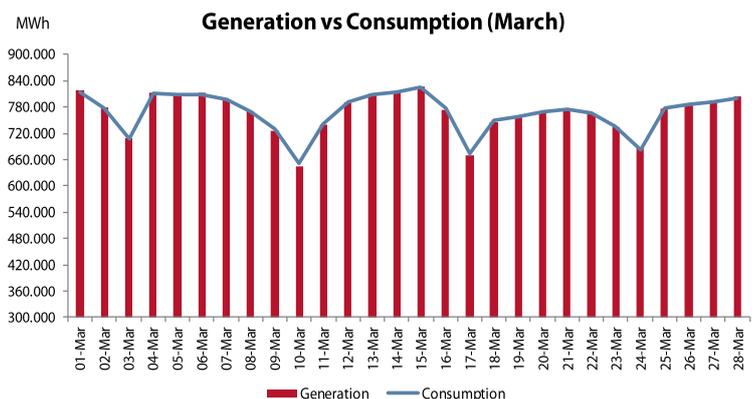


Source: TEİAŞ, YTBS Daily Reports, TSKB Economic Research

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Source: TEİAŞ, YTBS Daily Reports, TSKB Economic Research



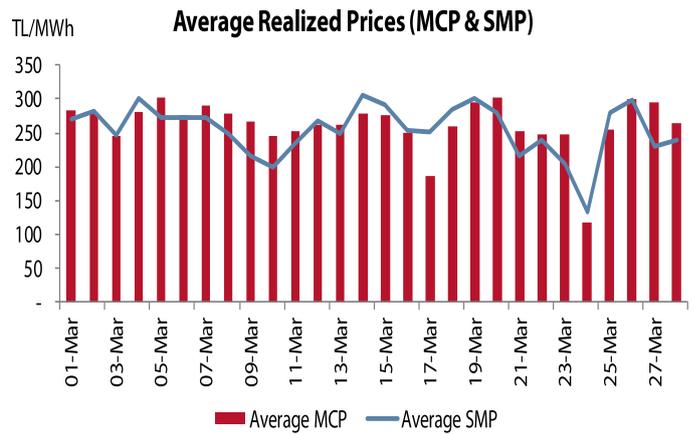
Source: TEİAŞ, YTBS Daily Reports, TSKB Economic Research

## Electricity Price Analysis

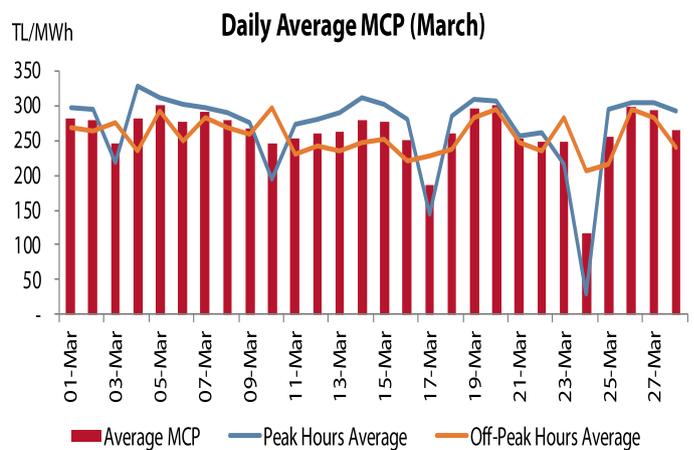
The average market-clearing price (MCP) and system marginal price (SMP) fluctuated between 115 TL/MWh and 310 TL/MWh in March 2019. In March 2019, the average MCP stood 262.59 TL/MWh, while SMP averaged 255.10 TL/MWh. The lowest average MCP, of 117.67 TL/MWh, was recorded on Sunday, March 24, and the lowest average SMP, of 132.47 TL/MWh was recorded on Sunday, March 24. The MCP was 2.2% higher, in March, than the February average.

An analysis of February's daily average MCP reveals an average tariff of 269.51 TL/MWh for peak hours (from 8AM to 8 PM), 2.6% higher than the daily average value. The highest peak-hour average was recorded as 328.39 TL/MWh on Monday, March 4, with the lowest peak-hour average being 30.17 TL/MWh on Sunday, March 24.

The average pricing in off-peak hours (from 8PM to 8AM) for the same period was calculated as 255.66 TL/MWh. The highest off-peak hour average was 296.29 TL/MWh, recorded on Sunday, March 10, while the lowest off-peak-hour average, calculated as being 205.18 TL/MWh, was recorded on Sunday, March 24. A noteworthy point in the hourly SMP's was that on Sunday, March 24, the price was not determined for 5 hours.



Source: EXIST, TSKB Economic Research

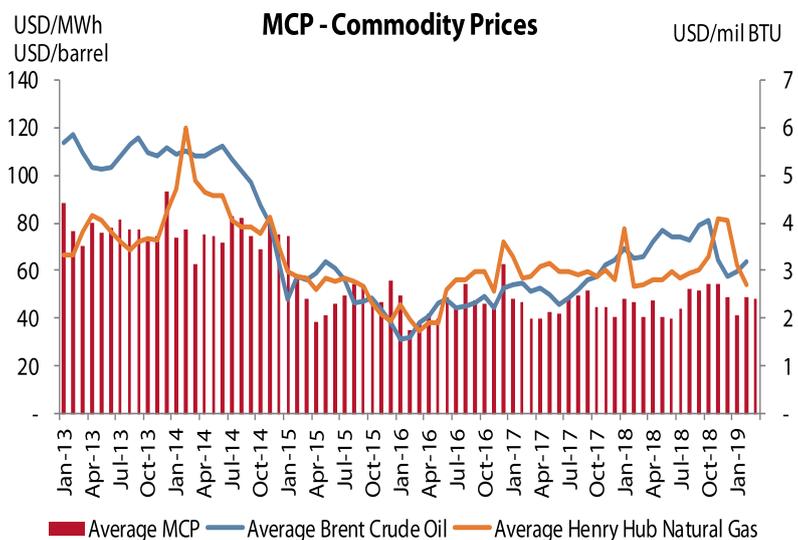


Source: EXIST, TSKB Economic Research

The annual average market-clearing price (MCP) in 2018 was 47.39 USD/MWh, while the MCP averaged 48.85 USD/MWh in February and 48.25 USD/MWh in March.

Compared to February, the MCP declined by 1.2% in dollar terms in March, mainly as a result of the 3.4% appreciation of the dollar against the Turkish lira.

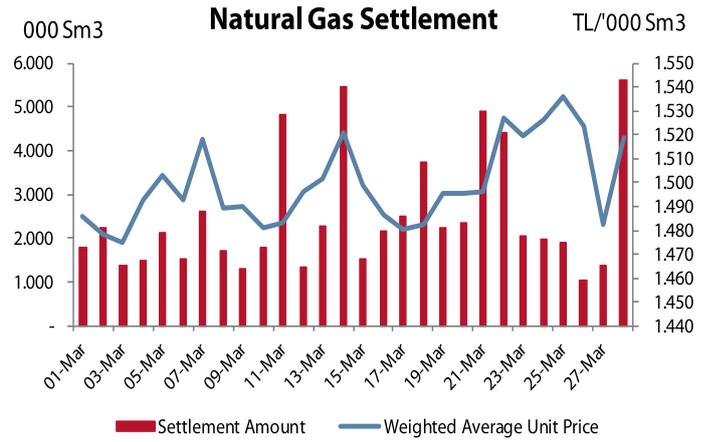
Brent crude oil prices had averaged USD 57.36 per barrel in December 2018; in February 2019, Brent oil crude oil prices averaged USD 63.96 per barrel, an increase of 7.7% compared to the previous month. In the same period, the average price of Henry Hub natural gas was 2.69 USD/mBTU.



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 recorded as 69.614 million Sm<sup>3</sup> in March. On Thursday, March 28<sup>th</sup> settlements for a total of 5.6 million Sm<sup>3</sup> in natural gas settlements were recorded, while on Saturday, March 9<sup>th</sup> settlements totaled 1.319 million Sm<sup>3</sup>. In March, the weighted average settlement unit price was calculated as TL 1,501.27 per 1,000 Sm<sup>3</sup>.



Source: EXIST Natural Gas Platform, TSKB Economic Research

## Sector News

### Local News

- The General Directorate of Mineral Research and Exploration (MTA) plans to finance services of private businesses in licensed mining fields, including exploration, analysis and drilling.** MTA initiated the Agreement on Enhancing Resources in order to support businesses that intend to carry out exploration activities in licensed mining fields. The Agreement on Enhancing Resources aims to support mining activity as well as the exploration of idle resources. (March 28, 2019)
- Oil imports increased in January.** According to data in the "Oil Market Report (January 2019)" released by the energy Market Regulation Authority (EMRA), Turkey's oil imports reached to 3.087 million tonnes, increasing by 18.39% in January compared to same month last year. Iraq supplied the highest volume of oil to Turkey, at 726,000 tonnes, while Iran supplied 381,000 tonnes and Nigeria supplied 21,000 tonnes. (March 27, 2019)
- The Çan-2 Thermal Power Plant was reactivated.** ODAŞ Elektrik announced that Çan-2 Thermal Power Plant had been reactivated upon completion of maintenance work. The Çan-2 Thermal Power Plant started generating electricity on 24 March 2019. (March 26, 2019)
- The spotlight turned to the petrochemicals sector in terms of oil consumption.** The Director of International Energy Agency (IEA), Dr. Fatih Birol, spoke at the "New Horizons in Energy" panel in the 8th Uludağ Economy Summit. He remarked that rising sales of electric cars did not imply the end of oil era, pointing to increasing global demand for petrochemicals. Stating the importance of diversification in energy imports, Birol said that there were major opportunities for Turkey in its natural gas sector. (March 25, 2019)
- Services from renewable energy plants are to be exempt from VAT.** According to legislation prepared by the Ministry of Finance and the Treasury, goods and services used in the construction of energy plants will be exempted from value-added tax. (March 25, 2019)

- **Halbes Energy’s wind turbines are now 90% local.** The General Manager of Halbes Energy, Haluk Deda, said that the company was producing wind turbines with double-wing technology and had recently increased the share of local resources in its wind turbines from 78.2% to 90%. The turbines can be used without connecting to the network. Deda made the following remarks on their turbines: “Very specialized computer software is encrypted in our turbines. Once you connect these turbines to a house or a factory, the system utilizes the electricity generated from these turbines. Turbines have the advantage of utilizing each kilowatt of energy they generate.” (March 21, 2019)
- **Pinar Su decreased its carbon emissions in 2018 by 1.5% tonnes per product compared to last year.** The General Manager of Pinar Su, Hüseyin Karamehmetoğlu, said that the company had managed to decrease its consumption of plastic wrap and cardboard packaging thanks to improvements in their water cup products. Karamehmetoğlu added that the company had decreased the volume of wastewater by 19% in the Aydın Bozdoğan production plant and by 16% in the Sakarya production plant, with the help of automation in their production lines. (March 21, 2019)
- **The regulation for monthly netting in solar power has been completed.** The Deputy Minister of Energy and Natural Resources, Abdullah Tancan, announced that the Energy Market Regulatory Authority had completed the regulation for monthly netting in solar power, and that this would be submitted to a vote in the General Assembly. Tancan also said that they expected the approval of regulation to be announced in the Official Gazette shortly. (March 20, 2019)
- **SOCAR Turkey Energy Inc. applied to the Competition Authority for approval of its acquisition of sole control over EWE Turkey Holding Inc.** EWE Turkey Holding Inc. is comprised of five separate affiliates, in the electricity supply, energy efficiency, renewable energy, telecommunications and cloud sectors. (March 19, 2019)
- **Rönesans Holding Inc. and Sonatrach applied to the Competition Authority for the go-ahead to build a petrochemicals plant in Ceyhan.** The production facility, which is planned to sell polypropylene, is planned to be built in the Ceyhan Mega Petrochemicals Industrial Zone. (March 19, 2019)
- **TSKB Economic Research released its “Water is the Next Diamond” report.** The report explains why the price of water is much lower than diamonds, despite its relative importance under the framework of famous economic theory of water-diamond paradox, while pointing to the risk of water becoming the next diamond with the ongoing resource shortages. According to the report, Turkey’s water potential, which was 1,422 cubic meters per person, declined to 1,386 cubic meters per person in 2017. In addition, the reports estimates that Turkey’s water potential will decrease to 1,289 cubic meters as the population climbs to 87 million by 2023. (March 18, 2019)
- **Purification plants will be classified as industrial subscribers in the electricity market.** The Energy Market Regulatory Authority (EMRA) released its Decision on Amendment to Tariffs of Legal Persons with Distribution License. According to the amendment, all purification plants will be categorized as industrial subscribers. In addition, milk collection plants, livestock farming businesses, chicken farms and greenhouses will be categorized as agricultural subscribers. (March 15, 2019)

- **The Energy efficiency index is to be calculated.** The Chairman of Energy Efficiency Association, Murat Kalsın, announced the Association's collaboration with the Ministry of Energy and Natural Resources, the Energy Market Regulatory Authority and the private sector in the calculating energy efficiency index. Murat Kalsın said that the efficiency levels in each sector would be determined within this index, as well the extent that their efforts had reduced costs and offered a positive contribution to the current account deficit. He added that the index would help encourage efficiency in the industrial sector and other sectors. The Energy Efficiency Association and SOCAR Turkey have reached an agreement to start work on a pilot project of the energy efficiency index. (March 14, 2019)
- **The support for voluntary agreements and the energy cost amount for efficiency enhancing and energy density reduction projects has been changed.** According to the amendment to the Energy Efficiency Law, project amounts were raised from TL 1 million to TL 5 million, with the support amount rising from 20% to 30%. The voluntary agreement support amount for energy density reduction projects was raised from TL 200,000 to TL 1 million and the proportion of energy costs was increased from 20% to 30%. (March 14, 2019)
- **The Trans Anatolia Natural Gas Pipeline (TANAP) will carry 4 billion cubic meters of gas.** The General Manager of TANAP, Saltuk Düzyol said that 1.25 billion cubic meters of natural gas had been carried between 30 June 2018 and 28 February 2019, adding that by the end of June, the pipeline will have carried 2 billion cubic meters of gas, a figure that will have reached 4 billion cubic meters by the end of 2019. Düzyol also stated that TANAP would be ready to carry gas to Europe from 1 July 2019. (February 13, 2019)
- **Aksu Energy announced that it had entered negotiations with an American investment company on a letter of intention for share selling.** The name of the American investment company was not disclosed in company's statement on Public Disclosure Platform. (March 12, 2019)
- **The Ministry of Energy and Natural Resources plans to generate 60-65% of Turkey's total electricity supply from domestic renewable resources.** The Minister of Energy and Natural Resources, Fatih Dönmez said the government was directing its efforts to increasing the share of domestic and renewable resources in the nation's energy portfolio, adding that last year, Turkey generated half of its electricity supply from domestic resources and would increase this rate to 60% this year. He added that the government's goal was to generate 60-65% of Turkey's electricity from domestic and renewable resources. (March 11, 2019)
- **A total of 6,436 MW of capacity was allocated to unlicensed solar and wind power investments in March.** According to the capacity enrolment list prepared by Türkiye Elektrik İletim A.Ş. (TEİAŞ) for unlicensed energy generation investments, a total of 6,192 MW of capacity was allocated to unlicensed solar power investments and 154 MW to wind power. (March 8, 2019)

- **Thermal insulation brings a total of USD 4 billion in savings.** The Chief Executive Officer of the Association for Energy Efficiency in Buildings (VERİMDER), Professor Emre Alkin, stated that USD 4 billion of energy savings could be achieved with thermal insulation on 16 million of Turkey's 23 million homes. Alkin added that 80% of energy generated was wasted, pointing to the fact that buildings without thermal insulation were responsible for the highest amount of energy leakage. (March 7, 2019)
- **No permits for imported coal-fired and natural gas-fired power plants.** During a visit to Yozgat, the Minister for Energy and Natural Resources, Fatih Dönmez, stated that the government would no longer give permission for power plants using imported natural gas, adding that Turkey would use its own local resources; and only if they were not adequate would the government allow imported energy. Dönmez also commented that the government would introduce a new regulation on solar power plants, allowing municipalities and public institutions to build their own solar power plants to generate electricity for their own use. Private citizens will also be able to build solar power panels on their roofs and generate electricity under the plans. (March 6, 2019)
- **The first unit of the Akkuyu Nuclear Power Plant will enter operation ahead of schedule.** One of Rosatom's executive managers, Anton Dedusenko, spoke at the 6th International Nuclear Power Plants Summit and announced that the first unit of the Akkuyu Nuclear Power Plant would enter operation before 7 years after work begun, as set out in the original pre-specified duration. Dedusenko said that total cost of investment in the Akkuyu Nuclear Power Plant was approximately USD 20 billion, adding that the guaranteed purchasing price of 12.35 cents per kWh at the Akkuyu Nuclear Power Plant would not be subject to change. Also speaking at the summit, the Deputy General Manager at the General Directorate of Nuclear Energy, İbrahim Halil Dere, reiterated that nuclear energy was a necessity, rather than an option. (March 6, 2019)
- **Reservoir levels have increased.** The Minister of Agriculture and Forestry, Bekir Pakdemirli, said that reservoir rates were higher than last year, thus assuring that there would not be any water shortages. Rainfall between October 2018 and February 2019 was 26.7% higher than in the same period of the previous year and 44% higher at the beginning of 2019, according to Pakdemirli's statements. "Last year reservoirs were 39.3% full, while this year this rate has increased to 51.9%." said Pakdemirli, adding that levels in irrigation reservoirs had increased from 38.9% to 50.4% while in reservoirs used to generate energy, the rate had risen from 39.1% to 46.6%. (March 4, 2019)

## News From Abroad

- **The Cordemais coal power plant in France will be transformed into a biomass plant.** French energy giant EDF plans to convert the 1,200 MWs capacity Cordemais Coal Plant into a biomass plant by 2022. The plant will burn pellet, which is produced from forest waste. Named as "Ecocombust", the process will be applied to all other coal fired power plants. (March 27, 2019)
- **Ford plans to increase its production of electric cars.** The American car giant, the Ford Motor Company, decided to open up another electrical car production plant in North America. As part of the USD 11 billion investment program, the company will add an electric car production line to its plant in Flat Rock, Michigan, spending USD 900 million. The process will be completed by 2023 and is expected to provide employment to 900 people. (March 22, 2019)

- **The U.S. is expected to increase its shale oil production.** According to monthly drilling report released by the Energy Information Administration (EIA), shale oil production in the U.S. is expected to break a record at 8.59 million barrels per day in April 2019, up by 85,000 barrels/day. The report also states that natural gas production in the U.S. will reach 79 billion cubic feet in April, an increase of 0.9 billion cubic feet compared to March. (March 20, 2019)
- **Saudi Arabia announced that OPEC members may extend the production cut until the end of 2019.** The Saudi Arabia's Minister of Energy, Halid el Falih, spoke at the OPEC+ Joint Monitoring Committee in Baku. He remarked that OPEC's efforts to re-stabilize the oil market should continue. He also stated that the agreement to cut oil production would remain in place until the second half of 2019, since global oil stocks continued to rise despite U.S. sanctions against Venezuela and Iran. Minister El-Falih stated that Saudi Arabia's oil exports would remain below 7 million barrels/day in March and April. The Russian Minister of Energy, Aleksander Novak, also stated OPEC and non-OPEC members would decide in May or June whether or not the global oil cut agreement would continue after June 2019. (March 19, 2019)
- **OPEC's daily average oil production declined in February.** According to OPEC's March report OPEC's oil production averaged 30.55 million barrels/day in February, declining by 221,000 barrels/day compared to the month before, as part of the agreement to stabilize the oil markets. Saudi Arabia's production declined by 106,000 barrels/day, Angola's production by 47,000 barrels/day and Venezuela's production by 56,000 barrels/day, whereas Nigeria's oil production increased by 85,000 barrels/day. (March 15, 2019)
- **The U.S. Energy Information Administration (EIA) revised its projections for global oil demand downward.** The EIA decreased its projections for global oil demand in 2019 from 1.49 million barrels/day to 1.45 million barrels/day. The EIA also revised its projections for demand growth down to 1.46 million barrels/day. (March 14, 2019)
- **The International Energy Agency (IEA) stated that the US would become world's biggest oil exporter by 2024.** According to the IEA's annual oil market projections, the US is on its way to becoming a net exporter of oil by 2021 with its shale oil production and will become the world's biggest oil exporter by 2024, overtaking Russia and Saudi Arabia. (March 12, 2019)
- **The European Union (EU) plans to provide USD 900,000 of support to Zorlu Energy in its energy storage project.** Zorlu Energy received USD 900,000 of funding from the GeoSmart project under the European Union's research and innovation program Horizon 2020, with its Kizildere-1 Geothermal Energy Plant. Coordination of the project will be completed in April, with fieldwork starting 18 months later and the project will be completed in 4 years. The Horizon 2020 program allocates EUR 5.9 billion of funds to innovative energy projects each year. (March 12, 2019)
- **Aygaz plans to invest in Bangladesh.** As part of its partnership with the Bangladeshi company, United Enterprises, Aygaz will invest USD 150,000 over 4 years. Each party will hold a 50-50% of partnership. The agreement will be signed on March 5, 2019 in the Dakka headquarters of United Enterprises. (March 7, 2019)
- **Total purchased 10% of shares of Novatek's Arctic LNG 2 project.** According to the deal, Total will increase its stake in the LNG 2 project from 10% to 15%, in case Novatek shares in the project. Total currently holds a 19.5% stake in Novatek. Total will also be able to buy 10-15% of the shares from Novatek's other LNG projects in the Yamal and Gydan peninsula. (March 7, 2019)

- **In February, OPEC members produced 30.68 million barrels of crude oil per day.** According to Reuters' research, OPEC's total crude oil production will decline to its lowest level in the last 4 years, mainly due to reduction in oil production by Saudi Arabia and Venezuela. (March 4, 2019)
- **More investment on electric and driverless cars.** German motor firms plans to speed up investments in electrical and driverless car production. The Chairman of German Association of the Automotive Industry (VDA) Bernhard Mattes said "In the coming 3 years, we will spend EUR 40 billion in electrified transportation. We also plan to invest EUR 18 billion in connected and autonomous cars, as part of our digitalization efforts. (March 4, 2019)



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