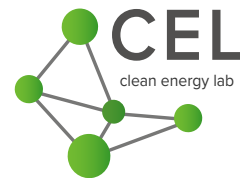




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Support Without Effect?

# **FACTORS CONSTRAINING THE SUCCESS OF RES SUPPORT AUCTIONS IN UKRAINE**

by Igor Piddubnyi and Oleksii Mykhailenko

LibMod Policy Paper

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## Автори

**Igor Piddubnyi** is an advisor to a member of the Verkhovna Rada of Ukraine’s Committee on Energy, Housing, and Utilities. Igor is responsible for policy analysis and advisory work related to renewable energy development, energy efficiency, international energy policy, and the implementation of EU legislation. He also works as an analyst at Scatec, focusing on commercial activities in the solar energy sector in the Ukrainian electricity market. Previously, Igor held the position of analyst and researcher at the Kyiv School of Economics (KSE Institute), where he led the assessment of damage and losses to Ukraine’s energy sector after the start of Russia’s full-scale war against Ukraine.

**Oleksii Mykhailenko** is an economist specializing in the energy sector, with over ten years of experience in the Ukrainian market. He is a co-founder of the Clean Energy Lab, an analytical center that researches issues related to the transformation and development of energy policy in Ukraine. In 2019-2020, he served as an advisor to the Minister of Energy of Ukraine. Oleksii has collaborated with the OECD, World Bank, GIZ, and USAID/Tetrattech on analytical and research projects.

## SUMMARY

The shift from the feed-in tariff to auctions was intended to reduce the cost of supporting renewable energy sources and improve their market integration. However, the launch of Ukrainian auctions was delayed by the debt crisis, macroeconomic difficulties and wartime risks, and the first auctions in 2024-2025 proved largely ineffective, with most lots attracting no successful bids.

Ukraine's EU integration commitments and the urgent need to rebuild the energy system prompted a revision of the state support framework. Draft Law No. 13219, adopted by the Verkhovna Rada in first reading, proposes, among other things, a temporary transition from Contracts for Difference to the Feed-in Premium mechanism until 2029 in order to lower investor risks.

Our analysis shows that the performance of auctions is weakened not only by accumulated feed-in tariff debts or high investor risk, but also by the methodology of the support mechanism itself. The Ukrainian CfD and FiP models differ significantly from European practice, reducing the effectiveness of support. The key methodological deviations include:

- **Use of baseload indices for “qualification” of payments on a monthly basis** which do not reflect RES generation profiles, leading to paradoxical situations with no payments or even reverse payments despite market conditions
- **Two-month smoothing of indices**, distorting the result and disconnecting payments from actual revenues.
- **Monthly netting of hourly values**, which limits the effect of support by adjusting even hours when market prices exceed the auction price.

As a result, the **effective level of support is significantly lower** than under standard European approaches. Producers may receive no support when it is most needed according to policy logic, or even face reverse payments, making the model economically unattractive. Our calculations indicate that the difference in revenue between the Ukrainian and standard European models may reach:

- SOLAR PV: -6.4% for FiP and -12.4% for CfD
- WIND FARM: -2.5% for FiP and -7.9% for CfD

We find that the main economic drivers of low investor interest in RES auctions are:

1. Expectations of higher market prices
2. Complexity of the settlement methodology, reducing effectiveness
3. Auction prices that do not reflect the actual level of support
4. Difficulties in formulating a competitive bid price given unclear mechanisms.

The changes proposed in Draft Law No. 13219 are likely to have a tangible effect only if the FiP and CfD settlement methodology is revised.

Recommendations:

- 1. Adopt decisions on the applicable support mechanism at the government level,** allowing timely adjustments without lengthy legislative amendment procedures.
- 2. Simplify the methodology for calculating the support level and align it with international standards,** increasing transparency and attractiveness for investors.
- 3. Introduce dynamic revision of the maximum auction price,** enabling more flexible response to market changes.
- 4. Adjust annual support quotas to the updated methodology,** anticipating increased investor demand for auctions and thereby accelerating the construction of new renewable generation capacity.
- 5. Implement additional risk-mitigation mechanisms** for RES projects.

The implementation of these measures will make auction-based support schemes more attractive to investors and stimulate investment in renewable generation capacity – a crucial element for rebuilding and developing Ukraine’s energy system.

# GLOSSARY

<b>CFD</b>	Contract for difference, Контракт на різницю
<b>CMU</b>	Cabinet of Ministers of Ukraine
<b>DAM</b>	Day-Ahead Market
<b>FiP</b>	Feed-in Premium
<b>HPP</b>	Hydropower plant
<b>LCOE</b>	Levelised cost of electricity
<b>NEURC</b>	National Energy and Utilities Regulatory Commission of Ukraine
<b>PV</b>	Photovoltaic (Power Plant)
<b>RES</b>	Renewable energy sources

# 1. STUDY CONTEXT

## From feed-in tariff to auctions

Renewable energy sources investment projects in Ukraine face a broad range of risks:

- **Price and market risks** – price volatility and market-driven revenue variations
- **Counterparty risks** – timeliness and completeness of payments
- **Currency and inflation risks** – hryvnia devaluation and inflation
- **Political and regulatory risks** – legislative instability, regulatory complexity
- **Technical and construction risks** – challenges in implementing infrastructure projects
- **Resource risks** – dependence on weather conditions and seasonality
- **Grid-related risks** – system constraints, dispatch priorities
- **Financial risks** – access to and cost of capital
- **Taxation risks** – tax burden and ownership structures
- **Security risks** – war-related threats specific to Ukraine.

Until 2020, the main mechanism to mitigate these risks was the **feed-in tariff** guaranteed by the government for all electricity volumes, which protected investors from currency and market fluctuations. However, rapid capacity growth led to a spike in subsidy costs, making the model financially burdensome.

**The drawbacks of the feed-in tariff – primarily its high fiscal cost and limited ability to control volumes – triggered the shift towards more balanced support mechanisms. In 2019, Ukraine decided to adopt an auction-based model** aimed at cost control and tariff competitiveness. Unlike the feed-in tariff, valid for all eligible projects until 2029, auctions offer fixed-term support and allow annual adjustment of quotas, ensuring control over subsidy levels.

## Barriers to transition: debt crisis and full-scale war

**The actual launch of auctions was delayed for several years due to the sector's debt crisis and the inability of the state to ensure stable funding.** Most industrial-scale RES projects after 2020 were still developed under pre-2019 agreements that preserved the right to feed-in tariff support. In 2023, debt to RES producers peaked at over UAH 32 billion (~ €1.5 billion), and as of July 2025 remained at approx. UAH 19 billion (~ €900 million). Key reasons included:

- Insufficient NEURC-approved transmission tariff used to finance support payments
- Declining electricity consumption after Russia's full-scale invasion, reducing funding sources
- Hryvnia devaluation, significantly raising feed-in tariff obligations indexed to EUR.

## Return to auctions transition: first results and lessons learned

**The need to rebuild the power system after massive Russian attacks and to align support mechanisms with EU principles revived the auction agenda.**

In July 2023, the Verkhovna Rada adopted Law No. 3220-IX, introducing the CfD model for RES auctions.

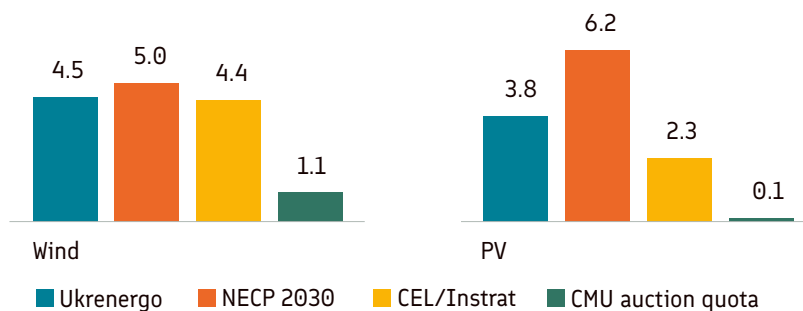
**The priority of the approach to the development of renewable energy generation based on the competitive auction model is also confirmed by key strategic documents of the Government**, which were adopted subsequently, in particular:

- National Energy and Climate Plan to 2030 (NECP-2030, adopted 25.06.2024)
- Distributed Generation Development Strategy to 2035 (adopted 18.07.2024)
- National Renewable Energy Action Plan to 2030 (adopted 13.08.2024).

The EU's [Ukraine Facility](#) programme also included full regulatory preparation for RES auctions among mandatory milestones for 2024.

According to government ([NECP-2030](#)), [TSO](#), and [expert estimates](#), Ukraine requires 4.5-5.0 GW of new wind capacity and 2.3-6.2 GW of new solar capacity. In Q4 2024 the Government announced the first pilot auctions with quotas for 2025-2029 – significantly below estimated needs (Figure 1).

**Figure 1: Required additional wind and solar capacity (GW)<sup>1</sup>**



<sup>1</sup> In NECP-2030, capacity estimates include both utility-scale and behind-the-meter solar PV (not applicable for auctions support).

**Despite the reform, the pilot and initial RES support auctions in 2025 highlighted the need for further improvement of the mechanism.** In Q4 2024, the Cabinet of Ministers of Ukraine announced three auctions totalling 110 MW of new capacity (88 MW wind, 11 MW solar, 11 MW small hydropower and bio-energy). Only one auction resulted in a winner – a small HPP project of 0.9 MW, representing less than 1% of the total quota. On 13 March, the first “green” auction of 2025 for 33 MW of solar capacity failed due to lack of bidders. The same happened on 4 April for 100 MW of wind capacity. On 12 May, an auction for 47 MW of “other RES technologies” (small hydropower and bioenergy) also ended unsuccessfully. **The reason in all cases was the absence of participants.**

Key factors that explain the failure include:

- Investor distrust due to feed-in tariff debts and regulatory uncertainty
- Lack of a guaranteed funding source tied to the transmission tariff
- Caps on maximum quota per beneficiary
- Uncertainty regarding future changes in support mechanisms.

Thus, the unsuccessful start confirmed that without regulatory adaptation and fulfilment of state commitments, the current system will remain unattractive for investors. Consequently, in August 2025 the Parliament approved in first reading [Draft Law No. 13219](#) to improve competitive conditions for renewable electricity production.

## Potential barriers and limitations of the RES auction system in Ukraine

Among the factors that theoretically constrain investor interest in support contracts for RES projects through auctions, three groups can be distinguished:

### 1. Administrative

- a. Auction rounds are announced with insufficient notice, complicating project preparation.
- b. Quota volumes are unattractive.
- c. Qualification requirements for participants are too demanding.

### 2. Regulatory

- a. Lack of trust in the support system due to accumulated feed-in tariff debt
- b. Uncertainty and regulatory instability
- c. Restrictions on the maximum quota per beneficiary.

### 3. Economic

- a. Low ceiling (maximum price) for auctions
- b. Expectations of higher revenues in the market without support
- c. Insufficient level of support that does not guarantee the required return on investment.

**This policy paper focuses on the economic barriers of the current RES auction support model and the reasons investors remain hesitant to participate.**

Based on the results, we formulate recommendations considering changes proposed in [Draft Law No. 13219](#).

## 2. EUROPEAN PRACTICE OF SUPPORTING RES DEVELOPMENT IN THE POWER SECTOR

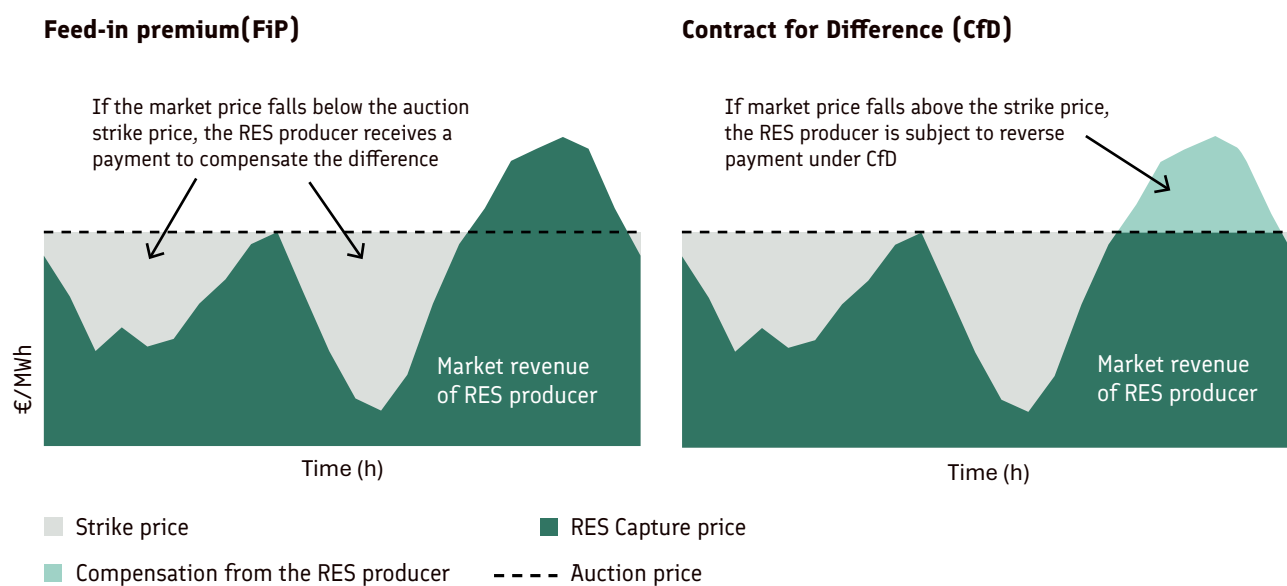
Over the past decade, most European countries have gradually moved away from the administratively-set feed-in tariff model for stimulating new renewable energy generation projects. The key motivations were the need to reduce support costs, avoid excessive investor incentives, and integrate renewables into market mechanisms. The most common RES support instruments today are the Feed-in Premium (FiP) and the Contract for Difference (CfD) mechanisms. Both usually involve determining the support price through competitive auctions and they operate on the principle that electricity is sold by the producer on the open market, with the state compensating the difference if the market price is lower than the auction price.

The Feed-in Premium (FiP) mechanism provides that an RES producer is guaranteed to earn at least the strike price set through the auction. The producer sells electricity on the market and bears responsibility for imbalances. If, during the settlement period, the reference market price is lower than the auction price,

the producer receives a compensatory payment (premium) from a state-designated counterparty. If the market price exceeds the auction price, the producer retains the additional income without any repayment obligation. Thus, the FiP mechanism creates an incentive for market participation and allows producers to benefit during periods of high prices.

The Contract for Difference (CfD) works on a similar principle, but guarantees the producer a fixed auction price for the entire volume of electricity sold and supplied to the grid. If the market price is lower than the auction price, the producer receives an additional payment from the state counterparty. If the market price exceeds the auction price, the producer must return the difference, paying the surplus revenue to the counterparty. This approach guarantees predictable revenue for the producer, but at the same time eliminates the possibility of earning additional profit during periods of rising market prices.

Figure 2. Comparing Feed-in Premium and Contract for Difference



Key parameters affecting payment size are:

- Reference market price
- Actual volumes of electricity sold and delivered to the grid.

In most European countries, settlements under CfD and FiP schemes are based on the **hourly Day-Ahead Market (DAM) price**. This approach reflects the volatile market conditions in which renewables generators typically operate.

Most commonly, the reference price is applied on an hourly basis to the **volumes of electricity sold and delivered to the grid**. At the same time, **full responsibility for imbalances lies with the producer**. This incentivises more accurate generation forecasting and integration of flexibility solutions into operations.

Usually, system curtailment volumes are not included in the support mechanism and are instead compensated through regular balancing market mechanisms and prices.

In some countries (e.g. Germany, the Netherlands), monthly indices are used instead of hourly prices. These are calculated separately for the renewable energy sources receiving support (hydropower, solar, onshore wind, offshore wind) based on the monthly generation profile across the entire bidding zone. For continuous-generation technologies, baseload indices may also be applied. In the Netherlands, these indices are further adjusted to account for imbalance costs.

Table 1. Comparison of RES support mechanisms in Europe

Country	Mechanism	Reference price	Settlement	Payment settlement
UK	CfD	Hourly DAM (multiple trading platforms)	Hourly	Quarterly with annual reconciliation
Spain	CfD	Hourly DAM	Hourly	Monthly with annual reconciliation
Germany	FiP	Monthly RES-specific DAM index	Monthly, based on hourly values	Monthly
Netherlands	FiP	RES-specific spot index adjusted for imbalance costs	Hourly with annual adjustment	Monthly with annual correction
Denmark	FiP	Hourly DAM	Hourly	Monthly

Overall, in developed countries the prevailing approach is based on simple and transparent rules regarding imbalance responsibility and curtailment, as well as clear market indicators. This makes support mechanisms predictable and understandable for investors. In this context, both the current Ukrainian model and the one proposed for revision under Draft Law No. 13219 contain a number of differences.

The following analysis compares the Ukrainian approach with European systems and identifies areas for improvement.

### 3. HOW DOES THE RES SUPPORT AUCTION MODEL WORK IN UKRAINE?

#### Auction parameters

Auctions are conducted by the Guaranteed Buyer in accordance with a pre-announced schedule. Within each technology category, participants submit price bids (not exceeding the maximum ceiling price) and indicate the capacity of the proposed projects. The bid price submitted by the auction winner becomes their auction strike price (in EUR/MWh) which is used for calculating support payments or actual compensation to projects. The winning company obtains the right to sign a contract with the state-owned Guaranteed Buyer for the full duration of the support period. Detailed parameters of the Ukrainian auction model are presented in Table 2.

Ukrainian legislation and secondary regulations provide for Feed-in Premium (FiP) and Contract for Difference (CfD) mechanisms. Both are described as “market premium mechanisms”, with the distinction that the Contract for Difference is currently defined as a “market premium mechanism for the seller who is the auction winner”.

In practice, the classical FiP mechanism is currently available only to projects operating under the feed-in tariff and wishing to voluntarily switch to this regime. In this analysis we use the term FiP to refer to such cases. Meanwhile, although the contract signed by the RES auction winner with the Guaranteed Buyer is called a “market premium service agreement”, it effectively functions as a CfD. Therefore, for clarity and consistency with international professional terminology, we use the term CfD throughout this paper.

The previously mentioned Draft Law No. 13219, adopted by the Verkhovna Rada in the first reading, is intended to improve the RES auction support mechanism. The main changes proposed in the first-reading version are summarised in Table 2. The most significant change is the introduction of the Feed-in Premium (FiP) mechanism for contracts awarded in auctions before 2029 – a tool that is currently available only to feed-in-tariff producers. We therefore examine whether this change is meaningful and whether it would be sufficient to attract investors.

Table 2. Parameters of RES auction support in Ukraine

Parameter	Current rules	Changes under Draft Law No. 13219
<b>Duration</b>	Until end of 2029	Until end of 2034
<b>Auction type</b>	<ul style="list-style-type: none"> <li>• Separate by technology</li> <li>• Additional sessions with special rules</li> <li>• Two-stage sealed-bid</li> <li>• Pay-as-bid</li> </ul>	No changes
<b>Support mechanism</b>	Contract for Difference	<ul style="list-style-type: none"> <li>• Until end of 2029 – Feed-in Premium</li> <li>• Starting from 2030 – Contract for Difference</li> </ul>
<b>Currency</b>	<ul style="list-style-type: none"> <li>• Price in euro</li> <li>• Settlement in UAH (quarterly FX update)</li> </ul>	No changes
<b>Indexation</b>	No inflation indexation	No changes
<b>Support duration</b>	12 years	No changes
<b>Eligible project technology and size</b>	<ul style="list-style-type: none"> <li>• SOLAR PV <math>\geq 1</math> MW</li> <li>• WIND FARM <math>\geq 5</math> MW</li> <li>• Small hydro, biomass, biogas, geothermal – no minimum</li> </ul>	No changes
<b>Commissioning deadlines</b>	<ul style="list-style-type: none"> <li>• SOLAR PV - 18 months</li> <li>• WIND FARM &amp; others - 36 months</li> </ul>	No changes
<b>Max strike price</b>	<ul style="list-style-type: none"> <li>• €80/MWh for SOLAR PV &amp; WIND FARM</li> <li>• €120/MWh for others</li> </ul>	No changes
<b>Qualification requirements</b>	€5/kW participation guarantee + €15/kW construction guarantee for winners	<ul style="list-style-type: none"> <li>• €10/kW construction guarantee for winners</li> <li>• Cash guarantee instead of banking one</li> </ul>
<b>Additional limitations</b>	Max 50% quota per beneficiary per year	No changes
<b>Quotas definition</b>	<ul style="list-style-type: none"> <li>• 5 years ahead, annual update</li> <li>• Quotas per technology <math>\geq 10\%</math> of total annual quota.</li> </ul>	<ul style="list-style-type: none"> <li>• Quotas per technology <math>\geq 5\%</math> of total annual quota</li> <li>• New quotas for hybrid power plants with collocated battery storage system.</li> </ul>

## Current methodology for calculating support payments

Ukrainian FiP/CfD settlement rules ([Law on Electricity Market](#) and [NEURC Resolution No.178](#) of 24.01.2024) differ significantly from international practice. They rely on baseload price indices and qualification checks rather than hourly prices.

**We define the following key three steps that determine payment outcome:**

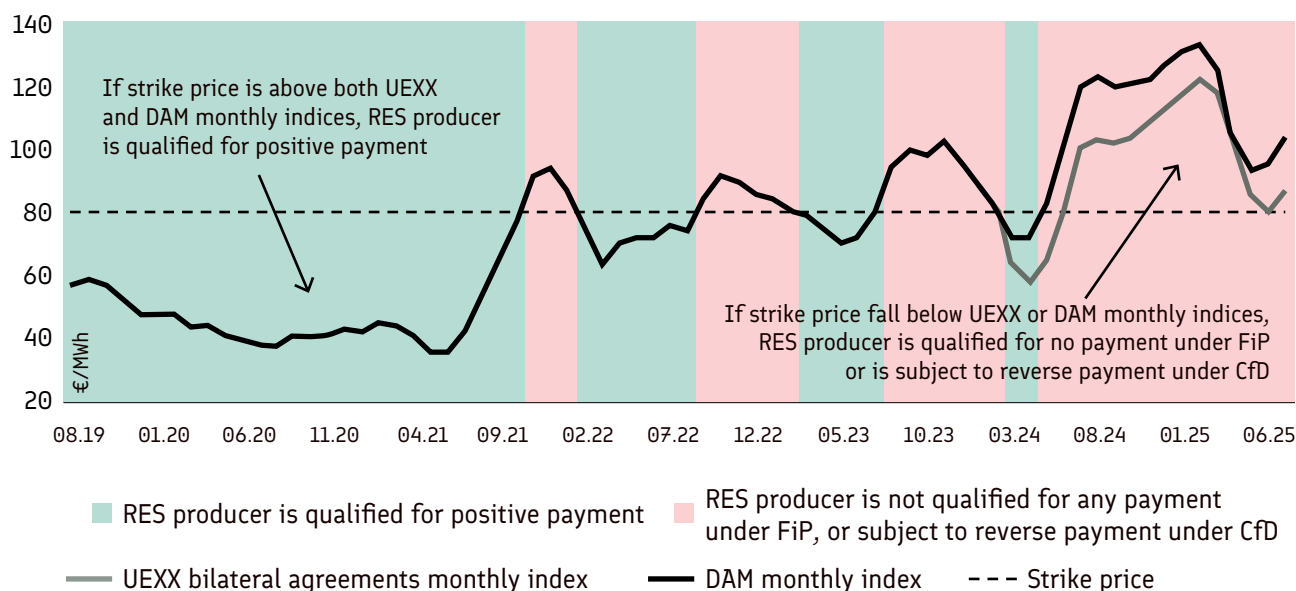
1. Monthly qualification
2. Hourly price calculation using two-month weighted averages
3. Monthly settlement with netting of hourly values.

### Step 1. Monthly qualification

The auction strike price is compared with the “calculated price under the market premium mechanism for the settlement month”. The calculated monthly price (CMP) is defined as the higher of two monthly indices – the Day-Ahead Market (DAM) index and the bilateral contracts market index on the electronic trading platforms of the Ukrainian Energy Exchange (UEEX). The DAM and bilateral contract indices are calculated by the Market Operator and UEEX as the weighted average baseload price – i.e. the arithmetic average – over the previous two months.

If the producer’s auction strike price is higher than the CMP, the producer is entitled to receive support payments for that month. If the auction strike price is lower than the CMP, the producer either does not receive FiP support or must make a payment to the Guaranteed Buyer under the CfD mechanism. Thus, the calculated monthly price determines the direction of CfD payments or whether a FiP contract qualifies for support in a given month.

Figure 3. Current monthly qualification logic for CfD and FiP mechanisms



Source: authors’ calculations based on data from the Market Operator, UEEX, and Ninja Renewables (for the period prior to January 2024, calculations were carried out using historical DAM data; no equivalent data were available for bilateral contracts).

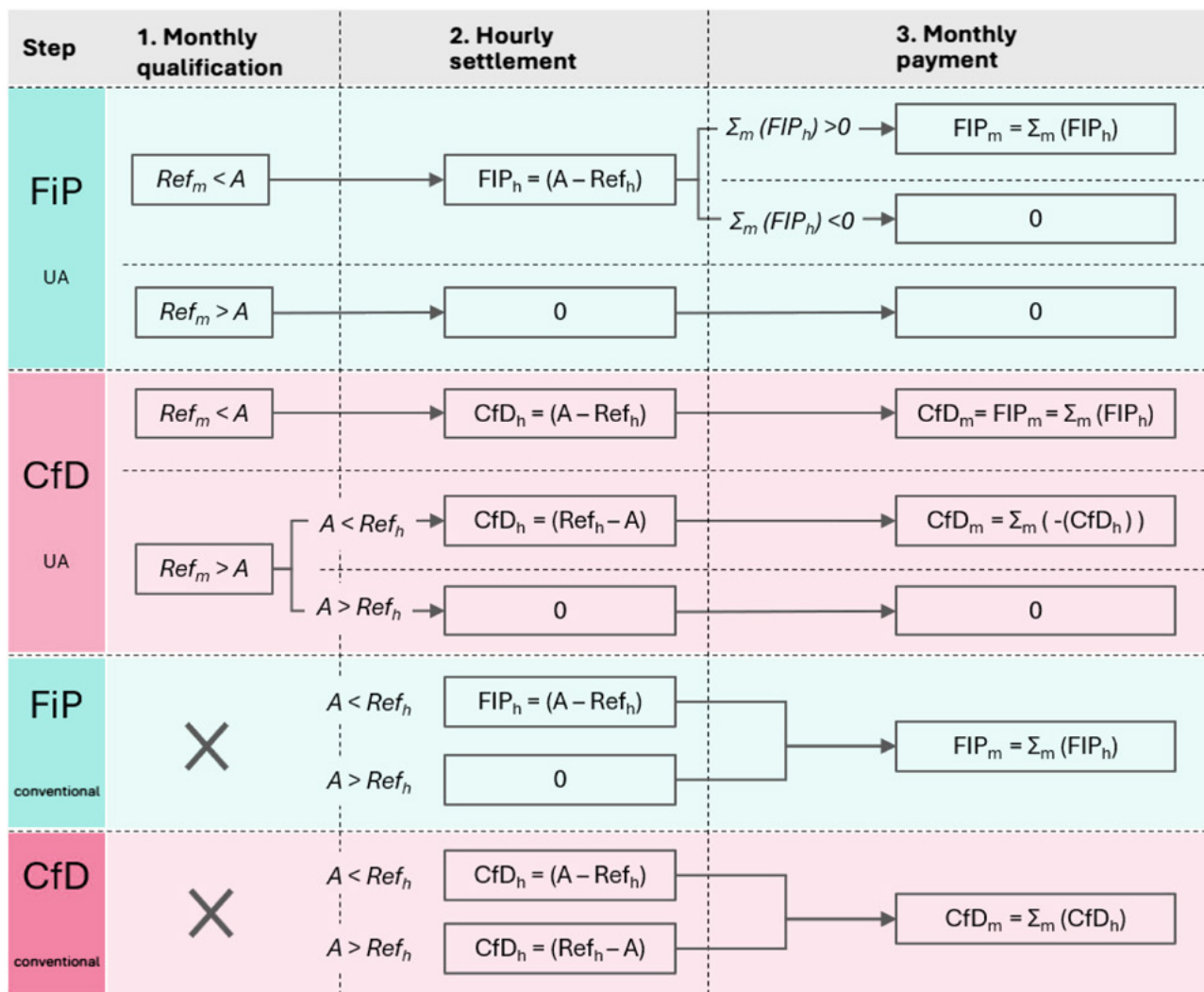
### Step 2. Calculation of hourly payments based on the weighted reference price

The reference hourly price used for determining support payments is calculated as the average Day-Ahead Market price for the specific hour over the previous two months, weighted by DAM trading volumes. If the monthly bilateral contracts index exceeds the DAM index, the hourly indices are additionally adjusted to reflect the difference.

### Step 3. Calculation of the monthly payment

Monthly payments are calculated as the sum of hourly differences between the reference hourly price and the auction strike price, multiplied by the volume of electricity sold and delivered to the grid. All positive and negative hourly values are netted within the month, and the final result depends on the monthly qualification outcome.

Figure 4. Schematic illustration of FiP and CfD settlement in Ukraine versus standard (conventional) practice



$Ref_m$  – Reference monthly index  
 $Ref_h$  – Reference hourly index  
 $A$  – Strike price (auction price)  
 $FIP_h$  – FiP payment for specific hour

$FIP_m$  – Total monthly payment under FiP  
 $CfD_h$  – CfD payment for specific hour  
 $CfD_m$  – Total monthly payment under CfD

The Ukrainian FiP and CfD methodology differs from common practice and standard approaches used across European countries. This makes direct comparison of auction prices between countries impossible, as identical strike prices will lead to different financial outcomes under different methodologies. These methodological differences may also confuse potential foreign investors.

We identify the following key distinctions:

- Standard methodologies used in other countries do not have a preliminary monthly qualification step in payment calculations.
- Typically, the reference hourly price is not averaged over two months; instead, actual hourly market prices are used.
- There is a different approach to accounting for hourly settlements when calculating monthly support payments to RES producers (netting both positive and negative hourly values).

The following sections analyse the impact of these methodological differences.

## 4. ANALYSIS OF POTENTIAL ECONOMIC FACTORS BEHIND THE LOW DEMAND FOR RES AUCTIONS

### Is the maximum auction price sufficient?

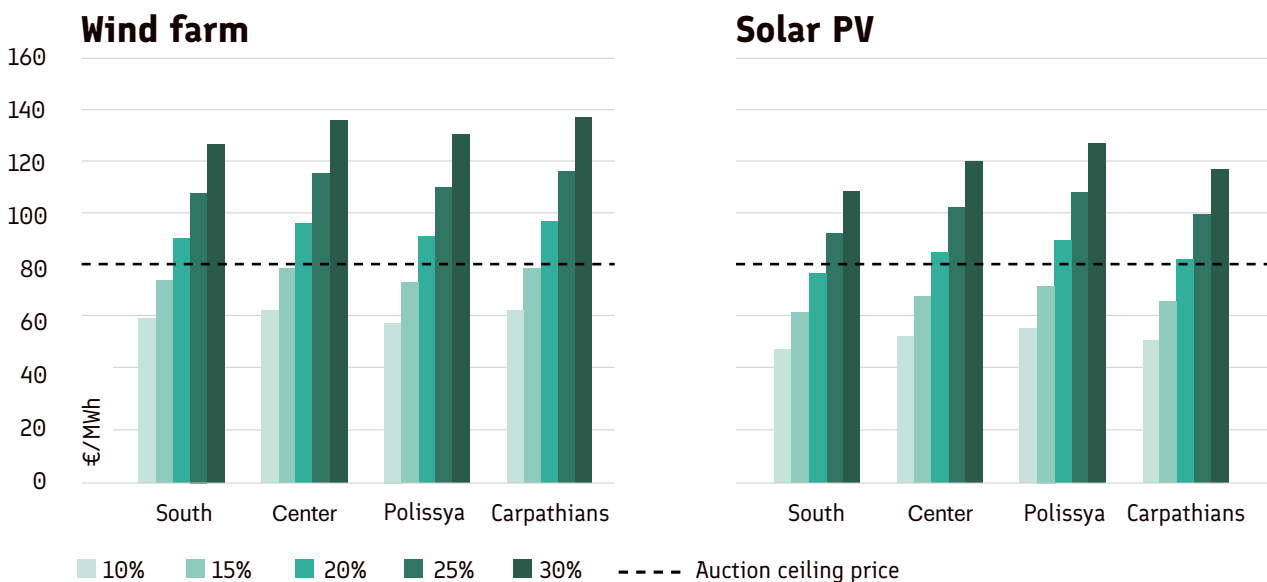
The levelised cost of electricity (LCOE) varies depending on the expected return on investment for a project. While in European countries the internal rate of return rarely exceeds 10-12% for unsubsidised RES projects (depending on the country), in Ukraine it can be significantly higher (25-30%), reflecting market, currency, regulatory and security risks.

In addition, the cost of electricity will vary depending on the region in which the project is located. Solar PV plants have different

generation levels depending on solar irradiation intensity. Wind power plants will have different generation levels according to wind resources, and will also differ in capital expenditure due to logistical complexity and distance (cheaper in steppe and coastal regions, more expensive in mountainous areas).

Given these factors, the maximum auction price is sufficient to theoretically provide a return of around 15-16% for wind projects and 17-20% for solar projects (Figure 5). This may be insufficient to fully cover the risks faced by projects in Ukraine.

Figure 5. Comparison of levelised cost of electricity<sup>2</sup> (LCOE) at different internal rates of return and the maximum auction price



Source: authors' calculations based on Ninja Renewables data

2 For theoretical projects launched in 2025 with a duration of 20 years.

## Expectations of higher market revenues

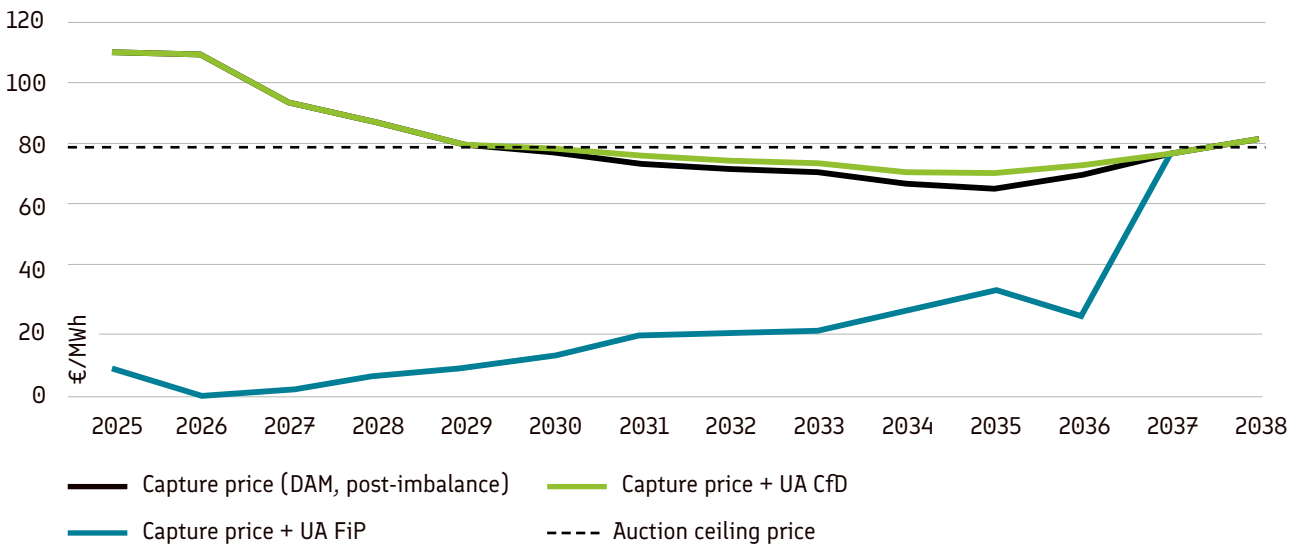
The CfD mechanism is similar to the feed-in tariff in that it guarantees (in theory) a fixed electricity price, since any revenues above the strike price must be returned. If market prices exceed the auction price for a prolonged period, such a contract becomes disadvantageous for the producer.

The case of offshore wind projects in the United Kingdom demonstrates how developers seek to optimise revenues. The Moray East wind farm used the possibility to delay the start of its CfD during 2022-2023, when market prices surged as a result of the energy crisis triggered

by Russia’s invasion of Ukraine. As a result, revenues above the strike price were retained by the company rather than paid to the government. The onshore Viking Wind Farm in Scotland completed construction in 2024, before the start of its CfD in 2028, taking advantage of higher market prices and balancing market revenues.

A similar dynamic may be observed in Ukraine, except that Ukrainian wind developers currently do not seek to obtain a CfD contract with the state company. The effective revenue per kWh under the CfD with the maximum auction price would lead to significant losses, whereas direct market participation is more profitable than receiving the maximum auction price.

Figure 6. Comparison of final capture prices for a wind farm project

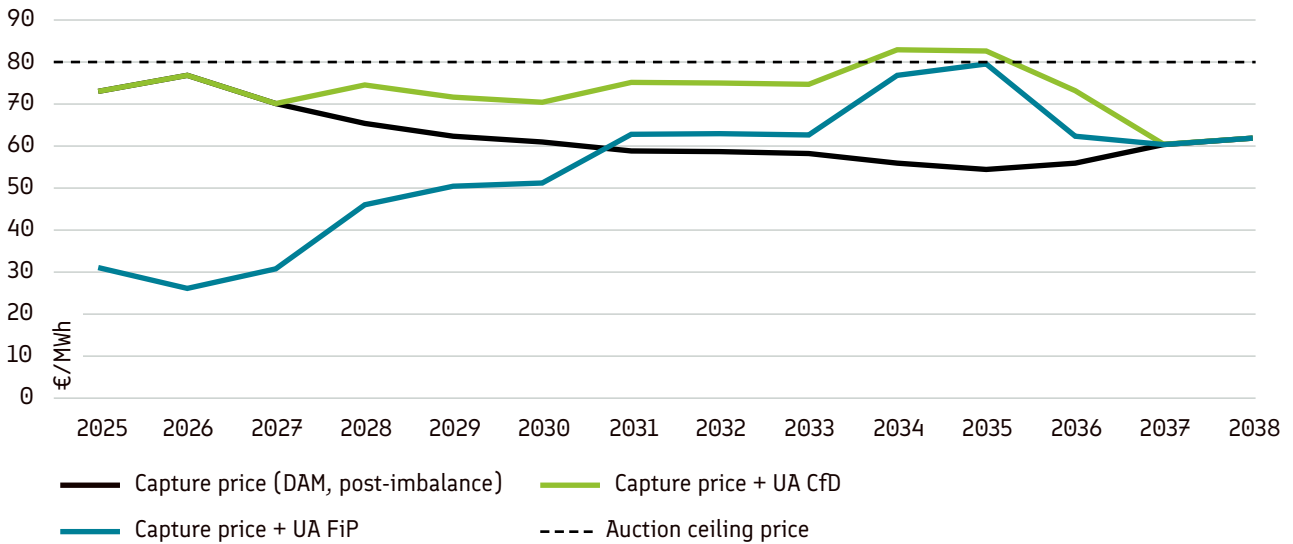


Source: authors’ calculations based on Ninja Renewables data.

The situation for solar generation is similar. Under the CfD mechanism, PV plants would receive significantly lower revenues than from selling electricity directly on the market. At the same time, solar projects could receive meaningful support if they had access to FiP contracts without the obligation to make reverse payments to the state.

However, according to calculations based on the current methodology, even under the FiP mechanism both solar and wind projects would earn an effective price lower than the auction strike price. This means that projects switching from the feed-in tariff to FiP would receive lower revenues. This dynamic also discourages developers from participating in RES support auctions. What then are the problems with the current Ukrainian methodology for determining support under FiP and CfD?

Figure 7. Comparison of final capture prices for a photovoltaic project



Джерело: власні розрахунки на основі даних Ninja Renewables.

## Methodological shortcomings in calculating support levels

Although the introduction of CfD and FiP mechanisms was intended to provide a more competitive and transparent model for supporting renewable energy sources, their Ukrainian implementation has significant methodological flaws. These present risks of financial losses for RES producers and reduce investor confidence due to the complexity of the model. Below, we examine two key aspects that directly affect the attractiveness of auctions.

### 1. Inappropriateness of monthly qualification.

Comparing a two-month baseload price index with the auction strike price may create situations where the calculated monthly price exceeds the auction price, even though the actual hourly prices received by the producer were below the auction price. This leads to cases where support would theoretically be justified, but is not paid.

**For solar projects, this methodology is a critical barrier.** The increasing share of solar generation in the power system – both industrial and behind-the-meter – steadily and increasingly lowers daytime spot market prices. Meanwhile, evening and night hours are included in the baseload index (when PV plants do not generate), artificially inflating its value.

Thus, **monthly baseload indices not only fail to reflect the real performance of RES projects, but also create paradoxical situations:** a producer may either not receive support or even incur additional financial obligations. At the same time, under the opposite market scenario, the state would have to pay premiums to producers even if their actual electricity sale price exceeded the strike price.

We modelled theoretical qualification outcomes for solar and wind projects under the Ukrainian CfD mechanism for 2024–2025, assuming a maximum auction price of €80/MWh.<sup>3</sup>

#### For a SOLAR PV project:

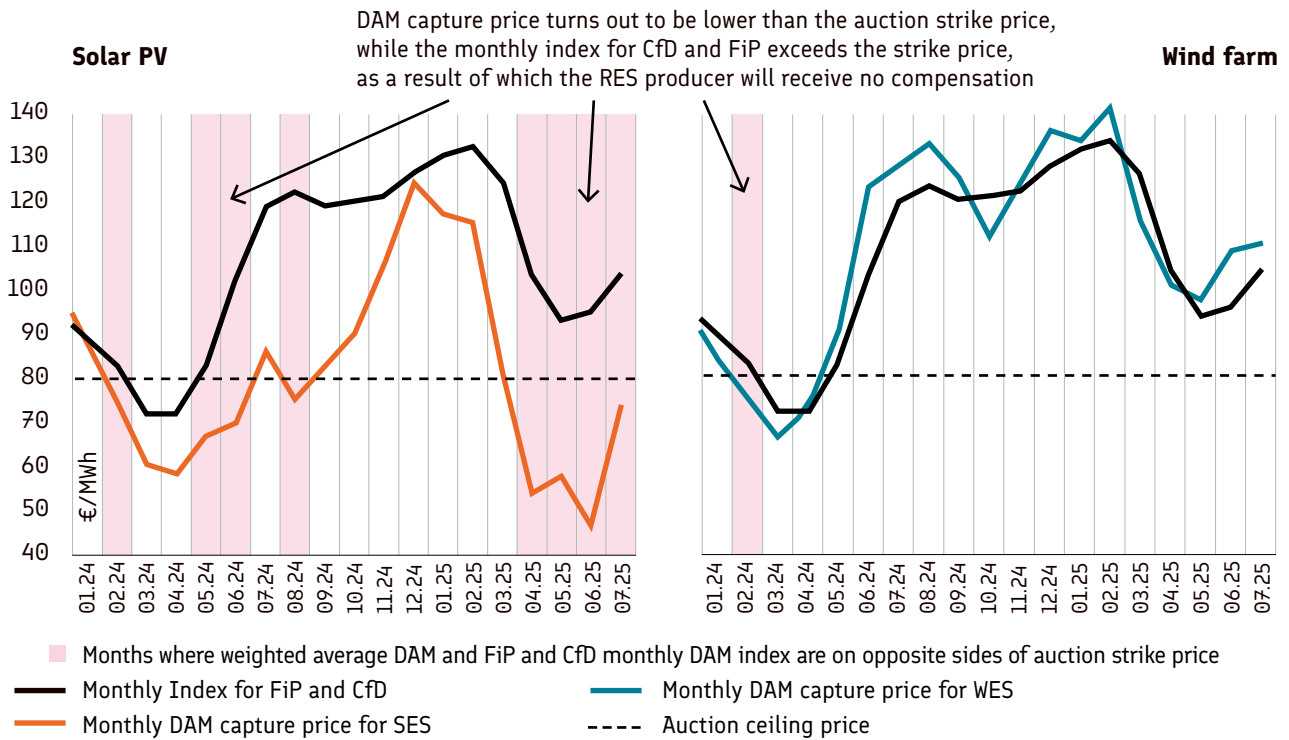
- **In 8 out of 19 months, the actual average DAM sale price was below the strike price, yet the calculated monthly price exceeded the strike price.**
- As a result, under FiP the producer would receive no support in those months, despite market prices being below the auction price (highlighted in red in Figure 8).
- Under CfD, the situation is even worse: even when the actual sale price was below the strike price, the producer would frequently face reverse payments to the Guaranteed Buyer.
- Over 18 months of operation, the modelled PV project would receive support in only 2 months, whereas the actual market price was below the strike price in 10 months.

#### For a WIND FARM project:

- Since the start of 2024, the modelled project would have failed qualification for support only once, even though the market price was below the strike price (Figure 9).
- However, the number of months requiring CfD payments would be substantial, sharply reducing the project's profitability

<sup>3</sup> In the pilot RES support auctions in 2024, the maximum auction strike price was set at €90/MWh for solar PV and wind projects, and at €80/MWh for the 2025 quota.

Figure 8. Actual DAM sale price versus calculated monthly price



## 2. Different approach to netting

Under a standard Feed-in Premium scheme, only the hours in which the reference hourly price is below the strike price are taken into account when calculating monthly support. Under the Ukrainian methodology, all hours are included, effectively introducing netting within the month. The Ukrainian FiP method therefore functions more as a **“soft” version of a Contract for Difference**, where producers are guaranteed not to make direct payments to the Guaranteed Buyer. However, the effective level of support may be significantly lower than under a classical Feed-in Premium scheme.

## 3. Incorrect price comparison base

The calculated monthly price corresponds to a baseload profile but is compared against the strike price for the generation profile of the relevant RES technology. Under the current methodology, the reference hourly price is averaged over two months and further weighted by DAM trading volumes – and therefore does not reflect the actual sale prices achieved by RES generators. This discrepancy underlies the gap between the actual revenues of RES operators and the benchmark prices against which the strike price is compared.

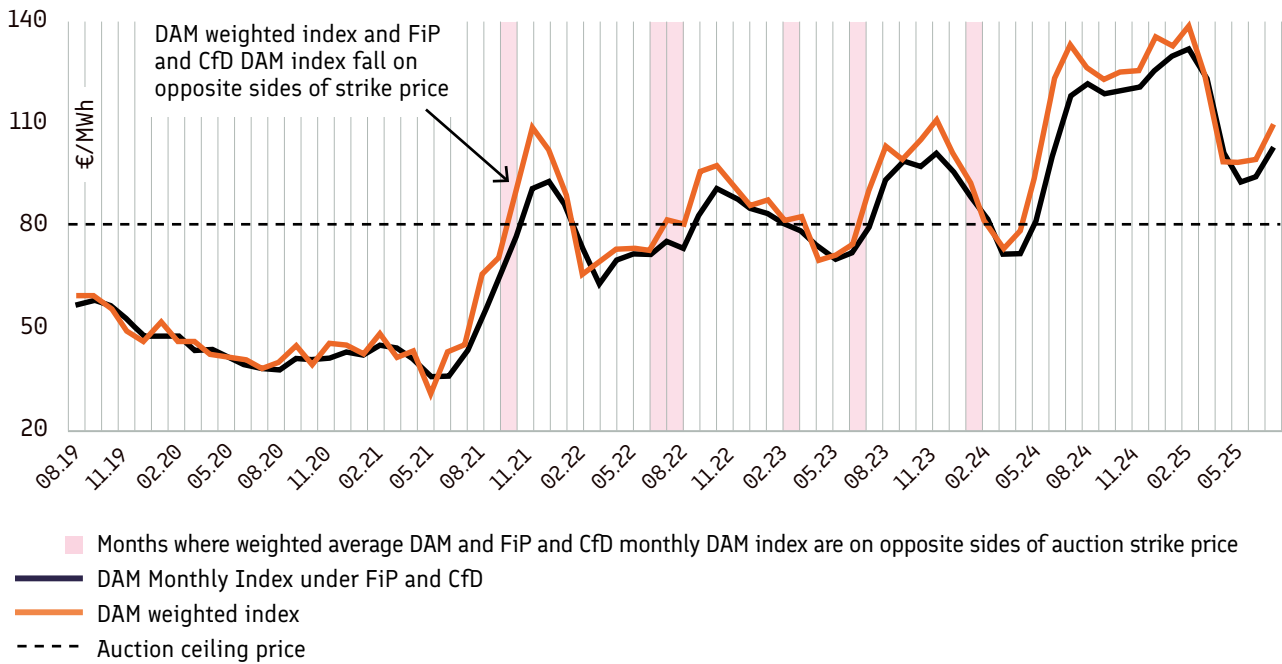
The main RES technologies – solar PV and wind – have a characteristic hourly generation profile that depends on weather and seasonal patterns. By design, the baseload index does not capture the operational specifics of solar and wind power generation.

Furthermore, both calculated prices smooth values over the previous two months. Given that solar and wind output may fluctuate substantially between months, this approach further widens the gap between the actual market prices received by producers and the values used for determining support payments.

In periods of high price volatility, this leads to double distortions: producers do not receive compensation in months when the market price was below the strike price, or conversely, excessive payments may occur at the expense of the state.

Analysis of DAM data shows that in some months the smoothed index and the actual sale price diverged around the €80/MWh threshold – the maximum auction price set for 2025. The average deviation between the smoothed index and the actual indicator was around 7%, making state support payments even less predictable.

Figure 9. Weighted DAM index vs. DAM index used for CfD and FiP



Source: authors' calculations based on data from the Market Operator, Ueex, and Ninja Renewables.

## How does this affect the financial performance of solar and wind projects?

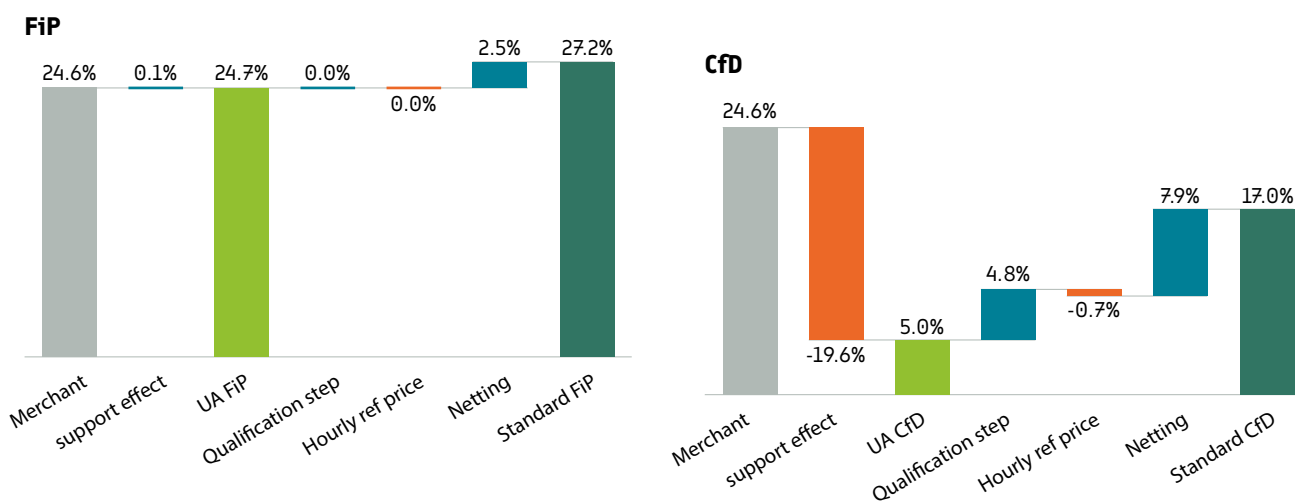
We modelled the financial performance of theoretical wind and solar projects located in southern Ukraine, assumed to be commissioned in 2025 and operating for 20 years, of which 12 years involve FiP or CfD contracts with an auction strike price of €80/MWh. Input data for the modelling are provided in the Appendices.

We also compared the impact of the identified methodological shortcomings with the payment calculation approaches used in European countries (referred to as “standard CfD and FiP”), which include: no monthly qualification and use of actual hourly prices as reference values.

According to the modelling results, a wind project would achieve an internal rate of return (IRR) of 24.6% if selling all electricity on the DAM without state support mechanisms – an attractive return for investors. Under a CfD contract awarded via auction, the IRR would fall fivefold to 5% (Figure 10). In contrast, under standard European methodologies, the wind project would achieve 2.5 percentage points higher IRR under FiP and 12 percentage points higher under CfD.

Under the FiP mechanism using the Ukrainian methodology, the IRR would remain almost unchanged. However, the negative effect of hourly netting reduces the potential support-driven return by approximately 2.5%.

Figure 10. Internal rate of return for a WIND FARM project under different support mechanisms

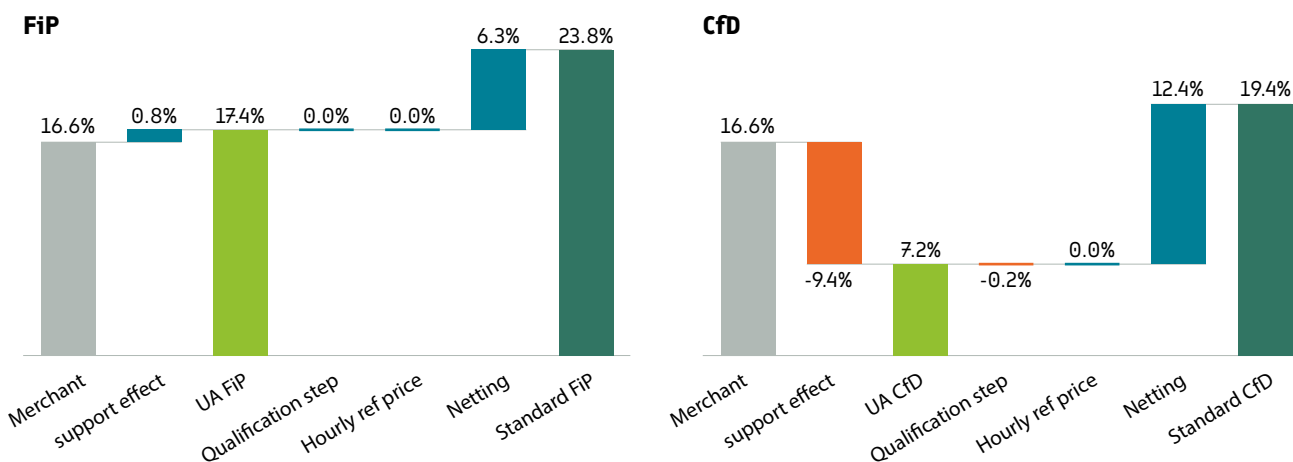


Source: authors' calculations based on data from the Market Operator, and Ninja Renewables.

For SOLAR PV projects, the methodology used in the Ukrainian support mechanisms has a greater impact due to the scale of the difference between baseload indices and actual market sale prices. At market prices, a SOLAR PV project would achieve an internal rate of return (IRR) of 16.6%, making the project unattractive for investors. Under the Ukrainian FiP mechanism, SOLAR PV projects would potentially add almost

1 percentage point to IRR, and an additional 6.3 percentage points under the standard methodology. Under the standard FiP approach, the IRR would reach 23.8%, approximately equal to the return for wind projects under merchant market conditions. The Ukrainian CfD reduces the IRR of a SOLAR PV project by 9.4%, whereas a CfD under the standard methodology would increase IRR by 2.8%.

Figure 11. Internal rate of return for a SOLAR PV project under different support mechanisms



Source: authors' calculations based on data from the Market Operator, and Ninja Renewables.

Based on our modelling, we draw the following conclusions:

- The Ukrainian FiP methodology provides a lower level of support compared to standard international approaches and has almost no effect on the profitability of wind projects while offering very limited added value for solar projects
- The Ukrainian CfD methodology is extremely unattractive for both wind and solar projects.
- The most significant factor reducing potential profitability under both support mechanisms is the approach to netting hourly results determined in Step 2.
- Monthly qualification (Step 1) has the greatest negative effect on wind projects under CfD contracts.

## 5. CONCLUSIONS

The analysis demonstrates that economic factors indeed contributed to the unsuccessful performance of RES support quota auctions in Ukraine in 2024-2025. The key factors are

### I. Expectations of higher market prices

If expected market prices exceed the maximum auction strike price, demand for contracts under the RES auction support framework decreases significantly. This is particularly relevant for wind projects and has been observed in other European countries. Uncertainty regarding the duration of periods of high prices always remains. While long-term contracts with a state counterparty can mitigate market risks, even under significant uncertainty Ukrainian renewables investors see no benefit in a Contract for Difference.

### II. Complexity of the methodology reduces support effectiveness

Although nominally similar to European designs, the Ukrainian CfD and FiP mechanisms have substantial differences and systemic deficiencies. The use of monthly baseload indices and two-month smoothing reduces the effectiveness of support. The current methodology for calculating reference prices and payments does not reflect the generation profiles of wind and solar, creates risks of disproportionate settlements, increases financial uncertainty for producers, and ultimately undermines the purpose of auctions – stimulating investment in new capacity.

### III. Auction strike price does not represent the real level of support

Due to methodological complexity and the mismatch between reference prices and RES generation profiles, the strike price loses its informational value. A bid price does not guarantee the producer will actually receive it for each MWh generated. In addition, a fixed ceiling may not ensure adequate returns under the heightened investment risks present in Ukraine.

### IV. Complexity in formulating auction bids

The methodology forces auction participants to perform detailed hourly market modelling and complex calculations, raising barriers to participation.

In wartime economic conditions and amid an urgent need for new generating capacity, the cost of support, while important, may not be the main priority. Ukraine's power system requires rapid investment, and purely market-based mechanisms cannot adequately cover investment risks, as shown by the rate of capacity additions in 2023-2024. Therefore, an effective and operational RES auction support mechanism is critical.

The changes proposed in Draft Law No. 13219, particularly the temporary shift to FiP contracts, may give auctions a “second wind” and stimulate investment, provided the issue of accumulated feed-in tariff debt is resolved. According to our analysis, transitioning to FiP for auctions held until 2029 will have a limited positive effect on demand. The expected impact on project profitability is modest but may serve as an important tool for reducing market and currency risks. To make the support scheme more attractive, a revision of price-setting methodology and a transition to clear and straightforward approaches aligned with standard European practice is required.

## 6. RECOMMENDATIONS

### I. Adopt decisions on applicable support mechanisms at government level

Support schemes available to producers are set in primary legislation. Changing laws is a lengthy process, limiting flexibility in responding to market shifts and implementing reforms. Draft Law No. 13219 highlights the need for legal clarity and regulatory flexibility. We propose that the Verkhovna Rada amend the Laws “On the Electricity Market” and “On Alternative Energy Sources” to:

- legally establish the existence of multiple RES support mechanisms available via auctions
- transfer to the Government the authority to determine the contract type for RES producers under auctions.

This will increase flexibility in responding to market price dynamics and changes in project capital cost.

### II. Simplify the methodology for calculating support

We propose three key conceptual amendments to the methodology set by the Law of Ukraine “On the Electricity Market” (Art. 65, para. 4) and the Guaranteed Buyer settlement procedure (NEURC Resolution No. 178 of 24.01.2024, para. 12):

- Simplify the payment calculation system by removing the first step (monthly qualification) as redundant.
- Use actual hourly DAM prices in the settlement month to provide a more realistic measure of RES project revenue.

- Modify the monthly payment settlement approach:
  - For FiP: no netting of hours with negative values (when the reference price exceeds the strike price); support paid only for hours where the market price is below the strike price.
  - For CfD: hourly difference between strike and market price without prior qualification test.

Additionally, monthly technology-specific indices (solar, wind, baseload for others), similar to the German model, could be considered. However, for hybrid projects with storage, an hourly model remains most accurate and administratively efficient.

Under the revised methodology:

- For CfD: the producer is compensated when  $DAM < \text{strike}$ ; pays the difference when  $DAM > \text{strike}$ .
- For FiP: support paid only when market price  $<$  strike; no payments otherwise.

**This methodological approach would align with European practice** applied in most EU countries and help **enhance the transparency, predictability, and investment attractiveness** of Ukraine’s RES auction support model. Simplifying the methodology makes the auction strike price a clearer and more straightforward indicator of the value of electricity from renewable sources.

### III. Dynamic revision of the maximum auction price

Fixing a maximum auction price may act as a constraining factor. In Ukraine's dynamic and volatile economic environment, the risks associated with developing RES projects have increased significantly during wartime. The current maximum auction price may not reflect an adequate level of return for projects in Ukraine. We propose the following conceptual amendments to the Laws "On the Electricity Market" and "On Alternative Energy Sources":

- Delegate authority for setting the maximum auction price to the executive branch.
- Introduce a methodology – developed by an independent consultant – for determining maximum auction prices applied throughout the year.

### IV. Adjusting annual support quotas to the updated methodology

Following implementation of the proposed changes, demand for auctions is likely to increase. The Government should consider raising annual auction quotas for solar and wind even before secondary legislation is formally adopted. This would avoid time lags between a rise in demand and the next quota cycle, accelerating the deployment of new RES capacity. The provision in Draft Law No. 13219 allowing in-year quota adjustments will support this process.

### V. Introducing additional risk-mitigation mechanisms for RES projects

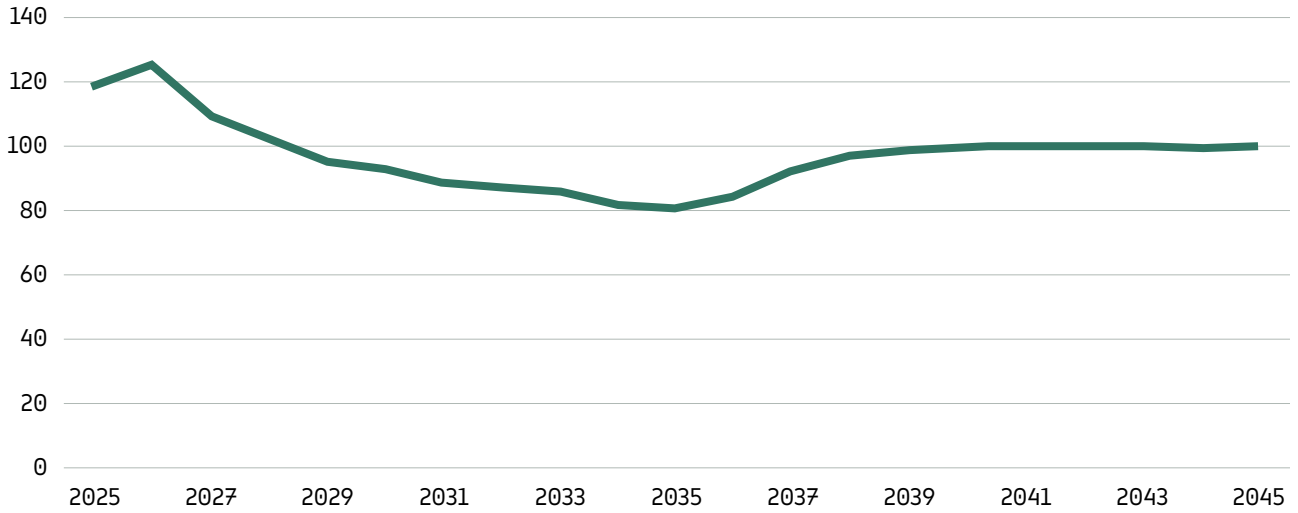
Reducing risks will maximise expected investor returns, allowing lower auction bid prices (and preventing the need to increase ceiling prices). RES projects in Ukraine already benefit from some non-auction mechanisms of state support (such as preferential loan programmes and import duty exemptions, which are expected to be prolonged into 2026). Additional measures should include:

- War-risk insurance
- Inflation indexation of FiP and CfD contracts
- Improved access to bank financing for auction winners
- Resolving legacy feed-in tariff debt as the key non-economic factor increasing producer risks
- Transparency of data on historical and forecast levels of system curtailment.

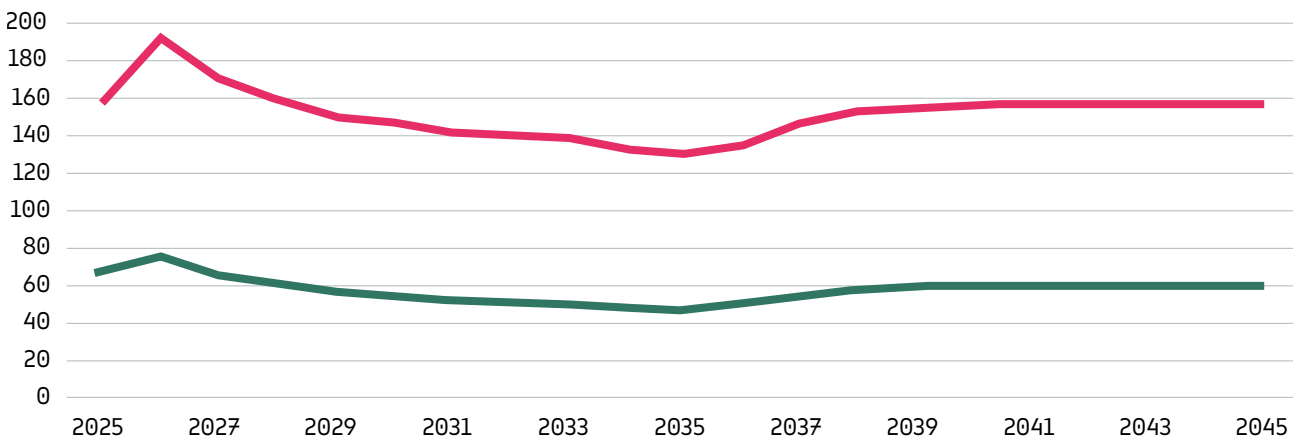
# ANNEXES

## Annex 1. Forecast average electricity prices used in the modelling, EUR/kWh (2024 prices)

### Wholesale baseload price



### Imbalance prices



Positive Negative

## Annex 2. Financial parameters of wind and solar projects used in the modelling

Project location	CAPEX, EUR/kW	OPEX, EUR/kW	Capacity Factor	Imbalance, % of forecast volume per year
<b>WIND FARM</b>				
South	1,150	30	44%	1,4%
Centre	1,175	30	41%	1,4%
Polissia	1,200	30	42%	1,4%
Carpathians	1,250	30	43%	1,4%
<b>SOLAR PV</b>				
South	460	11	15,9%	2,2%
Centre	460	11	14,3%	2,2%
Polissia	460	11	13,5%	2,2%
Carpathians	460	11	14,5%	2,2%

Construction period for solar PV - 1 year, construction period for wind - 2 years.

Dispatch tariff fixed at UAH 100/MWh for the entire project period.

System curtailments not included



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Published October 2025  
Zentrum Liberale Moderne  
Reinhardtstraße 15  
10117 Berlin  
Germany  
+49 (0)30 - 13 89 36 33  
info@libmod.de

[www.libmod.de](http://www.libmod.de)