Russian War Against Ukraine: Energy Dimension

DiXi Group alert

(status as of 12:00, July 22)

#StopRussianAggression

#StandWithUkraine

Summary of the Week (July 18-22)

- As of July 21, 760 settlements were left without electricity supply (about 580,400 consumers) due to damage caused by hostilities. As of July 19, 900 de-occupied settlements (almost 88% of liberated cities and towns) had power supply restored. Over 243,800 consumers were left with no gas supply. However, 2,621 settlements are still under the control of the invaders.

- Active hostilities continued near the energy infrastructure facilities. Fire attacks, airstrikes, and unsuccessful attempts by the Russian military to establish control over the territory of the Vuhlehirsk TPP in the Donetsk region are fixed every day. In the Luhansk region, the enemy attempted an assault from the side of the Lysychansk refinery, with no success. For the fifth day in a row, the Russian troops are attacking the city of Nikopol in the Dnipropetrovsk region from rocket artillery installed on the territory of the Zaporizhzhia NPP. On July 20, the Ukrainian military launched a high-precision strike against a concentration of Russian military equipment and manpower on the station's site.

- The occupiers continued acts of nuclear terrorism on the ZNPP site. The invaders abducted several middle management employees. They also entered the radioactive zone of the ZNPP unit 2, disregarding safety requirements and procedures. Moreover, after the high-precision strike of the Armed Forces of Ukraine, the Russian military moved at least 14 units of heavy equipment with munitions, weapons, and explosives to the engine room of the ZNNP unit 1. This arsenal is located next to the equipment that keeps the turbine generator running - in close proximity to the main oil tank, which contains flammable oil that cools the steam turbine, and the hydrogen tank used for cooling the generator. These actions have critically increased the risks for national and global nuclear and radiation safety. There are also signs of setting up defensive shelters in the basement of the station's Training Center.

- The power system of Ukraine worked stably and remained in surplus. Ukraine continued to export electricity to Moldova, Poland, Romania and Slovakia (at app. 465 MW in total). Favorable conditions in the EU markets and significant competition for capacity allocation led to high prices.
for access to cross-border export flows to Romania and Slovakia. At the same time, there was a relatively high concentration of distribution, dominated by large producers. The total revenues of Ukrenergo from the auctions was more than 117 million UAH.

- The operation of the day-ahead market (DAM) was characterized by a general increase of the weighted average settlement price, which fluctuated between 2,586-2,743 UAH/MWh. At the same time, a deficit was observed in some evening peak hours, and the price reached the upper cap of 4,000 UAH/MWh. At the same time, the Base DAM indices of the Eastern European countries were app. 2.6-5.4 times higher than the Base DAM index of Ukraine. The total trading volume demonstrated a **systematic downward dynamics** - from 19.2 to 17.5 GWh. Notably, about 80% of the electricity sold in June at the DAM and intraday market (IDM) was **carbon neutral**.

- Naftogaz **prepares** a **new claim** against Gazprom due to the non-fulfillment of the contract on organization of transit in terms of the "ship or pay" clause. The final decision of the company's claim against Russia regarding the Crimean assets is expected in a year.

- In the first half of 2022, **the volumes of natural gas trading** on the Ukrainian Energy Exchange (UEEX) **decreased** 10 times year-on-year and amounted to 145.97 mcm. The decrease is related to both military factors (industrial consumption falling, etc.) and the **transition** of the Naftogaz Group companies to the alternative platform (Ukrainian Interbank Currency Exchange). However, even on the latter, the last auctions were held on **May 13**.

- The government adopted the Regulation on the imposition of public service obligations (PSO) on natural gas market entities, which defines the specifics of gas supply to heat energy producers. From August 1, 2022, to March 31, 2023, the PSO guarantees the supply of fixed volumes of gas at fixed prices: for the supply of heating and hot water to households - 7,420 UAH/tcm, for budget institutions - 16,390 UAH/tcm.

- In addition, the Prime Minister Denys Shmyhal **confirmed** the agreement with the World Bank and the EBRD on 500 million USD to **prepare for the heating season**. According to him, as of **mid-July**, Ukraine has accumulated 11.3 bcm of gas, and coal reserves at power plant warehouses amounted to 1.5 Mt.

- Ukraine **signed** the joint **declaration of association with the International Energy Agency (IEA)**. The parties intend to cooperate on the analysis of energy markets, reconstruction of the energy system, strengthening of energy security, development of energy efficiency, acceleration of energy transition, and roll-out of alternative energy resources.

- The Verkhovna Rada **ratified** two agreements between Ukraine and the European Investment Bank on the provision of a 5 million EUR investment grant for the **thermal modernization of about 1,000 public buildings**.

- The wholesale fuel market **reacted** to the National Bank 25% correction in the UAH/USD exchange rate by **increasing the price** of diesel fuel by 10 UAH/liter and A-95 petroleum by 11.50 UAH/liter. Experts noted that wholesale buyers (e.g. farmers) will suffer first. At the same time, **Ukrzaliznytsia and PKN Orlen (Poland)** **agreed on strategic cooperation** on the supplies of diesel fuel for the Ukrainian economy. As expected, these supplies shall meet the needs of the Armed Forces of Ukraine, farmers, industry, and households.

### Attacks

For the fifth day in a row, the Russian troops are attacking the city of Nikopol in the Dnipropetrovsk region from rocket artillery installed on the territory of the Zaporizhzhia NPP site, reported the Dnipropetrovsk Regional Military Administration Head Valentyn Reznichenko. According to the information of the General Staff of the Armed Forces of Ukraine, the occupiers in the Donetsk region do not stop trying to seize the Vuhlehirska TPP, carrying out assaults and shelling. In addition, in
the Luhansk region, the enemy made attempts to storm positions from the side of the Lysychansk refinery in the direction of Ivano-Daryivka, without success.

Electricity Sector:

Power system operation

Interaction with ENTSO-E: As of July 22, Ukraine continued to export electricity to Eastern European countries at 465 MW. Exports of electricity to Poland via the Dobrotvirska TPP - Zamosc transmission line were reported at 205 MW on a flat schedule. Exports to Romania amounted to 50 MW on a flat schedule. Also, according to Ukrenergo, exports to Slovakia continued at the level of 50 MW (flat schedule). Exports to Moldova amounted to 160 MW. Also, technical cross-border flows continued between the energy systems of Ukraine and Eastern European countries (Romania, Hungary, Poland and Moldova).

Daily capacity allocation auctions (for July 22):

Ukraine->Poland: DTEK Zakhidenergo purchased all available 65 MW on a flat schedule; marginal price - "zero".

Ukraine->Moldova: out of 600 MW available capacity, 500 MW was distributed between two companies: 400 MW by Energoatom (except 00:00-01:00, where the company booked 200 MW) and 100 MW by Ukhydroenergo (both at flat schedules); marginal price - "zero".

Ukraine->Romania: 50 MW available capacity was distributed among 7 companies, and 9 companies competed at the auction. At the same time, the distribution concentration has significantly increased - the largest total shares were booked by Energoatom (45.3%) and DTEK Zakhidenergo (32.5%), the remaining 22.2% were distributed among 5 companies (Herfindahl-Hirschman index, HHI, increased from 2,064 to 3,299). The marginal price for different hours of the day fluctuated in a range from 6,799.23 UAH/MWh (for 04:00-05:00) to 14,199.92 UAH/MWh (for 16:00-17:00), which allowed Ukrenergo to receive over 12.3 million UAH in revenues from the auction.

Ukraine->Slovakia: 50 MW available capacity was distributed among 7 companies, and 8 companies competed at the auction. The results were characterized by further decrease in concentration, since the largest total share of cross-border capacity was purchased by Energoatom (46.7%) and DTEK Zakhidenergo (21.4%) the remaining 31.9% were distributed among 5 companies (HHI decreased from 3,248 to 2,940). The marginal price for different hours of the day increased and ranged from 7,150.42 UAH/MWh (for 04:00-05:00) to 13,913.67 UAH/MWh (for 17:00-18:00), which allowed Ukrenergo to receive over 12.5 million UAH in revenues from the auction.

Infrastructure restoration: According to Ukrenergo, in the northern and eastern regions, restoration works at two 330 kV substations continued.

Electricity market performance

According to the SE Market Operator, the electricity sold on DAM and IDM in June had the following origin: 41.08% - nuclear fuel, 22.17% - solar, 13.01% - hydropower, 6.37% - natural gas, 4.42% - coal, 1.62% - wind, 1.27% - biogas, 1% - fuel oil, 0.56% - biomass. At the same time, for 8.5% of electricity, the source of origin is uncertain or not reported. To note, about 80% of the electricity sold was carbon neutral.

Day-ahead market (DAM): As of July 22, due to changes in the supply and demand, the Base and Offpeak price indices increased slightly - to 2,681.61 UAH/MWh (+0.4% vs the previous day), 2,533.02 UAH/MWh (+1.2%), respectively, and the Peak index decreased to 2,830.21 UAH/MWh (-0.3%). At the same time, exchange prices in the Eastern European markets have shown a diverse dynamics. The Base DAM indices of Romania, Slovakia and Hungary were app. 4.9-5.1 times higher than the Base DAM index of Ukraine; while the price spread to Poland reduced to 3.6 times.
The weighted average price of purchase and sale of electricity decreased to 2,711.38 UAH/MWh (-1.2%). At the same time, prices during 19:00-23:00 reached the upper cap of 4,000 UAH/MWh. In general, according to the Energy Map service, in the working days of the week (July 18-22), the weighted average price showed a general upward trend and fluctuated between 2,586-2,743 UAH/MWh.

On the other hand, the total volume of trading was characterized by a systematic downward trend, ranging from 19.2 to 17.5 GWh. In particular, on July 22, it decreased to 17,479 MWh (-1.7% vs the previous day), and the supply - to 61,106.3 MWh (-5%). Altogether, these factors caused some decrease in the market surplus: the gap between the total volume of sale and purchase bids was at 3.2 times. At the same time, certain hours of the day (in particular, 19:00-24:00) were characterized by a deficit. In the structure of purchase, 73.1% was occupied by suppliers, 26.8% by system operators, 0.1% by producers.

Intraday market (IDM): On July 21, the weighted average price increased moderately to 3,107.75 UAH/MWh (+3.6% vs the previous day). At the same time, the prices during 19:00-23:00 reached the upper cap of 4,000 UAH/MWh. The total volume of trading increased more than twice to 1,368.8 MWh (+12.4%). Together, these factors resulted in further decrease in the market surplus: the gap with the volume of purchase bids dropped from 36 to 23 times. At the same time, certain hours of the day (in particular, 23:00-01:00) were characterized by a deficit. In the structure of purchase, the dominant part (94%) was occupied by suppliers, 4.4% by system operators and 1.6% by producers.

Disruption and resumption of supply

According to the Ministry of Energy, as of July 21, due to damage caused by hostilities, a total of app. 580,400 consumers in 760 settlements were disconnected from electricity supply. During the day, electricity supply was resumed to app. 6,500 consumers.

Large-scale power supply disruptions and, consequently, active recovery works were taking place:

- in the Donetsk region, according to the local DSO, during the day specialists restored electricity supply to app. 800 households in 7 settlements of the Bakhmut and Pokrovsk districts. Residents of 322 settlements remained offline (according to the Ministry of Energy - about 350,800 consumers);

- in the Luhansk region, according to the Ministry of Energy, more than 128,200 consumers were left without electricity supply;

- in the Kharkiv region, according to the Ministry of Energy, app. 22,300 consumers remained without electricity supply and supply to 1,200 consumers was restored during the day;

- in the Zaporizhzhia region, according to the local DSO, as of 07:00 on July 22, 17,691 consumers in 74 settlements remained without electricity supply. During the day, specialists repaired the damaged networks and equipment, and restored power supply to 26 consumers of the Zaporizhzhia power grids, which were disrupted due to equipment damage in a transformer substation;

- in the Mykolaiv region, according to the Regional Military Administration, as of July 22, 510 power supply facilities were partially or completely damaged (including 1 in the last day). 89 settlements (including 4 partially) of the Bashtanka and Mykolaiv districts were disconnected (according to the Ministry of Energy - a total of 30,800 consumers). In addition, electricity supply to 700 consumers was restored during the day;

- in the Dnipropetrovsk region, according to the local DSO, on the night of July 22 due to the enemy shelling, a transformer in one of the settlements of the Pokrovsk community was damaged - with several villages left without electricity supply. According to the local DSO, emergency crews repaired networks in the Nikopol district, damaged by enemy shelling, and resumed electricity supply to 2,700 households during the day. As of the morning of July 22, after another large-scale night attack, new damage to lines was recorded in the Nikopol and Kryvyi Rih districts;
• in the Chernihiv region, according to the Regional Military Administration, as of 6:00 on July 22, due to weather conditions and other technical reasons, electricity supply service to 7,480 consumers in 29 settlements was not provided;

• there was no up-to-date consolidated information on power supply in the Kherson, Odesa and Sumy region at the time of the review preparation.

Gas Sector:

Gas system performance

On July 20, the gas transit through the territory of Ukraine amounted to 41.9 mcm (+0.2 mcm as compared to the previous day). These volumes were only 38% of the capacity contracted by Gazprom (109 mcm per day). There were no transit flows via the Sokhranivka interconnection point.

Physical imports of gas from the EU were reported via the Hermanowice interconnection point (virtual interconnection point "Ukraine-Poland") at 3.6 mcm/day. Also, physical imports at 0.5 mcm/day were reported through the Budince interconnection point (from Slovakia). At the same time, on Ukraine's gas system exit via the Berehove interconnection point (virtual interconnection point "Bereg") 0.8 mcm was shipped.

Gas transit through Ukraine (at Sokhranivka and Sudzha interconnection points), mcm

Source: GTSOU

Functioning of natural gas market

The trading volumes on the Ukrainian Energy Exchange (UEEX) amounted to 145.97 mcm in the first half of 2022 (more than 10 times less year-on-year - i.e. as compared to 1,562 mcm in 2021). According to our assumptions, this trend is related to both military factors (industrial consumption falling, etc.) and the strategy of Naftogaz Group companies, which sold at least 15% of the extracted
gas on the exchanges, namely their transition to the Ukrainian Interbank Currency Exchange (UICE) platform. However, even on it, the last auctions were held on May 13.

**Disruption and resumption of supply**

The Donetsk, Luhansk, Zaporizhzhia, Kherson, Mykolaiv, and Kharkiv regions had the most challenging situation. According to the Cabinet of Ministers, as of July 21, more than 243,800 consumers were left with no gas supply.

In the Donetsk region, the situation didn’t change: almost the whole region remained without gas supply due to the main gas pipeline damage. As of July 2, only 1,900 consumers in 2 settlements had supply.

In the Luhansk region, there were no changes in gas supply: it was completely suspended due to hostilities which were deeply destroying the region’s critical infrastructure.

In the Kharkiv region, the local DSO continued to carry out repairs to eliminate the consequences of enemy shelling in the settlements of Derhachi, Zolochiv, Vilkivka, Balakliya and Chuhuiv communities.

In the Mykolaiv region, as of the morning on July 22, 717 gas infrastructure facilities (+1 as compared to the previous day) were damaged for the whole period of war. As a result, 7,254 consumers (no change) were left without gas supply.

According to the Chernihiv Regional Military Administration, as of the morning on July 22, the situation didn’t change: about 700 consumers in 22 settlements have not received gas supply service.

Operational information on gas supply in the Kherson and Zaporizhzhia regions was not available at the time of the review preparation.

**Countermeasures of Ukrainian Companies and Public Authorities**

The Prime Minister of Ukraine Denys Shmyhal expressed gratitude to the EU Council and all partners for their support and the adoption of the 7th package of sanctions on Russia. Among the measures, the new package includes a ban on the imports of gold and jewelry, strengthening control over the ban on the exports of dual-purpose goods and advanced technologies to Russia, and changes that block the ways of circumventing a number of previous sanctions.

The Cabinet of Ministers obliged Naftogaz to coordinate with the government any actions regarding the implementation of the main contract with Kondor Finance, an issuer of Naftogaz Eurobonds. The government also evaluated the performance of the company's board as unsatisfactorily due to the failure to conclude an agreement with Kondor Finance regarding changes to loan agreements in the amount exceeding 3 billion UAH.

The Minister of Finance Serhii Marchenko stated that the postponement of debt service payments for Eurobonds and GDP warrants in the next 2 years makes it possible to direct the saved 5 billion USD for urgent needs: social protection and financial support of military personnel. He also expressed hope that commercial investors would also agree to the proposed terms. Marchenko noted that Ukraine offered a deferral in the payment of interest and repayment of the loan body for each of the 13 issues of securities.

The Government Commissioner for Public Debt Management Yuriy Butsa reported that Ukraine is discussing the possibility of revising the payment schedule for external debt with the IMF and other international financial institutions. Butsa specified that, if no changes are made, this year Ukraine
will transfer more funds to the IMF than receive, even taking into account the 1.4 billion USD received in SDRs after the start of the war. According to him, there are two options for solving the problem: either one of the G7 members will be able to replace these payments, or the IMF increases the financing of Ukraine under a new program. At the same time, Butsa noted that the start of a new program is complicated by the need to conduct a macrofinancial forecast for the whole period of its duration.

The wholesale fuel market reacted to the National Bank of Ukraine 25% correction in the UAH/USD exchange rate by increasing the price of diesel fuel by 10 UAH/liter and A-95 petroleum by 11.50 UAH/liter. Experts noted that wholesale buyers (e.g. farmers) will suffer first, as the cost of fuel has increased in accordance with the exchange rate adjustment. At the same time, retail prices can be maintained without an increase, given still high margin and fierce competition.

Ukrzaliznytsia and PKN Orlen (Poland) agreed on strategic cooperation regarding the supplies of diesel fuel for the needs of the Ukrainian economy. In the near future, as expected, these supplies shall meet the needs of the Armed Forces of Ukraine, farmers, industry, and households. The Ministry of Infrastructure noted that PKN Orlen has a successful experience of supplying fuel to Ukraine in recent months.

NEURC announced a meeting on July 26, where it plans to consider a number of decisions regarding:

- settlement of urgent issues of economic activity of licensees under martial law (the draft decision has not been published);
- regulating a top-priority, urgent and free connection to electricity distribution networks of the facilities for temporary accommodation of displaced (evacuated) persons in 'modular towns';
- changes to the procedure for notifying the NEURC by DSOs about the restoration of electricity networks or their components as a result of hostilities;
- exempting Spektrgaz LLC from fulfilling the requirements of Article 39 of the Gas Market Law regarding the unbundling and independence of gas distribution system operators due to the small number of customers;
- changes to the Gas Transmission System Code in terms of limiting the acceptance by the TSO of bank guarantees for financial backing of settlements for transmission services only by the banks listed by the NBU as systemically important;
- increasing the expenditure part of 2022 cost estimate of SE Guaranteed Buyer by 3.62 million UAH - up to 278.3 million UAH (mostly for the spending on court proceedings);
- defining the calculation of the share of compensation for the settlement cost of the electricity imbalances in the period from February to June 2022 (inclusive).
- The Ministry of Environmental Protection and Natural Resources announced the launch of a new service on the national platform EkoSystema, which allows businesses to obtain a license for handling hazardous waste online. As noted, the service will become part of the national waste management information system, which is provided for by the Law "On Waste Management".

Sources:
The alerts are developed based on collected, verified, and analyzed information reports of over 100 official sources: ministries, state agencies, network operators, and energy companies. Information was collected only from official websites and official social media accounts.

For subscriptions, comments and other questions, please email to: author@dixigroup.org
SUPPORT UKRAINIAN ENERGY SECTOR
Prior to transferring funds, please email to the Energy Community Secretariat.

SUPPORT UKRAINIAN ARMY
To financially support Heroic Ukrainian Army, please follow the link (The National Bank of Ukraine)