

## Energy system and renewable energy in Ukraine

### Introduction

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The war has become a serious challenge for Ukraine's energy system. Full-scale attacks on critical infrastructure, disruption of logistics chains, financial instability, and capacity shortages – all these factors have forced the country to rapidly seek new approaches to ensure energy security. In response to these threats, the energy system has demonstrated adaptability, openness to market changes, and a commitment to harmonizing with European energy standards.

In such conditions, it is important to understand the current state of Ukraine's energy sector, the financial and regulatory challenges, as well as the development prospects of the renewable energy industry. A clear understanding of these processes is crucial for all stakeholders: producers, traders, investors, authorities, and international partners.

#### 1. Current state and challenges of the energy system, funding, and investment

##### Current state

Ukraine's energy system continues to be in a difficult situation. However, the issue of electricity shortages, which had been significant since the beginning of attacks on energy facilities, has substantially improved in 2025. This is due to several factors, including:

- changes in approaches to restoring and distributing capacity;
- increased import volumes;
- infrastructure restoration, taking current risks into account.

##### Price caps

In 2024, electricity imports to Ukraine, despite significant demand, were not very large. This was partly due to limitations on the maximum electricity price (so-called price caps).

At the same time, electricity prices in neighboring countries during certain periods were higher than the maximum prices on the Ukrainian market. Therefore, in many

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cases, it was difficult to sell electricity imported from abroad at a profit.

This, in turn, created an artificial shortage of electricity during those hours. Producers did not always have an economic incentive to cover demand at reduced prices. Under such conditions, imports became unprofitable.

Meanwhile, the regulator periodically raised transmission and dispatch tariffs. This further increased the financial burden on importers and decreased the attractiveness of imports.

This problem has been actively discussed by market participants with the regulator since early 2023. However, the regulator has so far refused to set price caps according to the EU model, maintaining differentiated caps and occasionally raising them.

In July 2025, the regulator once again raised the wholesale electricity market price caps for certain hours, bringing them closer to market realities. Although this increase does not completely solve the problem, it has made electricity imports more attractive during peak load hours.

### **Market debts**

The electricity market in Ukraine has traditionally been burdened with debts among participants.

Suppliers and producers owe "Ukrenergo" for balancing services. At the same time, "Ukrenergo" owes suppliers and producers for balancing, and so forth. This is partly due to insufficient revenues to cover all outstanding debts. Suppliers, in turn, also accumulate debts due to increasing non-payments from consumers.

The situation worsened with the onset of the full-scale invasion. In addition to traditional payment issues, new costs related to infrastructure repairs arose. Resolving these issues is further complicated by an insufficient regulatory framework governing market operations.

The regulator, together with market participants, is continuously working to close gaps in legislation to improve the situation. However, even if regulatory problems are resolved, the issue of accumulated debts will remain.

### **Imports and exports**

In 2025, the situation with electricity shortages improved compared to previous years. This allowed traders to start exporting electricity to neighboring countries. Additionally, as a result of cooperation between transmission system operators within the Eastern European Capacity Calculation Region (EE CCR) and the Regional Coordination Center (TSCnet), the maximum available export capacity of electricity from Ukraine and Moldova to EU countries was increased.

Thanks to agreements with ENTSO-E, Ukraine has the ability to import up to 2.1 GW of capacity from EU countries.

In the first half of 2025, exports were 2.8 times higher than in the corresponding

period of 2024.

The increase in exports was also influenced by favorable weather conditions, which, among other things, reduced the need for imports.

Overall, legislative and technological changes appear favorable for traders. The alignment of regulatory frameworks with EU standards also positively affects the interest of European traders.

In recent periods, Ukraine has taken several significant steps in harmonizing legislation with European Union regulations, including:

- the introduction of an insider information platform (REMIT);
- transferring border capacity reservations with Slovakia, Hungary, and Poland to the JAO platform, well known among European traders.

Work is also underway on implementing bilateral auctions and integrating into the EU trading system.

By the end of 2025, a number of legislative acts are planned to implement the provisions of the Energy Community. This will allow market coupling and provide an exemption from applying the Carbon Border Adjustment Mechanism (CBAM) to electricity imports from third countries.

## **2. Current state and development of alternative energy, prospects, and investment**

### **Payments in green energy**

During the period of full-scale invasion and damage to energy infrastructure, payments to producers of electricity from renewable energy sources worsened.

However, after the introduction of mechanisms that allow greater financial inflows, the situation started to improve. In addition to settling current payments, the Guaranteed Buyer has also begun to repay debts from previous periods.

Currently, the overall payment rate for electricity in this sector has reached 90.1%, whereas a year ago this figure was 78.33% (including 2021). The debt of "Ukrenergo" to the Guaranteed Buyer has decreased by almost half.

Thus, payments for alternative electricity are still not fully settled, but the trend is positive.

The largest share in electricity supply under the green tariff is covered by solar energy.

### **Guarantees of origin of electricity**

In February 2024, the Cabinet of Ministers of Ukraine adopted a resolution introducing guarantees of origin for electricity produced from renewable energy sources.

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This allowed Ukraine to establish a system of guarantees of origin. Subsequently, this system will be integrated into the pan-European AIB-hub platform for international trading.

After the implementation of the Carbon Border Adjustment Mechanism (CBAM), such guarantees will provide advantages for Ukrainian electricity and products manufactured using green energy.

By purchasing guarantees of origin, companies can officially confirm that they use "green" electricity in their operations. This attests to the environmental value of their products.

Anyone – whether an individual or a legal entity – can purchase guarantees of origin for renewable electricity in Ukraine on specialized electronic platforms. Buyers of guarantees of origin gain additional competitive and reputational advantages for their goods or services, while also contributing to the further development of renewable energy capacities in Ukraine.

### **Registry of renewable energy facilities**

In Ukraine, a digital Registry of Renewable Energy Facilities has been launched on the Diia.Engine platform. This is a digital database containing information about companies and their facilities that produce electricity from renewable sources such as solar, wind, biomass, and others.

The Registry contains complete information on companies' licenses and their power plants. It also includes active consumers – enterprises that have their own generation capacity and partially or fully supply themselves with electricity from alternative sources. This serves as the basis for issuing "guarantees of origin."

Previously, the Registry was compiled manually using multiple separate Excel spreadsheets and lengthy data reconciliation processes. The process took longer and was less accurate. Now, automatic updates, verification, and centralized registry formation are in place, along with integration with other registries and systems.

The system covers the entire territory of Ukraine and all companies operating renewable energy facilities.

However, during the period of martial law in Ukraine, access to the registry is restricted for security reasons.

After martial law is lifted, the registry is expected to become publicly accessible.