

## Renewable energy in Ukraine: current state of affairs

### Introduction

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Although the development of renewable energy in Ukraine has slowed down since the beginning of Russia's full-scale invasion, investors, including foreign ones, are still interested in implementing new projects.

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Upon consideration of the development process and the challenges faced by renewable energy producers over the past 2 years, the key trends in Ukraine's alternative energy sector can be identified.

#### 1. Sector problems

First and foremost, the Ukrainian renewable energy sector faces the problem of feed-in tariff arrears, which arose as a result of partial payments over the past few years. One can spend a long time looking into the reasons for the arrears and still not find a definitive answer.

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The source of payment for the "green" tariff lies in the funds of the National Energy Company Ukrenergo (from the electricity transmission tariff) and the revenues of the Guaranteed Buyer from the sale of electricity.

The electricity transmission tariff is set by the regulator, the National Energy and Utilities Regulatory Commission (NEURC). The tariff is paid to the transmission system operator, at present, the National Energy Company Ukrenergo. The tariff includes, among other things, funds for payment under the "green" tariff.

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As of 2024, the transmission tariff is set at UAH 528.57/MWh (approx. USD 13.91/MWh), excluding VAT, which includes support for electricity producers from alternative energy sources at UAH 191.36/MWh (approx. USD 5.04/MWh), excluding VAT. This means that more than a third of the transmission tariff is allocated to pay the "green" tariff.

The State Enterprise "Guaranteed Buyer" is an enterprise specially created to perform the functions of centralised procurement of electricity generated from renewable energy sources.

In other words, electricity producers under the "green" tariff sell all the electricity they produce to the Guaranteed Buyer, and the Guaranteed Buyer sells this electricity on the market and through electricity auctions. The Guaranteed Buyer also pays the producers under the "green" tariff and is responsible for the purchase of electricity for the needs of the population (household consumers).

In general, the scheme looks rather complicated, but it works under normal conditions. However, when debts between market participants accumulate, difficulties arise.

Currently, it is hard to estimate the exact amount of debt owed to producers under the "green" tariff, as the last report on the performance of the Guaranteed Buyer (on the official website) dates back to 2019, and the last financial statements – to 2021.

However, it is possible to estimate that the debt under the "green" tariff is no less than UAH 30 billion (approx. USD 789,387,000).

According to the Guaranteed Buyer, as of 30 November 2023, NEC Ukrenergo's debt to the Guaranteed Buyer for "green" tariff payments amounted to UAH 32.57 billion (approx. USD 857,011,150).

At the same time, the status of payments for electricity at the "green" tariff is as follows:

- for 2023 – 55.3% (excluding the last 10 days of November and December 2023);
- for 2022 – 55.3%.

There are several reasons for the arrears. The overregulation of the market and the mix of market mechanisms with temporary (and not so temporary) restrictions have created a situation similar to a "Mexican duel", where each participant in the scheme owes money to other participants but cannot pay the debt because it is owed by these other participants.

It should be noted that in most cases, netting of counterclaims to offset settlements between market participants is prohibited, even though

it could reduce the level of debt without additional financial injections.

It should be borne in mind that while netting would reduce the level of arrears in the books, it would not actually solve the problem of payments in the market, which requires more systemic changes in the market operation. As of the beginning of December 2023, market participants owed UAH 18.5 billion (approx. USD 486,788,650) to NEC Ukrenergo under the transmission tariff.

These debts were incurred mainly by the Universal Service Providers (USPs). They owe NEC Ukrenergo UAH 15.8 billion (approx. USD 415,743,820). A universal service provider is an electricity supplier that fulfils its obligations to provide universal services. Universal services are provided exclusively to household and small non-household consumers. At the same time, the universal service provider cannot refuse to conclude an electricity supply agreement with a consumer located in the territory of its operations.

In other words, a Universal Service Provider is an electricity supplier that supplies electricity to the population.

Previously, this was done by Oblenergos, which were divided into Distribution System Operators (DSOs responsible for networks at the regional level) and Universal Service Providers based on the 2019 reform.

A Universal Service Provider buys electricity at the market price and supplies it to the population at the tariff set by the regulator. In addition, the USP must buy electricity produced by generating facilities from private households.

The difference between the market price of electricity and the tariffs for households should be reimbursed through the mechanism of compensation for the difference in tariffs, i.e. at the expense of the Ukrainian budget. Such compensation should be provided at least during the transition period (transition from regulated tariffs to market prices). However, the transition to market mechanisms is currently delayed, so the issue of compensation to the Universal Service Providers remains relevant.

As of early December 2023, the Guaranteed Buyer owes Universal Service Providers UAH 20.4 billion (approx. USD 536,783,160).

In turn, the Guaranteed Buyer is owed by state-owned producers that finance the assignment of special obligations (UAH 21.3 billion, approx. USD 560,464,770), PJSC Ukrhydroenergo (UAH 2.2 billion, approx. USD 57,888,380), and the State Enterprise National Nuclear Energy Generating Company Energoatom (UAH 18 billion, approx. USD 473,632,200).

Special obligations are the obligations to ensure the public interest in the operation of the electricity market, which are imposed on certain market participants.

The special obligations include, in particular:

- ensuring an increase in the share of electricity generation from renewable energy sources;
- performing the functions of a universal service provider;
- acting as a supplier of last resort (i.e., a supplier that supplies energy in the absence of any other supplier);
- providing services to support the development of generating capacities;
- improving the efficiency of combined heat and power generation.

The Ukrainian government may also impose other special obligations on market participants, if necessary. Accordingly, the imposition of special obligations guarantees the supply of electricity to the population of Ukraine at the established tariffs, which are lower than market prices.

Currently (until 30 April 2024), the fixed price for electricity for residential consumers is UAH 2.2/kW (approx. USD0.058/kW), excluding VAT. At the same time, the weighted average price for the purchase and sale of electricity on the day-ahead market for this period is UAH 4.10/kWh (approx. USD0.11/kW), excluding VAT.

By the way, the state-owned enterprise NNEGC Energoatom also has special obligations to ensure the public interest in the functioning of the electricity market. However, its debts are on par with the total debts of other participants to the Guaranteed Buyer. In other words, the debt to the State Enterprise NNEGC Energoatom accounts for almost half of the debt to the Guaranteed Buyer.

This is a situation where all parties to the relations seem to bear no blame, but debts in the market, including under the "green" tariff, are growing.

Possible ways to resolve this situation include:

raising the tariff for households (or switching to a market-based tariff);

raising price caps (i.e., the maximum marginal prices of electricity on the day-ahead and intraday markets that can be set by electricity market participants in Ukraine) to the market level or to the level of European countries;

amending the mechanism of mutual obligations of market participants.

All of the above have been actively discussed by market participants for quite some time, but no agreement has been reached with the state

regulator, the NEURC.

Strangely enough, this accumulation of debts has led to the development of competition in the market. Some producers prefer to operate on the free market rather than under the green tariff. Market participants are also looking for new mechanisms of interaction to minimise possible debts. In addition, competition between balancing groups has increased.

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A balancing group is an association of electricity market participants created to facilitate the balancing of each individual participant and share responsibility for imbalances. Imbalances are discrepancies between the forecast supply or consumption and the actual supply or consumption. Participation in a balancing group provides the members of such a group with the opportunity to significantly save on deviations in forecasting.

## 2. Positive trends

Despite the difficulties of the renewable energy sector in Ukraine, there have been some positive changes as well.

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In particular, in 30 days of November 2023, the level of settlements by Guaranteed Buyer with companies that produce electricity from renewable energy sources exceeded 91%. And as of 27 December 2023, the level of settlements for December reached 98.6%.

Also, on 27 December 2023, the Guaranteed Buyer paid part of its debts for October and, accordingly, the level of payments for October 2023 reached 77.2%.

In addition, various methods are being developed and discussed to obtain funds to pay off "green" generation, namely:

- 1) another increase in the electricity transmission tariff of NEC Ukrenergo. The transmission tariff includes payment to the Guaranteed Buyer. However, market participants are sceptical about this decision, as it will not solve the problem itself;
- 2) creation of a CO<sub>2</sub> trading market. In November 2023, the Ministry of Environmental Protection and Natural Resources of Ukraine announced the opening of the Ukrainian Climate Office.

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The Climate Office will help with the decarbonisation of economic sectors, building adaptation governance, expanding opportunities for the youth and regions on the path to the EU Green Deal, and implementing the provisions of the Paris Agreement.

The idea is that Ukrainian companies will be able to trade their "CO2 units". However, it is currently difficult to predict when this system will be launched and how it will function.

3) Feed-in-premium. On 30 June 2023, the Law of Ukraine "On Alternative Energy Sources" was amended. The changes were mainly made to the incentive system for RES producers.

The NEURC, together with market participants, is developing regulations on the market premium mechanism for renewable energy.

At present, feed-in-premium seems to be the most promising route. In a simplified form, it is an additional payment to the producers of electricity under the "green" tariff of the difference between the market price and the "green" tariff.

In other words, a renewable electricity producer trades energy on the market on its own, and the Guaranteed Buyer compensates such a producer for the difference between the green tariff and the market price (or the auction price if the right to feed-in-premium is acquired through an auction).

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In this case, the Guaranteed Buyer is relieved of the function of a green electricity trader, and the financial burden of paying the "green" tariff is significantly reduced.

At the same time, this is a major disadvantage for RES producers, as they will be forced to participate in electricity trading on the market, i.e., to plan, balance, and operate on the market on their own, as well as to bear responsibility for imbalances.

However, not all renewable electricity producers are intimidated by independent market operation, in fact, some of them consciously refuse the "green" tariff in order to operate freely on the market.

This is due to both the relatively low "green" tariff in Ukraine for the commissioning of "green" energy facilities from 2023 and the accumulated "green" tariff debts and unclear prospects for their repayment.

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The construction of the Tyligulska wind farm serves as a good example. The wind farm was built in Mykolaiv region and became the world's first wind farm to be constructed during the war. It is also the first renewable energy producer to opt for the free market rather than receiving the "green" tariff.

The first stage of the Tyligulska wind farm (114 MW capacity, 19 turbines in operation) was commissioned in May 2023. In early December 2023, the construction of the second stage of the wind farm was announced. The design capacity of the two stages is 500 MW.