PUBLIC POLICY RESEARCH

RENEWABLE ENERGY IN MOLDOVA: CHALLENGES AND OPPORTUNITIES

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1. Introduction

The Republic of Moldova has no proven oil and gas reserves and is dependent on energy imports. Reducing this dependence on imports can be achieved by increasing local production of renewable energy. To attract investment in renewable energy, the government has implemented several support mechanisms:

- **Net metering** (replaced with net billing): consumers who have installed renewable energy systems pay only the difference between the energy they consume and the energy they generate. The mechanism was replaced with net metering in 2024;
- **Net billing** (effective as of 2024): consumers who have installed renewable energy systems sell their electricity at the average market purchase price (excluding transmission, distribution, and supply tariffs), but consume electricity at regulated rates, just like other consumers;
- **Fixed tariff** for medium-sized producers (up to 1 MW of solar and 4 MW of wind): producers receive a fixed tariff for a period of 15 years, approved by energy regulator ANRE;
- **Fixed price** for large producers (over 1MW of solar and 4 MW of wind): producers participate in auctions organized by the government, and the winning bids are awarded a fixed price for a period of 15 years.

The support mechanisms apply only to new equipment, and beneficiaries are granted the status of eligible producers. Essentially, the government offers two things: a fixed price for a period of 15 years and an obligation to purchase all the energy produced, regardless of the time of day. Against the backdrop of rising energy prices, these rules provide predictable conditions for attracting investment in renewable energy sources. Investors can be certain that they will be able to sell all their energy at a predictable price and recover their investments.

Renewable energy sources are not a universal solution for meeting energy demand because they are intermittent: they produce energy only when there is sunlight or wind. Most of the energy is generated during the day, whereas peak demand occurs in the morning and evening. To address this imbalance, storage batteries must be installed so that the energy generated during the day can be stored and used during peak consumption hours in the morning and evening.

At the same time, massive investments were made in the open market, outside of support mechanisms. The uncontrolled development of renewable energy sources in the open market was also noted by the CNED (National Center for Sustainable Energy) as part of its development strategy:[1] „ *Numerous energy efficiency and renewable energy projects are implemented through parallel mechanisms managed by other*

[1] CNED, Development Strategy for 2026–2030, chapter 2.7, https://cned.gov.md/sites/default/files/document/attachments/cned_strategy_ro_0.pdf

institutions or development partners. In the absence of a unified reporting and monitoring framework, these projects are difficult to integrate into the national energy balance, which limits the government's ability to quantify energy savings, report progress to European and international bodies, and adjust policies based on facts."

As technology has advanced and equipment costs have fallen, investment in renewable energy has grown exponentially. Over the past 5 years, the installed capacity of wind and solar power plants in Moldova has increased tenfold:

- **In 2021**: installed capacity totaled 97,5 MW (*wind: 87,6 MW, solar 9,9 MW*); 84.1 thousand MWh of renewable energy were generated (*of which 76.3 thousand MWh came from wind and 7.8 thousand MWh from solar*);[2]
- **In 2026**: in March, installed capacity reached 1015 MW (*wind: 255 MW, solar: 760 MW*), which generated 242,000 MWh of renewable energy in the first quarter alone (*of which 95,500 MWh came from wind and 146,500 MWh from solar*) —three times more than in all of 2021.[3]

The latest data for April 2026 show that more than half of the installed capacity (583 MW, or 56%) is on the open market and does not benefit from government support mechanisms. Due to excessive energy generation during the day, these producers risk going bankrupt because they cannot sell the energy and lack storage capacity. Most of the projects were financed through borrowing, and some producers are already having difficulty repaying their loans. The situation will worsen with the additional installation of 275 MW of wind power plants:

- 105 MW of wind power plants, as per the tender held in 2024,[4] and
- of wind power plants under the recently launched tender.[5]

Attracting investment in energy storage batteries has already become an urgent necessity. According to the Ministry of Energy, at least 600 MW of storage capacity is needed to integrate renewable energy into the grid.[6] To date, storage batteries with a total capacity of 150 MW have been installed. However, attracting investment in storage capacity faces certain financing challenges:

[2] ANRE Annual Report for 2021, page 21 and 25, https://anre.md/raport-de-activitate-3-10

[3] ANRE Report on Electricity Market Monitoring for Q1/ 2026, page 3, https://anre.md/rapoarte-de-monitorizare-3-73

[4] Government Decision No. 494/2025 on Granting the Status of Large Eligible Producer, https://www.legis.md/cautare/getResults?doc_id=150206&lang=ro

[5] Ministry of Energy press release of December 19, 2025, https://energie.gov.md/ro/content/fost-lansata-licitatia-pentru-constructia-centralelor-eoliene-cu-capacitatea-de-170-mw

[6] Ministry of Energy press release of May 29, 2026, https://energie.gov.md/ro/content/inca-un-parc-fotovoltaic-mare-de-30-mw-cu-baterii-de-stocare-energiei-de-60-mwh-urmeaza-fi

- According to Moldova's Growth Plan for 2025–2027, „ *One of the main obstacles is the need to refine auction mechanisms to incorporate energy storage solutions and allocate capacity strategically*";[7]
- The draft Energy Strategy through 2050 states that „*Without functional market instruments (organized day-ahead and intraday markets, a reference price) and without long-term contracting mechanisms (such as contracts for difference), investments in renewable energy sources and flexibility will be delayed*".[8]

In this study, we will examine the economic constraints in the renewable energy sector and how hourly energy prices have evolved on the Romanian OPCOM exchange, from which Moldova purchases energy. We will also analyze the extent to which the solutions proposed by the authorities can ensure the sustainable development of the renewable energy sector. Finally, we present alternative solutions and recent regulations from other European countries regarding the development of renewable energy sources.

[7] Government Decision No. 260/2025, Subsection 6.5 on page 110, https://www.legis.md/cautare/getResults?doc_id=148353&lang=ro

[8] Draft Energy Strategy of the Republic of Moldova through 2050, Chapter 2.15, page 56, https://gov.md/sites/default/files/media/documents/sedinte-de-guvern/2025-08/694-MEn-2025.pdf

2. Energy production and consumption

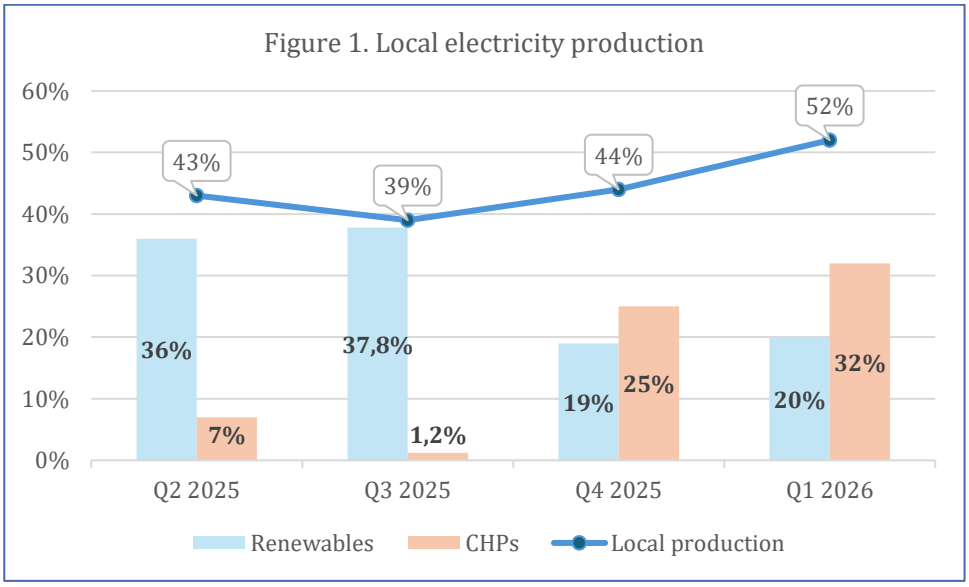
Historically, the Republic of Moldova has sourced approximately 75–80% of its energy consumption from abroad, with the MoldGRES power plant on the left bank of the Dniester River serving as the main source. Over the past five years, there have been major changes in the structure of the country's electricity supply:

- Local electricity production has doubled compared to 2021 thanks to the active development of the renewable energy sector;
- In March 2022, the electricity grids of Moldova and Ukraine were synchronized with the European ENTSO-E grid, making it possible to purchase electricity from Romania;
- In January 2025, Gazprom halted gas deliveries to the Transnistrian region, and MoldGRES reduced electricity supplies to the right bank. As a result, the Republic of Moldova turned to importing more electricity from Romania.

2.1. Local electricity production

In 2021, prior to Russia's military aggression in Ukraine, domestic electricity production accounted for 21.4% (or 984.7 thousand MWh). As a result of investments in the renewable energy sector, domestic electricity production exceeded 40% in 2025, and in the first quarter of 2026 it reached 52% of total energy consumption. As we can see in Figure 1, energy production from renewable sources is higher during the warmer months, in the second and third quarters. The rest of the energy is imported from Romania and sometimes from Ukraine, during certain hourly periods.

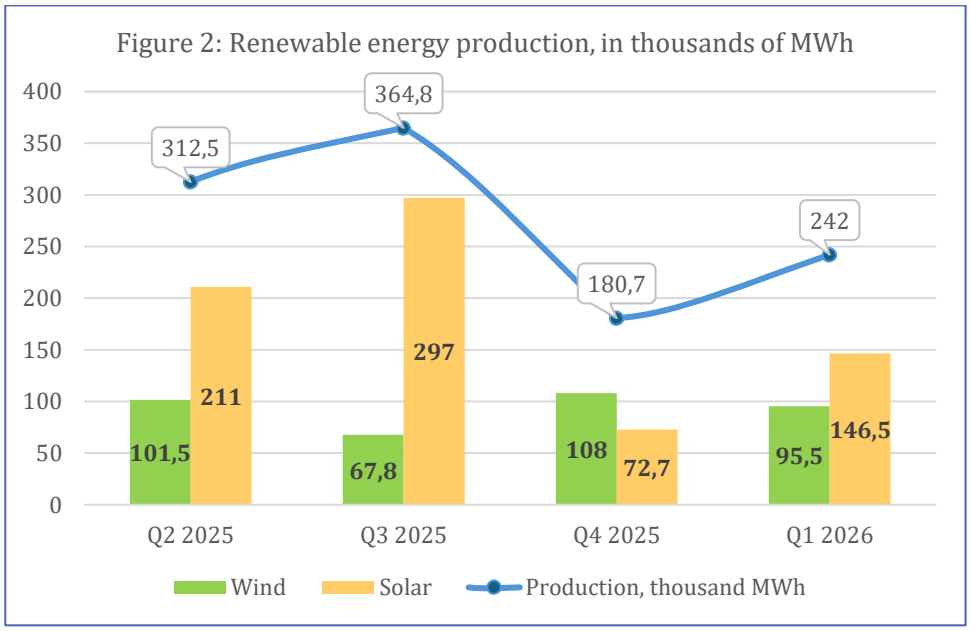
Figure 1. Local electricity production



Source: ANRE Reports on Electricity Market Monitoring

Solar energy accounts for a larger share of renewable energy production. This is more pronounced during the warmer months, when the days are longer. Over the past 12 months, solar power plants generated 727 thousand MWh, or twice as much as wind

turbines (373 thousand MWh). Figure 2 shows the breakdown of renewable energy production by source type:

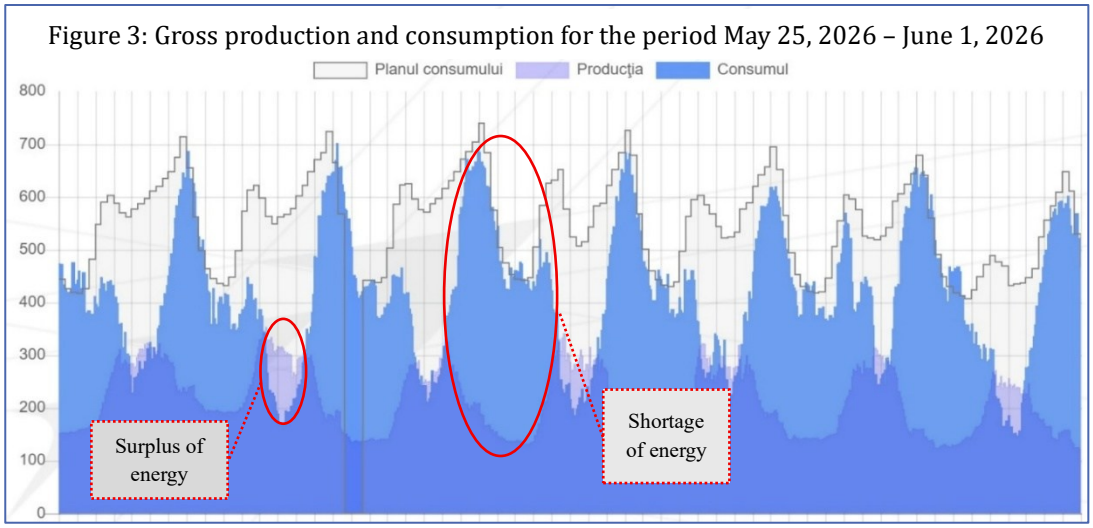


Source: ANRE Reports on Electricity Market Monitoring

2.2. Consumption breakdown by hourly intervals

Energy consumption varies greatly depending on the time of day, particularly because residential consumers account for a large share (44%) of total consumption. Systemic problems in the structure of energy consumption are already evident:

- **Shortage during peak hours:** consumption is highest in the morning and evening, and there is an energy shortage. The shortage is covered by imports from Romania, and energy prices are highest during peak hours.
- **Energy surplus during the day:** During the day, consumption is low, and there is periodically a surplus of energy due to increased production of renewable energy. **The excess energy creates imbalances**, which are transferred to Ukraine and could be subject to a fee, with the costs passed on to consumers.



Source: Operational information from TSO Moldelectrica, https://moldelectrica.md/ro/activity/operative_info

The information published by transmission operator Moldelectrica regarding energy production and consumption is incomplete. It does not include energy produced by renewable sources connected to the electricity distribution grids:

- 322 renewable power plants connected to Premier Energy Distribution grid[9];
- 154 renewable power plants connected to RED-Nord grid[10].

Therefore, consolidated real-time data on energy consumption and production are not available, which makes it difficult to manage the power system and make accurate forecasts.

2.3. Electricity shortage in peak hours

Following their synchronous connection to European power grids in March 2022, the Republic of Moldova and Ukraine gained the technical capability to import energy from the EU. However, the commercial import capacity (*NTC – net transfer capacity*) for the Moldova-Ukraine power grid is limited to 2100 MW in winter and 1700 MW during the warmer months[11]. Since Moldova has only one interconnection with European grids (the 400-kV Vulcanesti-Isaccea line), our share accounts for only 15% of the NTC import capacity: 315 MW in winter and 255 MW in summer. The NTC capacity is reviewed periodically and may vary.

At the same time, the energy deficit during peak hours can exceed 600 MW, or double the commercial import capacity:[12]

> Astfel că, situații în care capacitatea comercială oferită Republicii Moldova scade sub nivelul minim necesar de import devin tot mai frecvente, ceea ce generează riscuri reale pentru acoperirea consumului intern în orele de vârf, când necesarul depășește 600 MW.

The difference in consumption is covered either by reallocating Ukraine's unused NTC capacity or by accessing emergency electricity, which is much more expensive. For this reason, the annual electricity procurement auctions organized by regulated operators in the fall of 2025 were unsuccessful,[13] and in December 2025, the government extended the public service obligation of the supplier Energocom until the end of 2026 (Government Decision 801/2025). In other words, the annual

[9] Premier Energy Distribution, technical and economic indicators for Q1/2026, https://www.premierenergydistribution.md/sites/default/files/inline-files/indicatorii-tehnico-economici/Indicatori_tehnico_economici_2026_trim1.pdf

[10] RED-Nord Annual Report for 2025, page 17, https://rednord.md/doc/dezvinfo/Rapoarte%20privind%20activitatea/2025/raportul%20conducerii%202025.pdf

[11] ENTSO-E press release dated October 29, 2024, https://www.entsoe.eu/news/2024/10/29/european-transmission-system-operators-increase-electricity-export-capacity-to-ukraine-and-moldova-for-this-winter/

[12] Explanatory note to Government Decision No. 801/2025 on imposing a public service obligation on the supplier Energocom, https://gov.md/sites/default/files/media/documents/sedinte-de-guvern/2025-12/NU-982-MEn-2025_1.pdf

[13] Community WatchDog, December 2025: Moldova could return to purchasing energy from MoldGRES, https://watchdog.md/en/analyzes/208710/moldova-ar-putea-reveni-la-procurarea-energiei-de-la-moldgres/

auctions failed, and Energocom was tasked with procuring energy for the entire country, except for consumers in the free market.

To increase the NTC capacity, new interconnection lines must be built: Balti–Suceava and Straseni–Gutinas. Although Moldovan authorities state that the Balti–Suceava line could be built by 2028, Transelectrica, the Romanian transmission system operator, asserts that, according to the contract, work on the Romanian side will continue until 2030:[14]

> Contractul pentru proiectarea și execuția LEA 400 kV de interconexiune Suceava (RO) – Republica Moldova (MD) pentru porțiunea de pe teritoriul României a fost încheiat în luna martie 2025, în urma derulării unei proceduri de achiziție publice. Contractul (lucrări și echipamente) are o valoare de 133,4 milioane de lei fără TVA și o durată de 52 de luni, lucrările fiind executate de Asocierea Electromontaj SA (lider de asociere) – ELM Electromontaj Cluj

Under these conditions, it is most likely that Energocom's public service obligation will be extended for the next 3–4 years, until the completion of the Balti–Suceava line.

3. Current situation in the renewable energy sector

3.1. Installed capacity exceeds the 2030 targets

NIECP: The target for 2030, as set out in the NIECP (*National Integrated Energy and Climate Plan*), is to achieve a 30% share of renewable energy in gross final electricity consumption. To meet this goal, the installed capacity of renewable energy sources must reach **976 MW** by 2030:[15]

- 560 MW – solar photovoltaic systems;
- 390 MW – wind farms;
- 10 MW – biogas facilities;
- 16 MW – hydroelectric power plants.

Simulations: To meet the objectives set out in the NIECP, in April 2025 (two months after the NIECP was approved), simulations were conducted using the specialized PLEXOS software to determine the maximum capacity of renewable energy sources that can be integrated into the national power grid.[16] The simulations took into account the capacity already installed at that time, the inability to export energy, and the 5% cap on restricted (and wasted) energy during periods of surplus energy in the

[14] Transelectrica press release of April 24, 2026, https://web.transelectrica.ro/noutati/noutati/673_2026.04.24_09-40-49.pdf

[15] The Integrated National Energy and Climate Plan for 2025–2030, approved by Government Decision No. 86/2025, measure PM_DC 7 on page 76, measures PM_DC 20 and PM_DC 21 on page 90, https://www.legis.md/cautare/getResults?doc_id=147685&lang=ro

[16] Tetra Tech, 30.04.2025, *Modelling and Analysis of Moldova's Power System for the Integration of Renewables and Energy Storage Solutions*, pag. 10, https://energie.gov.md/sites/default/files/document/attachments/deliverable_3-_res_integration_report_final_clean.pdf

grids. According to the modeling results, an additional 234 MW of solar power plants and 310 MW of wind power plants can be installed to meet the NIECP targets:

Table 4-3 Results for RES generation for 2026 – right bank

Results for 2026			
RES technology	**Total RES capacity [MW]**	**Existing RES Capacity [MW]**	**Additional capacity [MW]**
PV	560	415	234
Wind	400	178.76	310
Biomass	12	3.6	8.4

Upon examining the presented results, **certain errors in the calculations can be observed**. If we add the [*Existing RES Capacity*] and the [*Additional capacity*], the calculations for biomass are correct (3,6 + 8,4 = 12 MW), but the calculations for photovoltaic installations and wind power plants are incorrect:

- Photovoltaic systems: 415 + 234 = 649 MW, compared to a total of 560 MW;
- Wind farms: 178,76 + 310 = 488,76 MW, compared to a total of 400 MW.

Consequently, the additional capacity from renewable energy sources was to be reduced so as not to exceed the limits set forth in the NIECP. **Why this is important:** excessive deployment of renewable energy sources leads to a surplus of energy in the grids (*see Chapter 2.2.*). As a result, energy production is restricted—some renewable energy producers are disconnected from the grid, and if they benefit from support mechanisms, the government is required to pay them compensation, which will ultimately be borne by consumers (*see Chapter 3.2.*).

Government Decision on Capacity Limits Through 2030: without taking these calculation errors into account, the Government approved Decision No. 599 of September 17, 2025, which stipulates that the capacity of wind power plants is to be increased by 170 MW through a new tender. The explanatory note accompanying the government decision repeats the same incorrect calculations regarding the additional capacity:[17]

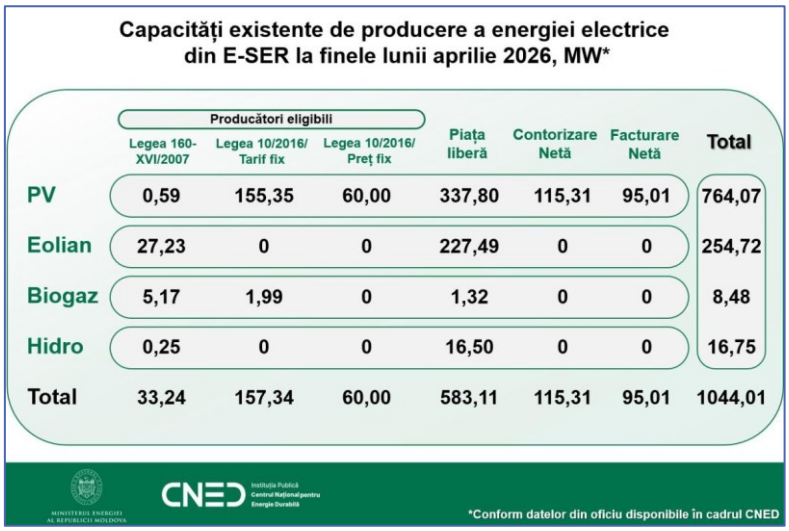
Mai jos sunt prezentate condițiile și rezultatele scenariului care a fost folosit pentru identificarea capacităților.

Scenariu 2026, fără export	
În 2026	
Capacitate solară totală [MW]	560
Capacitate eoliană totală [MW]	400
Capacitate totală de biomasă [MW]	12
Capacitate solară suplimentară [MW]	**234**
Capacitate eoliană suplimentară [MW]	**310**
Capacitate suplimentară de biomasă [MW]	**8.4**

[17] Page 8 of the explanatory note to Government Decision No. 599/2025 on the approval of capacity limits through 2030, https://gov.md/sites/default/files/media/documents/sedinte-de-guvern/2025-09/NU-666-MEn-2025.pdf

Discrepancies in public policy documents
An analysis of other public policy documents reveals a discrepancy between the established objectives regarding the capacity of renewable energy sources: • According to Moldelectrica's 10-year development plan, it is estimated that **by 2028,** renewable capacity of **644 MW will be available under the baseline scenario** (202 MW solar and 442 MW wind) and **1020 MW under the ambitious scenario** (470 MW solar and 550 MW wind)[18]; • According to the Ministry of Energy's Action Plan for 2026, installed capacity from renewable energy sources must reach **1100 MW**[19]; Therefore, it is necessary **to establish the same target capacity limits** or renewable energy sources in all public policy documents, considering the technical capabilities of the power grids and the targets regarding the share of renewable energy sources in final electricity consumption.

Installed capacity: according to the latest available information, by the end of April 2026, the installed capacity of renewable energy sources had already exceeded the targets set in the NIECP for 2030, reaching **1044 MW**, including 764 MW of photovoltaic plants and 255 MW of wind farms:



Source: CNED (National Center for Sustainable Energy)

In addition to existing capacity, 105 MW of wind farms will be installed under the auction held in 2024,[20] plus another 170 MW of wind farms under the auction

[18] Transmission network development plan for 2025–2034, table 23 on page 76, https://www.moldelectrica.md/files/docs/TYNDP%202025-2034%20(RO).pdf

[19] Ministry of Energy annual action plan, page 12, https://www.energie.gov.md/sites/default/files/planul_anual_de_actiuni_al_ministerului_energiei_pentru_anul_2026.pdf

[20] Government Decision No. 494/2025 on granting the status of large eligible producer, https://www.legis.md/cautare/getResults?doc_id=150206&lang=ro

launched in December 2025.[21] Therefore, the comparative analysis between the current situation and the 2030 targets set out in the NIECP will be as follows:

Table 1: Installed and tendered renewable capacity and targets for 2030

Type of renewable source	Targets 2030 (NIECP)	Installed and tendered capacities	Comments
PV	560 MW	764 MW	Exceeding the target by 204 MW
Wind	390 MW	255 MW + 275 MW (*255 MW installed, 105 MW under the 2024 auction, and 170 MW in the current auction*)	Exceeding the target by 140 MW
Biogas	10 MW	8 MW	
Hydro	16 MW	17 MW	
Total	**976 MW**	**1044 MW + 275 MW**	

Comments:

- The renewable energy capacity already installed exceeds the 2030 targets set out in the NIECP (1044 MW installed vs 976 MW target).
- Existing solar installations exceed the 2030 target by MW.
- The capacity of existing wind farms and those to be installed through auctions will be 140 MW higher than the 2030 targets.

3.2. What are the consequences of excess energy in power grids

There is already evidence of excess energy generation during the daytime (see Figure 3). The installation of additional renewable energy capacity will require **restrictions on energy production**. Excess energy could increase during cold periods (including at night), when power generation at the CHPs (Termoelectrica and CET-Nord) rises, as shown in Figure 1. This energy is procured on a priority basis.[22] Under these circumstances, it is unclear why it is necessary to hold the 170 MW auction, given that this capacity exceeds the targets set out in the NIECP for 2030.

Renewable energy producers **will be affected** differently by restrictions on energy production, depending on the category to which they belong, namely:

- **461 MW (or 44%) – Eligible producers**, who benefit from support measures. The government is required to purchase the entire amount of energy produced, regardless of the time of day, and to offer a fixed price/rate for 15 years. If

[21] Notice of the launch of the bidding process for the 170 MW wind farms, https://energie.gov.md/sites/default/files/document/attachments/anunt_de_initiere_licitatie.pdf

[22] (1) Article 6, paragraph (2)(c) of Law No. 92/2014 on thermal energy and the promotion of cogeneration, https://www.legis.md/cautare/getResults?doc_id=151415&lang=ro

(2) Article 74, paragraph (6) of Law No. 164/2025 on electricity, https://www.legis.md/cautare/getResults?doc_id=152516&lang=ro

production is restricted due to an energy surplus, the government is required to compensate for the amount of electricity not produced and not delivered.[23]

- **583 MW (or 56%) – Producers in the open market**, who do not benefit from support measures. The government is not required to purchase energy from these producers and does not offer them a predictable price that would provide certainty regarding the recovery of their investments. Consequently, this category will suffer if energy production is restricted.

Existing support mechanisms do not provide incentives for eligible producers to reduce output during hours when there is excess energy in the grids. The government is required to purchase energy from eligible producers at guaranteed fixed prices, even during hours when there is excess generation, thereby turning away from imports from Romania, which are considerably cheaper during those hours.

Eligible producers are incentivized to generate electricity regardless of demand (*produce-and-forget*), and the energy surplus leads to negative prices, exactly as is happening in Romania (see Chapter 4). **The difference between the guaranteed price and the negative price will have to be compensated by the government, and the costs will be passed directly on to consumers' bills, who will pay higher tariffs for electricity**.

At the same time, if energy production is restricted, the government is required to compensate for the amount of electricity that was not produced and not delivered. Thus, the support mechanism imposes additional costs on consumers in two ways: the mandatory purchase of local energy at fixed prices during periods of surplus—even though imports from Romania would be more advantageous at that time—and compensation to producers for the restricted energy.

Restrictions on energy production are also common in other countries that are actively developing renewable energy sources. In **Greece**, curtailment of energy production in 2025 reached 6.6% of total green energy generated, or 1,867 GWh. Practically, this doubled from the 968 GWh recorded in 2024.[24] In **Spain**, curtailment of energy production in July 2025 peaked at 11%.[25] Compensation paid by **Germany** for curtailing renewable energy production totaled 435 million euros in 2025, down 22% from the previous year (554 million euros in 2024).[26]

[23] Article 28(9) of Law No. 10/2016 on the promotion of the use of energy from renewable sources, https://www.legis.md/cautare/getResults?doc_id=151418&lang=ro

[24] Balkan green energy news, 05.02.2026, https://balkangreenenergynews.com/greece-achieves-record-renewables-output-but-also-curtailments-in-2025/

[25] Delfos energy, 25.02.2026, https://www.delfos.energy/blog-posts/curtailment-has-many-names

[26] Clean energy wire, 24.03.2026, https://www.cleanenergywire.org/news/renewable-curtailment-compensation-costs-germany-decrease-22-2025

In Moldova, there are no legal requirements regarding the monitoring of the restricted amount of electricity and the determination of the compensation to be paid.

The effects of production curtailment or excess electricity in the grids **will hit producers in the open renewable energy market the hardest**. These producers are on the verge of bankruptcy because they cannot sell their energy during the day due to overproduction and do not receive compensation in the event of production curtailment. Several producers in the free market have confirmed this during working sessions at the parliamentary and ministerial levels, as well as in informal discussions. They are already facing problems with loan repayments.

Because free-market producers account for approximately 56% of installed renewable energy capacity, their bankruptcy poses a major threat to the target of meeting 30% of energy consumption with renewables by 2030. Consequently, Moldova's energy security will be affected, as the country will have to import more energy – especially during peak consumption hours – at high prices.

The bankruptcy of producers in the open renewable energy market **will also affect the banking sector**. Given the installed capacity in the free market (583 MW), the value of the investments could amount to approximately 300 million euros (or 500,000 euros per MW). If half of these investments are financed by banks, the outstanding balance of the loans granted could amount to around 150 million euros. From discussions with bank representatives, it was found that **the authorities have not even requested information and are not aware of the banks' exposure (the outstanding balance of loans granted)** to renewable energy producers in the open market.

According to banking regulations, non-performing (impaired) loans that have been in arrears for more than 12 months are repaid in full from the banks' own sources: net income, reserves, and shareholders' equity.[27] A decline in the quality of a bank's loan portfolio can have the following effects on banks:

- The risk that the **bank's equity capital may reduce** below the initial capital requirement for obtaining a license (100 million MDL, or 5 million EUR), which could lead to the suspension of the bank's operations;[28]
- The risk of **maintaining the required liquidity**, which must cover the bank's net cash outflows over a 30-day period. The bank could become insolvent.[29]

[27] NBM Regulation No. 231/2011 on the Classification of Assets and Conditional Liabilities, Section 27, https://www.legis.md/cautare/getResults?doc_id=145844&lang=ro#

[28] Article 9(1) and Article 60(1) of Law No. 202/2017 on Banking Activities, https://www.legis.md/cautare/getResults?doc_id=151445&lang=ro

[29] Article 76(2) of Law No. 202/2017 on Banking Activities, https://www.legis.md/cautare/getResults?doc_id=151445&lang=ro

3.3. Formulation of the problems to be addressed

Accurately describing a problem is half the solution. Excess energy generated during the day can be stored in batteries and used to meet demand during peak hours. Therefore, attracting investment in energy storage batteries can help resolve the energy surplus and prevent the bankruptcy of producers in the open renewable energy market. According to the Ministry of Energy, the required storage capacity is 600 MW, and 200 MW will be operational by the end of this year.[30] However, in order to obtain financing, producers must demonstrate their ability to repay loans. In other words, to ensure the economic viability of renewable energy generation and storage projects, measures must be developed to address the following issues:

- **How to ensure revenue certainty** – energy producers must secure reliable off-take guarantees that it will have a secured buyer for the entire duration of the financing.
- **How to ensure a predictable price** to achieve full cost recovery and safeguard debt repayment obligations.

From the consumers' perspective, price incentives must take into account their impact on final tariffs, given that Energocom (or another supplier with a public service obligation) has the option to import energy from Romania. Therefore, **price incentives should not exceed the import price** from Romania to avoid additional costs. Thus, it is necessary to analyze hourly price trends on the Romanian energy exchange OPCOM as a reference point.

4. Prices on the Romanian energy exchange OPCOM

The energy shortage during peak consumption hours is covered by importing energy from Romania, including through purchases on the OPCOM exchange. This chapter analyzes the evolution of energy prices by hourly intervals for the years 2025–2026, broken down by season, since renewable energy production is higher during the warmer months, when daylight hours are longer.

Currently, energy prices in Eastern Europe are high because an energy shortage has developed. A significant portion of Ukraine's power generation capacity has been destroyed as a result of Russian military aggression, and Ukraine is importing energy from neighboring countries. For these reasons, it is also necessary to analyze the trend in energy prices over the previous years.

4.1. Seasonal price trends for the past 18 months

Starting in October 2025, energy trading on the OPCOM exchange takes place in 15-minute intervals. For the ease of data analysis, prices were selected in 60-minute intervals.

[30] Ministry of Energy press release of May 29, 2026, https://energie.gov.md/ro/content/inca-un-parc-fotovoltaic-mare-de-30-mw-cu-baterii-de-stocare-energiei-de-60-mwh-urmeaza-fi

Methodology: PZU (day-ahead market) prices were collected on an hourly basis for each day during the period from December 2024 to May 2026. The data were grouped by season, after which the average price, median (the value that occurs most frequently), and the minimum and maximum ranges were calculated. Currency conversion was performed at an exchange rate of 1 EUR = 5 RON, except for data for the spring of 2026, for which an average rate of 5.2 RON per 1 EUR was used. Dispatching hours are indicated in CET time slots.

The following figures show seasonal prices for the past 18 months:

Figure 4: OPCOM Prices for the winter of 2024–2025 (December – February), EUR/MWh

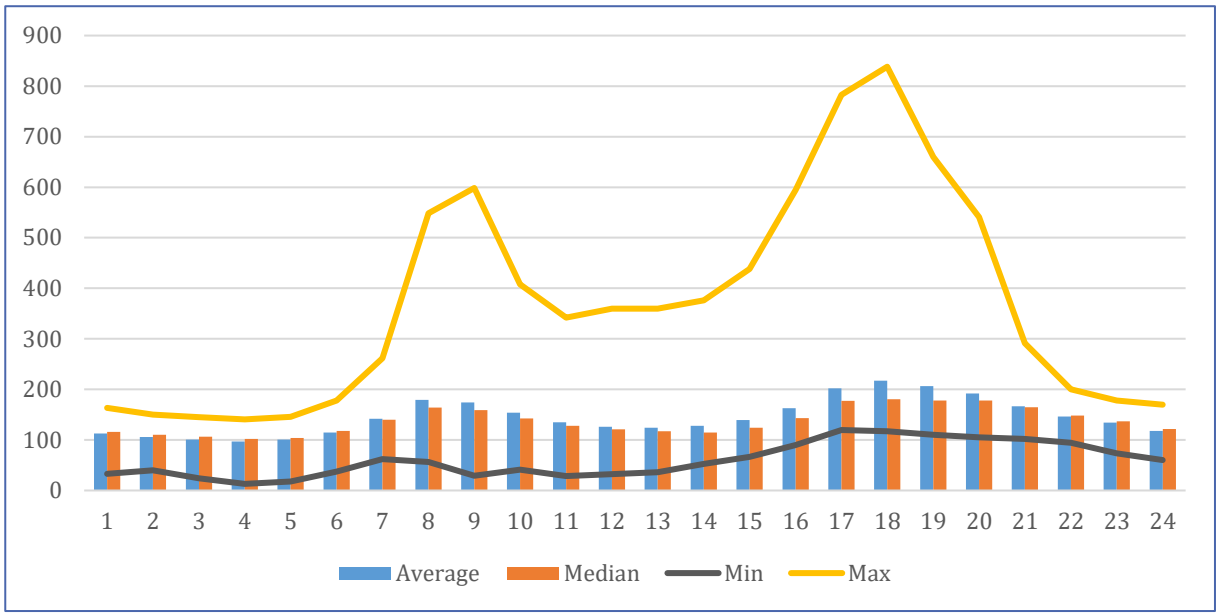


Figure 5: OPCOM prices in the spring of 2025, EUR/MWh

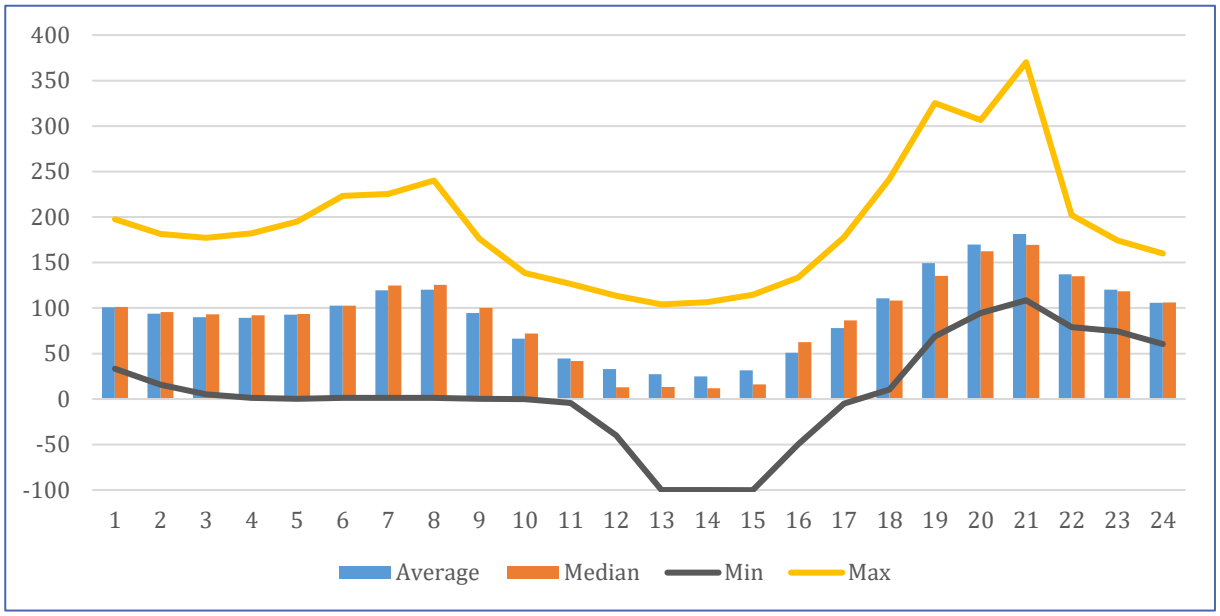


Figure 6: OPCOM prices in the summer of 2025, EUR/MWh

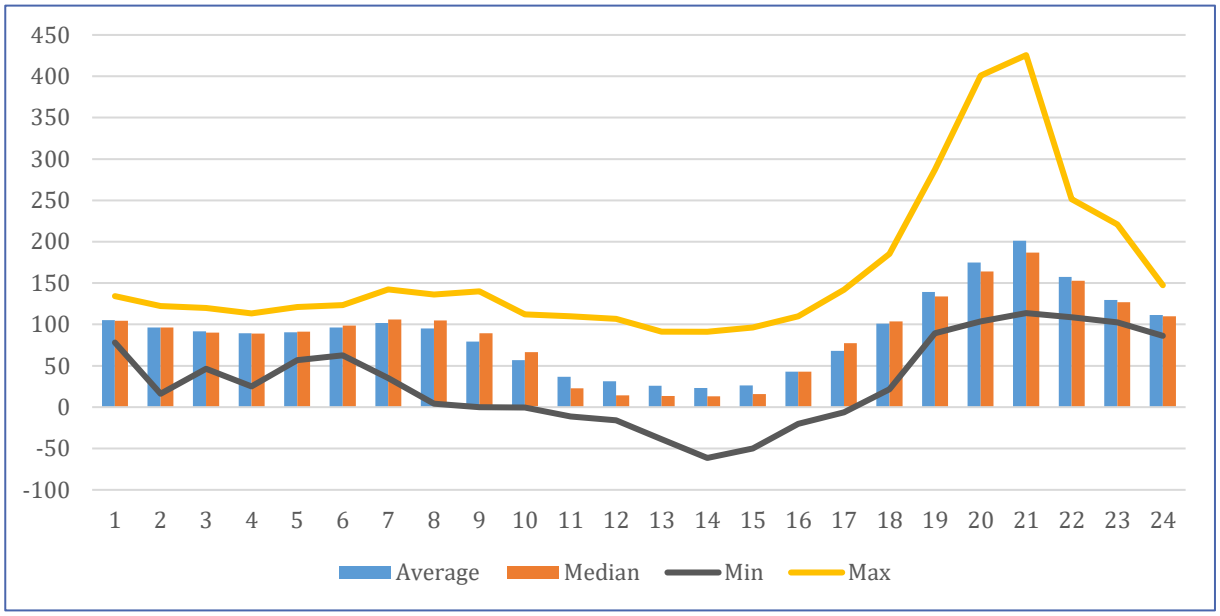


Figure 7: OPCOM prices in autumn of 2025, EUR/MW

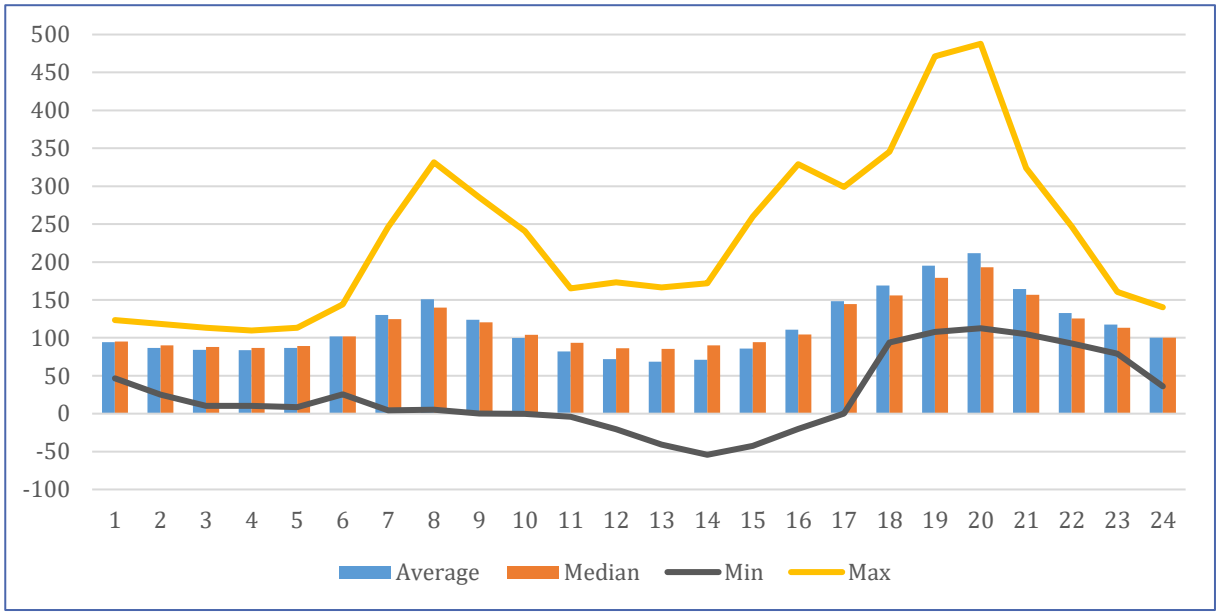


Figure 8: OPCOM prices for the winter of 2025-2026 (December – February), EUR/MWh

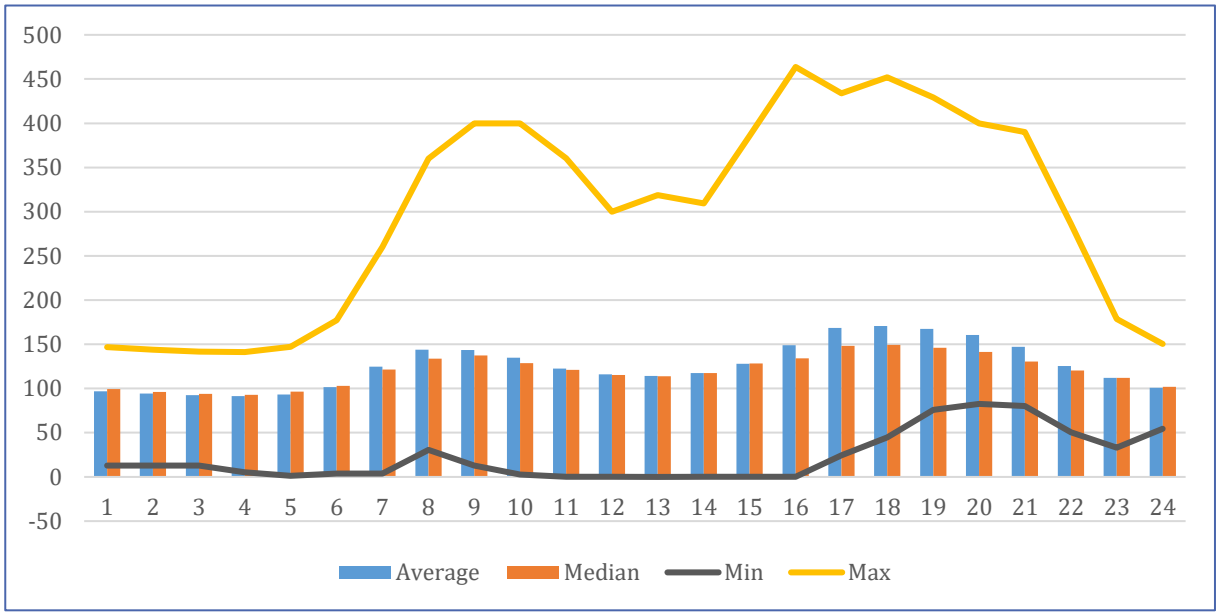
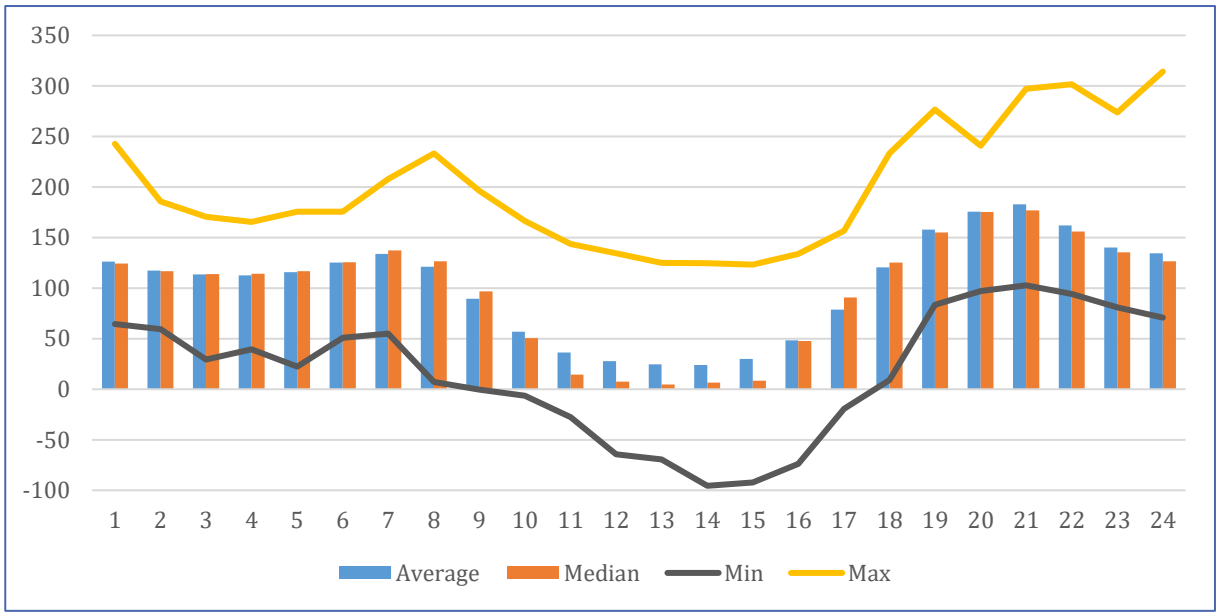


Figure 9: OPCOM prices in the spring of 2026, EUR/MWh



Comments:

- Regardless of the season, there are two price peaks—in the morning and in the evening.
- In the autumn and winter, the average price during peak consumption periods ranges from 150 to 200 EUR/MWh, while the average off-peak price is around 100 EUR.
- In the spring and summer, there is an **excess of energy during the day**, between 10:00 a.m. and 5:00 p.m. CET. During this time, the average price drops to between 0 and 25 EUR/MWh, and **negative prices** are occasionally recorded. Peak prices range from 100 to 200 EUR/MWh.

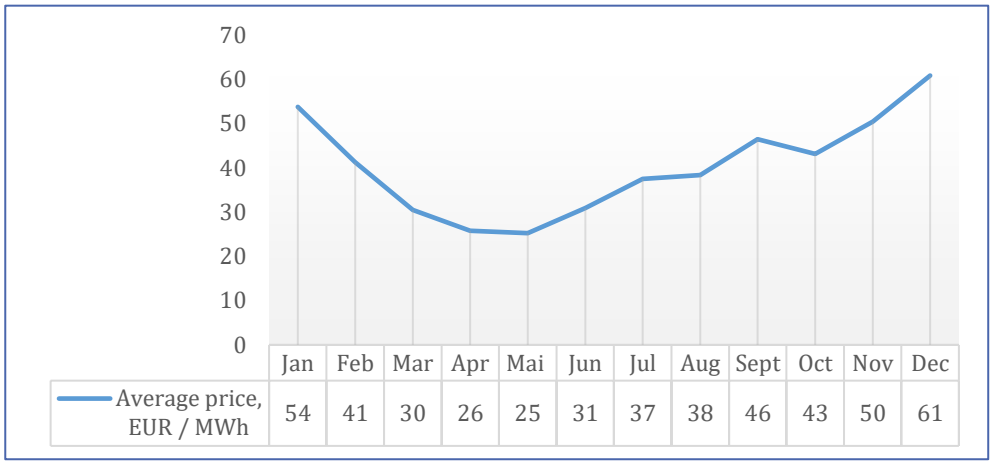
- Bulgaria takes advantage of this peak/off-peak price spread. In April 2026, it imported electricity from Romania during the day at low prices (~50 EUR) and re-exported it in the evening at much higher prices (~250 EUR).[31]

4.2. Historical prices for the past 15 years

Prices for the 2021–2024 period were not analyzed due to distortions related to the energy crisis. On the one hand, the Russian Federation reduced gas supplies to the EU starting in 2021,[32] which led to higher gas and energy prices. On the other hand, Ukraine's energy infrastructure was devastated by attacks from the Russian military, and Ukraine was forced to halt energy exports and rely on massive imports from neighbouring countries.

The year 2020 is partially relevant. From March through June, there was a significant drop in prices as a result of the enforcement of COVID-19 lockdown measures and the global economic shutdown. Starting in July, as restrictions were eased, energy prices gradually rose from 25–30 EUR to 61 EUR/MWh:

Figure 10: OPCOM average monthly prices in 2020, EUR/MWh



	Jan	Feb	Mar	Apr	Mai	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Average price, EUR / MWh	54	41	30	26	25	31	37	38	46	43	50	61

Source: OPCOM monthly reports, https://opcom.ro/tranzactii-rezultate/ro/22

If energy prices fall to a similar level in the future, there is a risk that non-eligible (open market) producers – including those with storage facilities – might be unable to recover their investments or could become insolvent.

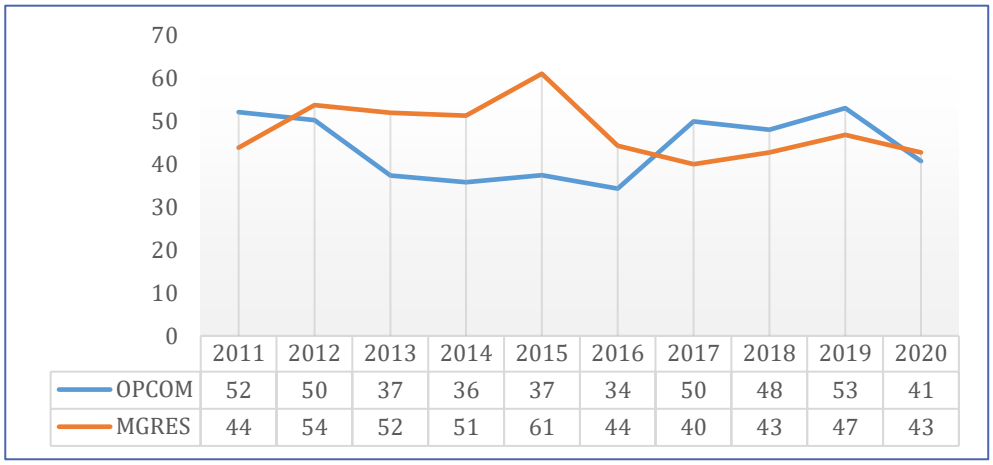
Average annual prices for the period 2011–2020 (Figure 11 below) were also quite low, ranging from 34 EUR/MWh (2016) to 53 EUR/MWh (2019). This price level is not sustainable for renewable energy producers. Therefore, support mechanisms will

[31] Profit.ro, 11.05.2026, De ce are România prețuri mari la energia electrică. AEI explică: Nu contează cât produci, ci când și cum produci [*Why does Romania have high electricity prices? AEI explains: it's not about how much you produce, but when and how you produce it*], https://www.profit.ro/povesti-cu-profit/energie/de-ce-are-romania-preturi-mari-la-energia-electrica-aei-explica-nu-conteaza-cat-produci-ci-cand-si-cum-produci-22440232

[32] „*Cât gaz rusesc este pe piața europeană?*" [*how much russian gas is on EU market*], Sergiu Tofilat, presentation of September 2025, https://youtu.be/c5UsvFaYqJk?si=pQCUH-gUKFfjJCpm and https://drive.google.com/file/d/17UgeicUKnSblTIt3agiokSnYIk84sGEJ/view

be necessary to ensure the viability of renewable energy projects and to achieve the targets set out in the NIECP.

Figure 11: OPCOM annual average prices for 2011–2020, EUR/MWh



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
OPCOM	52	50	37	36	37	34	50	48	53	41
MGRES	44	54	52	51	61	44	40	43	47	43

Source: OPCOM annual report; the price for MGRES in USD was taken from ANRE Moldova's annual reports, and the recalculation was based on the average annual exchange rates for EUR and USD, as published by the National Bank of Moldova (BNM)

As can be seen, prior to the Russian military aggression, energy prices in Romania were comparable to or even lower than the price of energy supplied by the MGRES power plant in the Transnistrian region.

5. Authorities propose necessary, but insufficient solutions

5.1. Reduction of taxes on batteries and equipment

The challenges in the renewable energy sector are on the agenda of the central authorities, which have held a series of public consultations with market participants in recent months. Parliament has drafted a bill that provides for the elimination of customs duties on imports of storage batteries and wind turbines: the customs duty on storage batteries will be reduced from 5% to 0%, and on wind turbines from 8% to 0%. The bill also proposes a VAT refund for batteries from eligible producers.[33]

The authors of the bill have correctly defined its purpose:[34]

- creating a regulatory framework favourable to the development and implementation of projects for the production of electricity from renewable sources that include energy storage solutions, in light of the need to strengthen the Republic of Moldova's energy security and align with the objectives of a sustainable energy transition;

[33] Government press release of May 28, 2026, https://gov.md/index.php/ro/comunicate-de-presa/mai-putine-taxe-pentru-investitiile-energie-verde-guvernul-sustine-facilitati

[34] Law bill no. 108 of April 03, 2026, https://parlament.md/preview?id=f6d20815-c400-4b30-9428-a316817760c6&url=https://ep-sp.parlament.md/materials/639107640137957369/Documents/20260403163241.docx&method=GetDocumentContent

- developing electricity storage capacity is becoming essential for maximizing the use of locally generated renewable energy and reducing dependence on costly imports.

However, the proposed solutions only partially address these objectives. Tax reductions will lower capital expenditures and minimize the impact of asset depreciation on the final cost of generated energy. But the measures fail to offer price incentives or off-take guarantees for the generated power. In other words, the proposed measures will reduce the costs of installing energy storage batteries, but they do not ensure the sustainable development of renewable energy projects.

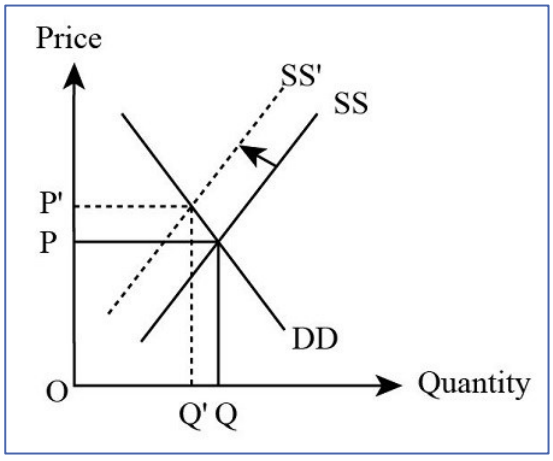
5.2. Market liberalization and the development of OPEM

Another important objective is the complete liberalization of the market for large and medium-sized non-residential consumers, scheduled for January 1, 2027, as well as the integration of the national energy market into the European market. To this end, the Ministry of Energy and OPEM (the Moldovan Energy Market Operator) organized training sessions on trading on the platforms managed by OPEM for 130 participants: electricity producers, suppliers, traders, and other market participants.[35]

Indeed, the creation of a fully functional and liquid exchange is essential in the context of energy market liberalization. However, it is important to consider the **risk factors**:

- the energy deficit during peak hours amounts to 600 MWh;
- the commercial import capacity (NTC) is limited to 200-300 MWh;
- Renewables produce very limited amounts of energy during peak hours.

Under these circumstances, purchasing local energy to meet peak-hour demand could lead to a situation where the **trading price on OPEM is higher than that of imports from Romania (OPCOM)**. The price difference will be included in the tariff and will lead to higher bills for consumers. In other words, when supply decreases, the equilibrium price inevitably rises:



[35] Ministry of Energy press release of May 18, 2026, https://energie.gov.md/ro/content/ministerul-energiei-si-opem-continua-instruirea-participantilor-privind-tranzactionarea-pe

Therefore, energy procurement on the OPEM must take into account the limits of the available energy supply, particularly during peak hours, and the price cap must not exceed the import price (OPCOM) minus the costs of transmission to Moldova.

6. Alternative solutions and regulations promoted in the EU

6.1. Revising the support measures

The Republic of Moldova is already facing a surplus of renewable energy during the day, especially in the spring and summer. In the absence of storage capacity, this energy is either wasted or transferred to Ukraine, creating imbalances. This cannot go on indefinitely—in the future, mechanisms to penalize these imbalances will be implemented, and the costs will be borne by consumers.

Maintaining the existing support mechanisms will lead to a worsening of the situation in the renewable energy sector. **The option of doing nothing** will lead to higher costs for consumers and undermine the objectives set out in the NIECP:

- Even during hours when electricity prices are negative, eligible producers are incentivized to continue generating electricity and sell it at a fixed price, under the support mechanism. Instead of importing electricity at very low or even negative prices, we are required to purchase it at a fixed price.
- The energy surplus will increase even further. We will either have to pay penalties for imbalances if we transfer energy to the Ukrainian grid, or restrict production and pay compensation. These additional costs will be borne by consumers.
- The market for ineligible producers (those in the open market, not receiving support measures) will shrink even further, accelerating their bankruptcy. In that case, we will be forced to import more energy from Romania, while NTC (commercial import capacity) is limited.
- If renewable energy producers in the open market go bankrupt, the goal of having renewable energy account for 30% of final energy consumption by 2030 will not be achieved.

Under these circumstances, it is becoming increasingly clear that support measures must be adapted to the new market realities. There is a need to **develop new support measures** that take the following objectives into account:

- The economic viability of investments in energy storage batteries to ensure the flexibility of intermittent renewable energy sources. Incentives must include a predictable long-term price (5–10 years) and certainty regarding the sale of the energy produced (off-take guarantees for the generated power).

- Support measures should discourage generation during periods of excess energy in the grid and increase supply during peak hours.
- Developing the OPEM electricity exchange and increasing liquidity, laying the groundwork for the liberalization of the energy market for large and medium-sized non-residential consumers.
- Support measures should be applied to energy procurement auctions based on hourly energy delivery schedules that correspond to consumption trends. Energocom applies this principle to energy imports from Romania and Ukraine, as well as to the organization of energy procurement auctions by universal service providers – Premier Energy[36] and FEE-Nord[37]. Load curves can be structured into two product categories – base and peak – or even into three – base, intermediate, and peak – to secure more favourable prices for firm products (base and intermediate):

Figure 12: example with 2 products

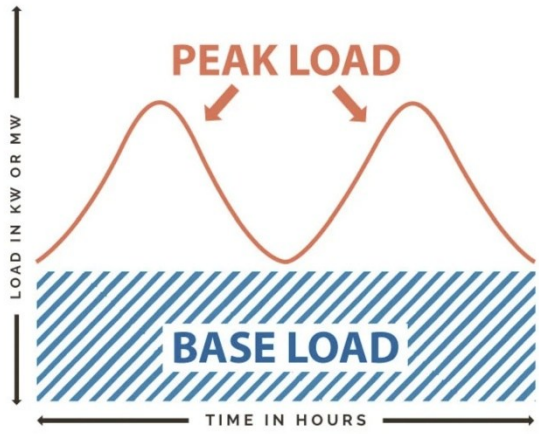


Figure 13: example with 3 products

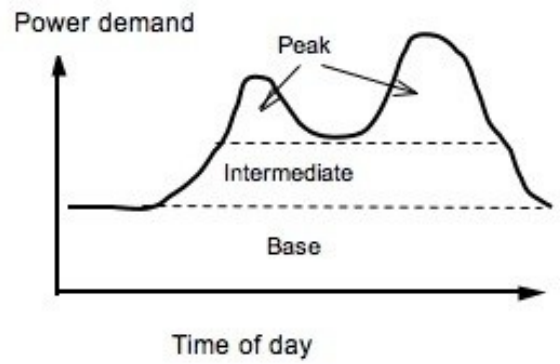


Figure 14: Example of a load curve by hourly intervals for weekdays (average load, MW)

Ora locală	ian.26	feb.26	mar.26	apr.26	mai.26	iun.26
00-01	173	167	176	228	225	258
01-02	152	147	159	204	202	233
02-03	141	137	150	192	191	222
03-04	136	133	146	187	186	215
04-05	136	135	149	189	186	211
05-06	153	157	167	203	193	215

Source: Premier Energy tender specifications

- Price caps to prevent cost increases for consumers. Purchasing energy from local producers should not be more expensive than imports from Romania.

[36] Premier Energy, specifications for the procurement of electricity of November 26, 2025, https://premierenergy.md/wp-content/uploads/2025/11/Caiet_de_sarcini_licitatie_2025.pdf

[37] FEE-Nord, specifications for the procurement of electricity of November 25, 2025, https://fee-nord.md/wp-content/uploads/2025/11/Caiet_de_sarcini_energiei-electrica_2026-licitatie-repetata-2.signed.pdf

Therefore, until the interconnections are completed and the markets are linked, it would be reasonable to set a maximum price cap on energy purchased from local producers.

6.2. European regulations

To strengthen energy independence and achieve the objectives set out in the REPowerEU plan, European countries intend to attract more investment in renewable energy sources. Attracting investment can occur if the market provides a long-term price signal. Member states are promoting power purchase agreements as a long-term market instrument. It is precisely these types of agreements that provide customers with long-term price stability and the certainty needed for producers to make investment decisions.[38]

EU Directive 2018/2001 on the promotion of the use of renewable energy stipulates that Member States shall assess the regulatory and administrative barriers to **long-term contracts for the procurement of energy from renewable sources**, remove unjustified obstacles to such contracts, and promote their adoption, including by exploring ways to reduce the financial risks associated with them, in particular through the use of credit guarantees.[39]

EU Regulation 2024/1747 stipulates that Member States shall promote the use of **power purchase agreements (PPAs)**, [...] in order to ensure price predictability and achieve the targets set out in the NIECP [...], including with regard to renewable energy, while maintaining the competitiveness and liquidity of electricity markets. Price support schemes for investments in new renewable energy generation facilities take the form of **two-way contracts for difference (CfDs)**. These must provide incentives for renewable sources to operate efficiently: they must reflect market conditions and prevent any distorting effect of the support scheme on [...] **bidding behaviour** in energy markets.[40]

How CfDs Work: A fixed price for purchasing energy (*strike price*) is set, but the energy is traded on the exchange. If the exchange price falls below the fixed price, the government compensates the producer. If the exchange price is higher, the producer returns the additional revenue to the government. These revenues are redistributed directly to end consumers to reduce their bills.[41]

[38] EU Regulation 2024/1747, recitals (27) and (28), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401747

[39] Article 15(8) of EU Directive 2018/2001, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02018L2001-20240716&qid=1783675862941

[40] Art. 19a, para. (1), Art. 19d, paras. (1) and (2) of EU Regulation 2024/1747, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401747

[41] ENTSO-E position paper, „Sustainable Contracts for Difference (CfDs) Design, February 2024, https://www.entsoe.eu/2024/02/20/position-paper-on-sustainable-contracts-for-difference-design/

Member States shall report every two years on the measures that promote the use of renewable energy procurement contracts, as set out in the NIECP, and provide information on renewable energy production supported by such contracts.[42] Each Member State shall submit to the Commission an interim report on the status of implementation of the NIECP, including an analysis of actual investments compared to the initial investment assumptions.[43]

The provisions regarding PPAs and CfDs have been transposed into national law, but the support mechanism provides incentives for installed capacity rather than for the energy produced, which creates inefficiencies – eligible producers are encouraged to generate energy even when the grids are congested.

Obstacles to the operation of PPAs are also being analyzed at the European level. In March 2026, the Agency for the Cooperation of European Regulators (ACER) launched **public consultations on the implementation of PPAs** to identify the main regulatory, financial, and market factors affecting the development and operation of PPAs in member states.[44]

Last year, ACER released its first-ever report monitoring PPA contracts. The PPA market has seen significant growth in recent years. Between 2020 and 2024, the volume of contracted energy capacity tripled, driving new investments in renewable energy projects across the EU.[45] **The average duration of PPAs** across Europe ranges from **6 to 10 years**. Among the challenges identified by ACER are the increasingly frequent occurrences of negative prices on the power exchange, support mechanisms that are inappropriate in the current context, and the need to aggregate or group demand to facilitate access to PPAs for large and medium-sized consumers. Several relevant examples are presented below:

Italy	It is among the first countries to have switched to trading products to cover base load and peak load. PPA contracts have a term of 5–10 years.
Spain	It has the most developed PPA market and widely employs innovative contract mechanisms—including various types of renewable technologies, multiple buyers, and terms designed to reduce the occurrence of negative prices.

[42] *Supra* note 38 (EU Directive 2018/2001)

[43] Article 17 of EU Regulation 2018/1999, https://eur-lex.europa.eu/legal-content/RO/TXT/PDF/?uri=CELEX:02018R1999-20231120

[44] ACER press release of March 09, 2026, https://www.acer.europa.eu/news/acer-will-consult-developments-initiatives-eu-power-purchase-agreements-market

[45] ACER monitoring report, „Power Purchase Agreements country sheets", November 2025, https://www.acer.europa.eu/sites/default/files/documents/Publications_annex/ACER-PPA-Country-sheets-2025.pdf

Denmark	It is among the European leaders in the development of renewable energy sources, having commissioned the world's first offshore wind farm as early as 1991. The target set for 2030 was to reach an installed capacity of 14 GW. However, the cancellation of the 2024 tender for wind farms with a capacity of 6 GW—for which no bids were received—prompted the authorities to revise their support measures. In 2025, a new tender for 2.8 GW was launched, based on rules adapted to market realities:[46] • a two-way CfD (contract for difference) support mechanism with a 20-year term. • If the exchange price is lower than the fixed price, government compensation is capped to prevent negative prices. On the other hand, if the exchange price is higher than the price set in the contract, the return of the additional revenue to the government is not capped. • Strict environmental criteria – recycling wind turbine blades, protecting nature. • Cybersecurity requirements.

6.3. Appropriate tools for Moldova

Attracting investment in energy storage batteries would make it possible to capture excess energy generated during the day and use it to cover energy shortages during peak hours. Based on the consumption pattern, it is necessary to develop new support measures – power purchase agreements (PPAs) based on hourly load profiles, as described in Chapter 6.1 (Figures 12–14). Unlike existing measures, this approach has the following advantages:

- The load schedule will create incentives for energy production in line with the consumption pattern, thus avoiding grid congestions.
- It will enable producers in the open market to be integrated into the support mechanisms. Long-term contracts (5–10 years) create the conditions for investments in renewable energy with storage to become bankable. This will prevent the bankruptcy of producers in the open market and achieve the target of 30% renewable energy in final energy consumption. Existing (not necessarily new) renewable energy sources are eligible for PPAs in European countries.[47]

[46] Coralpoint, Denmark's Offshore Wind Market: Lessons, Reforms and New Momentum, November 27, 2025, https://coralpointgroup.com/denmarks-offshore-wind-market-lessons-reforms-and-new-momentum/

[47] Re-Source platform, „RE-Source's corporate PPA guide", July 2025, https://resource-platform.eu/wp-content/uploads/RE-Source_Corporate_PPA_Guide_July2025.pdf

- Increased liquidity on the OPEM exchange in more concise terms: storage batteries can be installed in 6–9 months, compared to the 36-month timeframe specified in the auction for wind power plants.

Given that there is currently the option to import energy from Romania, the possibility of capping prices in PPA contracts should be considered. Support measures must ensure that the price in PPA contracts does not exceed the price at which energy is purchased on the OPCOM exchange. This will help avoid additional costs for consumers. However, a future decline in OPCOM prices to 40–50 EUR/MWh, as seen in 2020, this could jeopardize the viability of local renewable energy producers. Accordingly, the price cap must consider a minimum price that ensures the economic viability of renewable energy sources with storage.

This study focuses primarily on economic and financial aspects. However, it is worth noting certain important technical provisions:

- **Operational data on energy consumption** only partially reflects the actual situation: it records only the energy transferred from transmission grids to distribution grids. Energy generation at renewable energy facilities connected to distribution grids is not reflected. To accurately monitor the actual balance between production and consumption, operational data on renewable energy fed into distribution networks must be transmitted to Moldelectrica. This will enable price signals to be sent to market participants regarding energy surpluses or deficits in the networks.
- Approval of requirements regarding the **tracking of curtailed energy**. Currently, no statistical information is available regarding the amount of renewable energy not delivered as a result of curtailment of production.
- **Grid expansion and additional infrastructure:** the ability to integrate renewable energy sources depends on the capacity of the power grids and the requirements for maintaining voltage and frequency levels in the grids.
- **Recycling of wind turbines, solar panels, and batteries:** support measures and requirements for connecting renewable energy sources to the grid must take environmental considerations into account.