

Impact of the electricity price surge in Energy Community Contracting Parties and measures undertaken

(Updated in April 2022)

This paper is prepared by the Electricity Working Group (EWG) of the Energy Community Regulatory Board (ECRB) with the input from its member national regulatory authorities (NRAs) and is taking stock on the impact of the price surge in electricity markets and potential measures undertaken by regulators and policy makers.

This version provides updated information and substitutes the previous version published in December 2021. It focuses on measures undertaken by Governments, Regulators and TSOs from the Contracting Parties to mitigate the impact from the electricity and gas price surge.

There is a special focus on Ukraine with the aim to provide information on the impact of Russian aggression in the electricity sector of Ukraine.

Part I of the report provides an introduction to the price surge and its general impact.

Part II of the report outlines general conclusions of the EWG and the need to further monitor the market and exchange experiences on the impact and measures undertaken.

Annex A represents an outline based on the input and view of the respective national regulatory authority through their representation at the EWG.

I. Introduction

The global energy demand is picking up due to increased economic activity necessary for economic recovery from the COVID-19 pandemic. This, combined with other reasons, has resulted in a surge in energy commodity prices in the second half of 2021. The scarcity is expected to continue at least until first half of 2022. This is also outlined in the Agency for Cooperation of Energy Regulators' (ACER) *Preliminary Assessment of Europe's high energy prices and the current wholesale electricity market design* prepared upon the request of European Commission.¹ The European Commission's Communication,² *Tackling rising energy prices: a toolbox for action and support*, presents a toolbox of measures for European Union Member States to address the price hikes through targeted, national short-term relief measures that help the most vulnerable without endangering the operation of the energy markets. Contracting Parties may use such toolbox of measures as a guiding principles in

¹https://extranet.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER's%20Preliminary%20Assessment%20of%20Europe's%20high%20energy%20prices%20and%20the%20current%20wholesale%20electricity%20market%20design.pdf

²https://ec.europa.eu/commission/presscorner/detail/en/IP_21_5204.

designing their support measures to the categories of consumers that have been impacted the most by the hike in energy prices.

The impact of the price surge in electricity and gas reached out to Energy Community Contracting Parties whose electricity markets are linked with European markets. From the initial review it appears that the direct impact is specifically felt in the non-universal supply segment that represents the market segment. Some industrial consumers announced temporary shut-down of their consumption facilities, while some electricity market participants are struggling to meet their contractual obligations due to significant exposure.

A high-level assessment outlined in the Annex follows the Contracting Party national regulatory authorities' updates and discussions at the ECRB working groups in relation to the impact of the recent energy price surge in the electricity markets and measures undertaken by the transmission system operators (TSOs), regulators and Governments in the Contracting Parties to mitigate the adverse impact.

II. Conclusion

The Energy Community markets, despite some level of correlation, remain fragmented when it comes to utilisation of national resources for the purpose of supplying the end users. National electricity production is generally reserved for households and small commercial consumers at a price which does not reflect the regional prices unless imported from coal or gas.

Considering this, the following can be concluded for the Contracting Parties:

- Due to Russian aggression in Ukraine, the latter enacted the Martial Law which grants more powers to the Government in governing certain aspects of energy market.
- Many countries, namely Albania, Kosovo*, North Macedonia and Moldova, declared state of emergency and decided on direct financial support to consumers through the incumbent +companies;
- In addition, Kosovo*, North Macedonia and Moldova have increased universal supply electricity tariffs.
- A large segment of the markets in the Energy Community Contracting Parties is still either regulated via public service obligation or isolated via intra-group/companies arrangements hence the impact in these market segment is limited;
- Net importing countries, namely Albania, North Macedonia, Moldova and Kosovo*, are impacted from the high import prices, whereas producers from net exporting countries, namely Bosnia and Herzegovina, reported the highest revenues;
- Also consumers supplied under regulated prices will likely experience increase in their tariffs due to an increase of the import price;
- TSOs and DSOs are to some extent impacted, in particular where the network losses are procured on the market. This means that the network charges are likely to increase in the next tariff review by regulators;

- The Serbian TSO already did, and others are likely to, review the balancing rules and increase the level of financial guarantees to cover the exposure on balancing market;

Market anticipation on scarcity combined with the Russian aggression in Ukraine, is likely to influence the forward prices. therefore, it is too soon to conclude on the impact of the price surge on consumers and in general on electricity market operation. It is clear that in some segments of the market, such as the balancing segment, the regulators need to ensure that the balancing mechanism delivers balancing and imbalance prices that reflect the scarcity in the market and eliminate perverse incentives from the market operation. Universal supply tariffs are likely to increase in the next review due to the higher wholesale prices (imports) and the increase in network fees. The regulators report that, an increase to fully reflect the costs might bring the tariffs at the edge of their affordability, therefore a relief measures by the Governments might be the only instrument to keep the tariffs at the affordable level.

The ECRB Electricity Working Group invites regulators form the Contracting Parties to monitor the market and exchange experiences through ECRB Electricity Working Group on measures to improve market functioning.

ANEX A: Update by Contracting Parties

Information comprised in this Annex is provided or confirmed by the national regulatory authorities from Contracting Parties through their EWG delegated members per each Contracting Party.

Information provided below represents the view of:

1. Energy Regulatory Authority (ERE)
 - a. For part (1) Albania
2. State Electricity Regulatory Commission (SERC)
 - a. For part (2) Bosnia and Herzegovina
3. Georgian National Energy and Water Supply Regulatory Commission (GNERC)
 - a. For part (3) Georgia
4. Energy Regulatory Office (ERO)
 - a. For part (4) Kosovo*
5. National Agency for Energy Regulation (ANRE)
 - a. For part (5) Moldova
6. Energy and Water Regulatory Authority of Montenegro (REGAGEN)
 - a. For part (6) Montenegro
7. Energy Regulatory Commission (ERC)
 - a. For part (7) North Macedonia
8. Energy Agency of the Republic of Serbia (AERS)
 - a. For part (8) Serbia
9. National Energy and Utility Regulatory Commission (NEURC)
 - a. For Ukraine

1. Albania

Impact on the market

- Albania has a high exposure on hydro resources and due to weather conditions (namely, dry summer and autumn) is importing significant amount of electricity at high prices. Albania is generally a net importing country, however in favourable hydrological conditions the country's exports are high during the spring season.
- The universal supply segment of the market benefits from the public service obligation of the state-owned hydro producer, KESH, whose prices are based on costs, hence it is not directly affected by the global and regional prices but rather by weather conditions. Production by KESH is not sufficient to cover the demand from the universal supply segment therefore the universal supplier will need to procure a proportion of its portfolio in the market which mainly comes from import. This exposes the universal supplier to a price risk and revenue shortage.
- Industrial consumers and other consumers that are supplied in the free market are buying at regional market price, therefore their businesses are directly impacted by a significant increase in prices.
- The price surge in the market had direct impact on the balancing services offered to the TSO and subsequently imbalance prices. This is an expected and desirable effect, which ensures that there is a financial incentive on market participants to provide a balanced portfolio.

Measures undertaken

- By Decision no. 584 of 8 October 2021, the Government of Albania declared a state of emergency effective until 15 April 2022, followed by an emergency public service obligation act which dedicates all electricity produced by KESH to the universal supplier. Based on this act, the surpluses of KESH shall be stored via a commercial agreement and used by the universal supplier. The Government also announced EUR 100 mln for 2021, in the form of sovereign guaranty to the OSHEE Group to guaranty the import of electricity with high prices, including also another EUR 100 mln for Q1 2022.
- No specific measures have been undertaken so far by the regulator, ERE, however the regulator is monitoring the market and assessing the potential impact on tariffs.
- The transmission and distribution system operator were requested pursuant to the above mentioned Government's decision to review their investment plans and postpone their investments which are not urgent.

2. Bosnia and Herzegovina

Impact on the market

- Bosnia and Herzegovina is generally a net exporting country. Therefore, the surge in the regional prices meant higher priced exports from production companies in Bosnia and Herzegovina.
- Electricity producers in Bosnia and Herzegovina have recorded the highest revenues ever during this period of price surge. The companies have benefited also from the fact that electricity produced from fossil fuels is not subject to a carbon price/tax making it more competitive in the surrounding EU markets.
- The retail market in Bosnia and Herzegovina is supplied mainly by the electricity sourced within the country and reserved for retail supply. The incumbents are vertically integrated companies with generation, supply and trade functions.
- Balancing market prices are correlated, hence reflecting the regional scarcity.

Measures undertaken

- No specific measures undertaken so far by the policy makers or regulator.

3. Georgia

Impact on the market

- Georgia is generally importing significant amount of electricity at a relatively high price. However, due to good hydrological conditions, additional hydro energy that was generated at low costs by hydro power plants in Georgia is compensating for high electricity import prices.
- Along with imports, the thermal power plants are balancing the demand in the periods of insufficient domestic hydro generation. Gas supply for thermal power plants serving public obligation is purchased at fixed terms with a price lower than the wholesale market price. Hence, the price surge did not impact the wholesale and retail market segments, which operate at bilaterally fixed prices and regulated tariff.
- The day-ahead market is undergoing a dry-run operation preceding the expected go-live in March 2022.

Measures undertaken

- So far, no measure has been undertaken by the Government or the regulator, GNERC.
- GNERC has previously fixed the electricity prices for household consumers for 5 years, and currently there is no need to review the tariff.

4. Kosovo*

Impact on the market

- Kosovo* generally is a net importer. Imports are usually taking place during winter periods when prices are higher due to higher demand. Currently, Kosovo* is importing via all the its interconnection except the interconnection with Serbia where the net transmission capacity is set at zero by the neighbouring TSO.
- Most of the universal service supply is covered by domestic generation at relatively low prices (cost plus), while electricity import is demanded on peak hours and mainly during cold weather. Immediately after the regular tariff review undertaken by the regulator, the supplier of universal service requested an extraordinary tariff review due to increase on the energy wholesale prices.
- Network operators are also impacted by the fact that they procure electricity for covering the network losses in the market. The TSO, KOSTT, is particularly impacted by the fact that supply in the northern part of the country is procured via transmission network losses.
- Few industrial consumers that are supplied at market prices are directly impacted and already reported delays in payments, while one, the biggest industrial consumer, has temporarily ceased activity.

Measures undertaken

- The national regulatory authority, ERO, in November 2021 completed the tariff review for the regulated segment (TSO/MO, DSO and USS) and increasing the assumption on the import price to 90 €/MWh and allowed an additional fund of €5 million for universal service, as a balancing account, in case of further increase of electricity costs. Only one day after the ERO Board decision on tariffs, the supplier of universal service has requested an extraordinary tariff review due to the increase on the energy wholesale prices. Such review was initiated by ERO on 13 December 2021 following the unprecedented increase of wholesale import prices. Based on the regulatory framework, the condition of 5% material impact on revenues of the universal supplier would be a trigger for an extraordinary review of tariffs. In addition to high import prices and significant increase in demand, unplanned outages of thermal power plants aggravated the situation.
 - Following the review of the tariffs, ERO changed the tariff structure for USS and introduced the block tariff (at 800 kWh/month) and in addition an increase of the allowed revenues for up to 70% from the previous year.
 - The Government announced a subsidy of EUR 90-100 million, in addition to EUR 20 million already provided as an ad-hoc direct subsidy.
 - The increase on allowed revenues was revised in light of he announced subsidy, and the increase in revenues resulted at circa 20%, which is to be recovered by the household consumers that consume electricity more than the defined block.
- ERO is continuously monitoring the situation and will act in line with its mandate.



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- In addition to the general campaign for energy savings, the Ministry of Economy established an ad-hoc group with key stakeholders led by the regulator to assess the impact of the price surge and make proposals for potential support measures.

5. Moldova

Impact on the market

- As of 16 March 2022, the Moldovan electricity system (together with Ukraine) is synchronised with the electricity system of the Continental Europe. The so-called trial synchronisation means that no commercial exchanges are allowed until certain technical conditions are fulfilled. TSOs' however are able to exchange limited (in time and volume) emergency supplies. Currently Moldova can only have commercial electricity exchanges with Ukraine. Moldova is a net importer of electricity and furthermore it has a strong reliance on a gas-fired thermal power plant located in the Transnistria region.
- Due to strong reliance on gas for electricity production, the surge in gas prices has had impact in the electricity market. The shortage of natural gas during October 2021 led producers to switch to alternative sources of electricity (fuel oil or coal). Taking into account the long period of operation with the use of alternative sources and their limited stocks, demand was met via an influx of unscheduled electricity withdrawn from the Ukrainian electricity system. The situation returned to normal with the restoration of natural gas supply in sufficient volumes, which also enabled compensation to the Ukrainian system.
- Russian aggression in Ukraine has increased uncertainties and risks related to security of supply with electricity and gas. This has stalled further the ongoing market reforms.

Measures undertaken

- Due to the difficulties in contracting sufficient quantities of natural gas, on 22 October 2021 the Moldovan Parliament declared a state of emergency.
- On 25 November 2021, upon the proposal by the Government, the Moldovan Parliament approved a mechanism for compensating the price difference for natural gas and heating for household consumers. Compensations for the difference due to the increase in natural gas tariffs for each household consumer will be:
 - Up to 50 cm/month of consumed gas: 67% of the difference following the increase of tariffs for natural gas consumption;
 - For the next 100 cm/month of consumed gas: 50% of the difference following the increase of tariffs for natural gas consumption;
 - Up to 1 gcal/month of consumed heat: 67% of the difference following the increase of the tariff for consumption of consumption of thermal energy.
- The price surge and state of emergency in Moldova coincides with the entry into force of the new electricity market model following the approval of the Electricity Market Rules by the regulator, ANRE, in October 2020. On 29 October 2021, in coordination with the Energy Community Secretariat, ANRE approved a decision to postpone the entry into force first until 1 January 2022, and on 24 December 2021, the entry into force was postponed until 1 April 2022.
- Following the restoration of gas supply under the new terms, ANRE adjusted the prices of electricity produced at combined heat power plants (CHPs) and sold to suppliers. This increase in price for electricity produced by CHPs is below the 5% threshold set

by law for extraordinary review of suppliers' revenues. A potential increase of the electricity retail prices may prove necessary later once the existing fixed terms bilateral agreements mature.

- On 20 January 2022, due to new increased price of gas and new conditions for advance payment, imposed by the supplier (Gazprom), the Parliament adopted a second decision about state of emergency for 60 days. Consequently, the Government updated the mechanism of compensation for final gas customers.
- The Emergency Situations Commission:
 - approved payment in advance and the compensations for the difference in price for gas and heating consumption granted to household consumers;
 - postponed until March 2021, the obligation of Moldovagaz to pay the natural gas supplied by Energocom (state owned company) during October 2021;
 - imposed special terms for payment of the import rights for natural gas;
 - As of 28 January 2022 forbidden disconnection or penalization in case of non-payment on time of bills for electricity, heat, natural gas by household consumers;
 - as of 1 February 2022 amended the quotas of the difference in price to be compensated for gas as follows:
 - (1) In case of householders - up to 50 cm/month of consumed gas: 79.8% of the difference following the increase of tariffs for natural gas consumption;
 - (2) In case of householders - for the next 100 cm/month of consumed gas: 69.5 % of the difference following the increase of tariffs for natural gas consumption;
 - (3) In case of non-householders - 100% of the difference following the increase of tariffs for natural gas consumption for the first 500 cm/month.
- On 28 January 2022 ANRE approved a second adjustment of prices for gas, heating and electricity produced at combined heat power plants. The new conditions, pushed the wholesale price for electricity above the 5% margin set by Electricity Law, which is the threshold for extraordinary review. Following the request by the suppliers, on 18 March 2022, ANRE approved new electricity retails tariffs with an average increase of 18% and entry into force as of 1 April 2022.
- The TSO undertook measures to return to the Ukrainian system the significant volume of unscheduled electricity withdrawn during mainly during October 2021.

6. Montenegro

Impact on the market

- Based on the energy data of 2021, domestic production and consumption in Montenegro nearly matched.
- Electricity prices for households and small consumers remain unchanged since 2019. The Energy Law provides a specific type of protection for households and small commercial consumers – i.e. businesses with fewer than 50 occupied persons and an annual turnover or balance sheet not exceeding EUR 10 million - until the end of 2022 due to lack of competition in the retail market, by limiting the potential increase of electricity prices for these consumer categories up to 6%.
- So far, high energy prices on the wholesale market did not affect retail prices for households and small commercial consumers but they affected the TSO and DSO due to the unexpected increase of prices of energy needed to cover losses in the transmission and distribution network. Higher incurred costs of energy purchased for covering the losses are expected to affect tariffs for the usage of transmission and distribution systems for the next regulatory period 2023-2025.
- No significant increase of imbalances by balancing responsible parties has been recorded so far. The methodology for determining prices, deadlines and conditions for the supply of ancillary and balancing services to the TSO link the balancing prices with day ahead market prices (HUPX index), therefore the increase is expected to affect the network costs in the next regulatory period 2023-2025.

Measures undertaken

- No measures have been undertaken so far by the Government. However, the Energy Law provides the possibility for the Government to take support measures in case of a disturbance on the market caused by an unexpected energy deficit.
- The regulator is assessing the impact of the high prices and will consider it in the process of adjustments of network tariffs.

7. North Macedonia

Impact on the market

- Electricity generation in the country has been gradually decreasing over the last years, mainly due to lower lignite reserves and its calorific quality. Hydro capacities depend on the hydrological conditions, which were also not favorable in the past several years. Therefore, the import of electricity in 2020 was at a level of 32% of the gross domestic consumption, while in the period January - September 2021 the import rose to 37%.
- Small commercial consumers – i.e. businesses with fewer than 50 occupied persons and an annual turnover or balance sheet not exceeding EUR 2 million – and households benefit from the universal service obligation of the universal supplier which is a privately owned company. The regulator sets the prices for the universal supplier. However, the universal supplier is not highly exposed to wholesale electricity prices since most of the electricity offered by the universal supplier derives from the largest domestic electricity producer, a state-owned company that is obliged to offer electricity via tenders opened by the universal supplier in a percentage set in the Energy Law, which gradually decreases from at least 80% of the total annual needs of the universal supplier in 2019 to at least 30% of the total annual needs of the universal supplier in 2025. If the prices of the largest electricity producer are the lowest, the universal supplier has to conclude a power purchase agreement. The remaining electricity needed, but not covered by the largest electricity producer, is purchased by the universal supplier from other traders, suppliers or producers.
- Industrial consumers and other consumers that are supplied at market prices, are significantly exposed and directly impacted. Furthermore, some of the suppliers faced termination of their bilateral agreements for purchase of electricity from their foreign traders, as well as changes of prices, previously set in their bilateral agreements. These circumstances had large impact on the consumers of these suppliers. For instance, some of the consumers were left without a supplier, in most cases, with a very short cancellation period offered by their supplier. These customers had to return to the universal supplier or the supplier of last resort which, according to the regulations in place, is set at HUPX day a head price multiplied by 1,5. Other consumers received new offers with increased prices, although their purchase agreements with fixed term tariffs were still in force i.e. the contract period has not ended.
- The balancing market was also highly impacted by the wholesale electricity price increase. The balancing price is set in accordance with the methodology for setting the balancing price regulated in the Electricity Balancing Rules. The Balance Service Providers (BSPs) submit offers on auctions performed by the TSO. At some point the balancing prices were lower than the market prices due to the lack of correlation with market prices. Under such conditions, few market participants did not close their position in the market and supplied their customers, on short term or continuously, via imbalances, utilising therefore all the balancing capacity available to the TSOs within 24 hours. This brought hydro-accumulation at the historically lowest level.

Measures undertaken

- The Government of North Macedonia declared a state of emergency in the power sector on 9 November 2021 effective until 9 December 2021, followed by financial support for the incumbent producer, ESM JSC, and the transmission system operator, MEPSO. The Parliament extended the period for state of emergency in the power sector until 9th of June 2022. As of 18th of February 2022, the Government has allocated around 170 million Euro from the budget for measures for implementation of measures to deal with the state of emergency in the supply of electricity.
- The regulator has so far undertaken two types of measures:
 - Decisions against suppliers that have not complied with their obligations set in their license, the Energy Law and Rules for Electricity Supply, for customer protection in respect of providing timely information and information of consumer's rights to choose another supplier or to be supplied by the supplier of last resort and asked for a retroactive application of new higher prices. These decisions also set a timeframe for regular reporting to the regulator of actions taken for a proper provision of relevant information to consumers.
 - Decisions against suppliers that presumably abused the market and intentionally lowered their nominations to use balancing energy for supply of their consumers or did not have any bilateral agreements and used the entire balancing electricity for supply of their consumers. The regulator ordered these suppliers to end such practices and initiated a procedure for revoking their licences due to potential breaches with general requirements of suppliers to contract electricity for supplying their consumers and also endangering the security of supply.
- For 2021, no price revision process is foreseen by the regulator. However due to the direct impact of the high retail prices, the regulator will in 2022 review the network tariffs and take into account the impact on the costs of TSO and DSO for covering electricity losses. The regulator set new tariffs for electricity transmission, electricity distribution and prices for households and small consumers. The electricity transmission tariff was increased by 23,78%, electricity distribution tariff was increased by 40,37% and average price for households and small consumers was increased by 11,60%. The new tariffs and prices are in force since 1st of January 2022.
- Further, the regulator plans to revise the criteria for obtaining a supply license and amend the secondary legislation to introduce appropriate tools and mechanisms for the competent authorities such as the TSO and the Electricity Market Operator for timely action in such situation.
- The TSO and DSO have not taken any measures so far. The Electricity Market Operator issued a decision for suspension of one market participants (trader) from the wholesale electricity market in accordance with the Electricity Market Rules, since the trader unilaterally cancelled an agreement with the TSO for delivering electricity for covering grid losses.

8. Serbia

Impact on the market

- Serbia relies on internal production for supplying end users. The incumbent producer offers its volume to the incumbent supplier for supplying tariff consumers.
- The prices on the day-ahead market in Serbia operated by SEEPEX remain highly correlated to the regional prices.
- An increase of price for industrial and business consumers is likely, in particular where supply contracts are to mature soon.

Measures undertaken

- In order to protect the consumers that will be directly impacted, the Government made a Conclusion³ to freeze certain prices at which consumers are supplied in an open market. This is done through the national supply incumbent, EPS (state owned generation and supply company). Other measures by the Government:
 - Initial measures:
 - (1) Consumers, whose supply agreement ended on 31 October 2021 are supplied until end of November 2021 under the same conditions by EPS.
 - (2) Consumers, whose last resort supply agreement ended on 31 October 2021 and have not yet signed the new agreement, EPS will offer an extension of last resort supply for another month.
 - (3) For consumers, who signed the new supply agreement as of 1 November 2021, the validity is extended to 1 December 2021.
 - Latest measures:
 - (1) Recommended to EPS to conclude contracts with customers on the commercial market for the period 1 January – 30 June 2022 at the price of 75 EUR/MWh and with military industry at 68 EUR/MWh. This decision may lead to price increase for some customers while for some others it could lead to price decrease.
 - (2) The price of the supply-of-the-last-resort was increased from 67 to 97 EUR/MWh. A conclusion was also adopted related to the supply-of-the-last-resort where it was recommended to the EPS to enable the supply-of-the-last-resort to final electricity customers who are not entitled to the guaranteed supply after 1 January 2022 at the price of 97.50 EUR/MWh without VAT, from previously 66.72 EUR/MWh.
 - Import price for gas or price of gas produced in Serbia is set on the level of November 2019, and any surcharge for procurement of gas is recovered by the Government as of 1 December 2021.
 - (1) No categories of final customers are affected.
 - The TSO reviewed its procedures for increasing the financial security required by the balance responsible parties in order to mitigate the risk from the higher exposure in the balancing market.

³ <https://balkangreenenergynews.com/rs/vlada-srbije-zamrzla-cene-elektricne-energije-za-privredu-u-novembru/>

9. Ukraine

Impact on the market

- Apart from the impact of energy price surge, Ukraine is facing an unprecedented military aggression, which has not only affected the electricity and gas markets but also the security and safety of critical infrastructure such as electricity and gas network and generation capacities (including nuclear power plants).
 - Russian aggression started on 24 February 2022, exactly on the day when Ukrainian electricity system (including Moldova) was unified and started a test operation in the so called 'isolated mode'.
- As of 16 March 2022, the Ukrainian electricity system (together with Moldova) is synchronised with the electricity system of the Continental Europe. The so-called trial synchronisation means that no commercial exchanges are allowed until certain technical conditions are fulfilled. TSOs' however are able to exchange limited (in time and volume) emergency supplies.
- Following the start of military invasion, the situation in electricity market aggravated in many segments. The drop of demand from around 35% combined with significant drop in collection of payments is endangering financial liquidity of the sector.
 - The assumed financial deficit to the sector with the collection rate of around 70% is around EUR 250 million with a potential to increase as the situation escalates further and collection of payments drop. This does not take into account losses of the companies due to unusual market conditions, such as price not covering all the costs, increase balancing costs, curtailments, etc.
- Bilateral market, day-ahead market and balancing mechanisms are functioning with certain protection measures. The points below outline the pre-war situation:
 - Due to price caps for the day-ahead, intraday and balancing market segments, the impact of price surge only started to be seen with a few months delay.
 - Prices for non-household (industrial) consumers are linked with the prices on the wholesale electricity market.
 - Before October 2021 the market price for electricity in the segment of universal supply service was based on the actual market price of electricity for three months preceding the bidding month. As of October 2021, the market price for electricity was based on the market price of electricity for two months preceding the bidding month, respectively one month preceding the bidding month, since November 2021. That is the reason why the price surge influenced the universal service consumers only with a few months' delay. From March 2022, the estimated electricity purchase price is calculated taking into account the monthly index of base load on day-ahead market in Ukraine for the month preceding the settlement month and the amount of electricity corresponding to the base schedule of small non-household consumers, determined at 50% of actual consumption of small non-domestic consumers in the month preceding the two months before the settlement.
 - As of today, the majority of suppliers operating at unregulated segment on the retail electricity market apply the formula for calculating the electricity price in

the bidding month for a consumer instead of the electricity price in monetary (fixed) form.

- Meanwhile, the value of electricity is defined as the sum of the actual weighted average price of electricity purchased by the supplier on the wholesale markets (including imbalances settlement and mandatory taxes), the electricity transmission and distribution tariff and the premium on the supplier's services. Therefore, suppliers reflect the price fluctuations on the market of bilateral agreements and organized market segments to industrial consumers serviced at unregulated prices as well as non-household consumers serviced by universal supply.
- The prices for household consumers are stipulated by the public service obligation, fixed and enforced by the Government and have not increased.
- Due to established higher price caps, also the balancing market prices increased.

Measures undertaken

- **Wartime measures:**
 - Martial Law is imposed and certain powers on electricity market are transferred to the Ministry.
 - Authorities already introduced some stabilization measures under current market model to alleviate the significant financial losses:
 - (1) Supply of gas at a regulated price to TPPs (thermal power plants) to which coal cannot be transported;
 - (2) Introduction of a price floor which is currently serving as a DAM clearing price following a 70% price drop;
 - (3) Application of net payables on balancing market by the TSO, etc.
 - Significant financial support is needed to maintain financial liquidity of the sector. This remains a major challenge as the collection rate is likely to drop.
 - For the period of martial law, the following participants in the electricity market do not acquire the "default status":
 - (1) electricity producers providing services in the balancing market;
 - (2) electricity suppliers that perform the functions of universal service providers;
 - (3) electricity suppliers and traders, provided that the amount of receivables for electricity exceeds the amount of accounts payable.
- The pre-war state of play was the following:
 - The Government introduced changes to the public service obligation mechanism that stipulates transition from commodity- to financially-based settling between the market participants under the public service obligations. The regulator increased the price caps on the day ahead market in the IPS Ukraine and Burshtyn Island bidding zones. Consequently, following an increase in demand, retail market price went up as well.
 - The regulator, further:



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- (1) encouraged market participants to avoid operations which result in a negative balancing value for the billing period in the IPS Ukraine bidding zone when purchasing/selling electricity under bilateral agreements;
- (2) obliged the TSO as the balancing settlement administrator to conduct respective monitoring;
- (3) reviewed and increased the price caps on the day-ahead market and intra-day market in the IPS Ukraine bidding zone, setting them at a level of 2 000 UAH/MWh for off-peak hours and a level of 4 000 UAH/MWh for the peak hours;
- (4) reviewed and increased the price caps on the day-ahead market and intra-day market for the Burshtyn island bidding zone, setting them at a level of 1 650 UAH/MWh for off-peak hours and a level of 3 000 UAH/MWh for the peak hours;
- (5) established a limitation of monthly electricity volumes to be sold under bilateral agreements between the producers and other electricity market participants that are affiliated or belong to the same vertically integrated undertaking at a level of 50%;
- (6) initiated procedures for investigations on abuse of electricity market functioning;
- (7) conducts electricity market monitoring on a daily, 10-day, monthly, and quarterly basis to ensure effective and reliable operation of the power system of Ukraine.