PERSPECTIVES ON THE DEVELOPMENT OF RENEWABLE ENERGY IN THE REPUBLIC OF MOLDOVA IN THE CONTEXT OF ECONOMIC SUSTAINABILITY

Vitalie TOMA
PhD student, Moldova State University, Moldova
E-mail: toma.vitalie@usm.md
ORCID 0009-0008-6765-3491

Boris COREȚCHI
PhD, Associate professor, Moldova State University, Moldova
E-mail: boris.coretchi@usm.md
ORCID 0000-0001-8841-4838

Abstract: *The development of renewable energy sources has become a strategic priority for strengthening energy security and supporting economic sustainability in the Republic of Moldova. Given the country's high dependence on imported energy resources, the expansion of domestic renewable energy production is essential for reducing external vulnerabilities and improving economic resilience. This study aims to analyze the prospects for renewable energy development in the Republic of Moldova and to assess its impact on energy security and economic sustainability, with particular attention to the role of energy storage systems and regional energy hubs. The research is based on a mixed methodological approach that combines descriptive statistical analysis, energy scenario modeling for the period up to 2035, and an indicative economic evaluation of investments in renewable energy infrastructure. The results show that installed renewable electricity capacity increased rapidly, reaching approximately 950–980 MW by the end of 2025, while the share of renewable electricity in national consumption also grew significantly. At the same time, the effective use of this potential remains limited by the variability of solar and wind generation, grid constraints, and the lack of storage capacity. In response, the paper proposes a conceptual model based on three regional energy hubs integrating renewable generation, battery storage, and digital energy management systems. The findings suggest that such infrastructure could improve system flexibility, reduce energy imports, and support Moldova's long-term energy transition.*

Keywords: *renewable energy, energy security, economic sustainability, energy hubs, energy storage.*

JEL Classification: *Q42, Q48, O13.*

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1. Introduction

Energy transition is one of the most important economic and technological transformations of the last decades, driven by the need to reduce greenhouse gas emissions, enhance energy security, and develop sustainable economic models. In this context, energy from renewable sources has become a central element of energy policies at the global level, contributing to the diversification of the energy mix and the reduction of dependence on fossil fuels.

For states with a high degree of energy dependence, the development of domestic renewable energy generation capacities represents not only an energy policy option, but also a strategic necessity for strengthening economic resilience. In recent years, numerous economies have accelerated investments in clean energy technologies, smart energy infrastructure, and energy system flexibility mechanisms in order to facilitate the integration of increasingly larger volumes of renewable energy (International Renewable Energy Agency, 2023).

The Republic of Moldova has traditionally faced a high level of dependence on energy imports, which creates economic and geopolitical vulnerabilities. At the same time, the country has significant potential for the development of renewable energy, especially in the fields of solar, wind, and biomass energy. In recent years, the renewable energy sector has experienced rapid growth, driven both by the implementation of support mechanisms for green energy producers and by the increasing investment interest in this field (Popescu & Stoica, 2024; Toma & Coretchi, 2024).

However, accelerating the development of renewable capacities also generates new challenges for the energy system. The variable production specific to solar and wind energy, together with the limitations of the existing energy infrastructure, may lead to fluctuations in energy flows within the grid and to difficulties in integrating large volumes of renewable energy. Under these conditions, the development of energy storage infrastructure and energy flexibility mechanisms becomes essential for ensuring the stability of the energy system.

In the specialized literature and in the practice of modern energy systems, energy hubs represent one of the innovative solutions for the efficient integration of decentralized renewable energy production. These infrastructures allow the aggregation of production from multiple renewable sources, the integration of energy storage systems, and the optimization of energy flows through digital energy management platforms (Geidl & Andersson, 2007; Lund et al., 2017).

In this context, the purpose of the present study is to analyze the prospects for renewable energy development in the Republic of Moldova and to assess its impact on energy security and economic sustainability. The research examines the recent evolution of renewable capacities, analyzes the challenges associated with their integration into the energy system, and proposes a conceptual model for the development of regional energy hubs aimed at increasing the efficiency of renewable energy use.

By modeling energy development scenarios through 2035, the study highlights how the integration of storage systems and energy hubs can contribute to increasing the share of renewable energy in national electricity consumption, reducing dependence on energy imports, and strengthening the economic sustainability of the Republic of Moldova.

2. Literature Review

The transition toward sustainable energy systems represents one of the most important structural transformations of the global economy in recent decades. Growing concerns about climate change, energy security, and the volatility of energy markets have led governments and international organizations to strongly promote the development of renewable energy sources, regarded as a central pillar of the energy transition and sustainable development.

The concept of sustainable development was established in economic literature through the Brundtland Report, which defines sustainable development as meeting the needs of the present generation without compromising the ability of future generations to meet their own needs (Luca, 2025; Sachs et al., 2019). This concept was later reinforced through the 2030 Agenda for Sustainable Development, which sets global objectives for sustainable economic growth and environmental protection.

In the specialized literature, energy security is defined as the capacity of an energy system to ensure the continuous and reliable supply of energy for the economy and society (Cherp & Jewell, 2014). For states with a high dependence on energy imports, the development of renewable sources contributes to the diversification of the energy mix and to the reduction of economic and geopolitical vulnerabilities.

At the same time, numerous studies highlight the economic benefits of renewable energy, including job creation, the stimulation of technological innovation, and the reduction of external costs associated with pollution and climate change. However, the integration of renewable energy into energy systems also raises technical challenges, since solar and wind energy are characterized by high variability. In this context, the literature emphasizes the importance of developing energy flexibility infrastructures, such as storage systems and smart grids (Lund et al., 2017).

A concept increasingly analyzed in academic literature is that of energy hubs, defined as integrated infrastructures that enable the conversion, storage, and distribution of energy originating from multiple sources, while optimizing energy flows within a complex system (Geidl & Andersson, 2007). Such infrastructures facilitate the integration of decentralized renewable energy production and contribute to increasing the flexibility of energy systems (Lund et al., 2017).

In Eastern Europe, the energy transition is closely linked to the modernization of energy infrastructure and the reduction of dependence on energy imports. Analyses by the Energy Community Secretariat highlight that the development of renewable energy represents a strategic priority for the states in the region.

In the case of the Republic of Moldova, the specialized literature indicates significant potential for the development of solar, wind, and biomass energy. However, the efficient integration of these sources into the national energy system remains conditioned by the capacity of the infrastructure to manage variable production and by the existence of adequate institutional and technological solutions. In this regard, recent studies underline the relevance of strengthening the institutional framework and energy governance mechanisms in order to stimulate investment and increase the resilience of the national energy system (Toma & Coretchi, 2024).

3. Methodology

The research uses a mixed methodological approach that combines descriptive statistical analysis, energy scenario modeling, and the economic assessment of investments in renewable energy. The methodological objective of the study is to evaluate the impact of renewable energy development on the energy security and economic sustainability of the Republic of Moldova.

The analysis is based on official data from national and international institutional reports concerning the structure of the energy system, installed capacities, and electricity consumption. The main sources used include reports from the National Center for Sustainable Energy, the Ministry of Energy of the Republic of Moldova, the National Agency for Energy Regulation, and analyses on the structure of energy procurement published by Energocom. For the assessment of technological costs and global trends in the energy transition, data published by the International Renewable Energy Agency and the International Energy Agency were used. The integration of the energy system of the Republic of Moldova into the European market was analyzed on the basis of ENTSO-E documents.

The research methodology includes a descriptive analysis of the evolution of installed capacities and electricity consumption, as well as the conversion of installed capacities into annual energy production using capacity factors specific to renewable technologies. The conversion between installed capacity and annual energy produced was carried out using the following relationship:

$$E_{an}(TWh) = \frac{P_{inst}(MW)\ x\ CF\ x\ 8760\ (hours/year)}{10^6} \quad (1)$$

where P_{inst} represents the installed capacity, and *CF* represents the capacity factor of the technology under analysis.

Within the scenario modeling, indicative capacity factors were used for the main renewable technologies: solar energy (0.15-0.16), wind energy (0.24-0.30), biogas (0.80-0.85), and hydropower (0.30–0.35). The research includes the modeling of three energy system development scenarios for the 2030–2035 period: a conservative scenario, an accelerated renewable energy integration scenario, and a scenario oriented toward reducing energy dependence.

The economic assessment of investments uses indicative technology costs of approximately USD 750/kW for photovoltaic installations, USD 1,200/kW for onshore wind turbines, and approximately USD 250/kWh for battery energy storage systems. The results are interpreted in the context of the macroeconomic impact of the energy transition, especially with regard to reducing energy imports and increasing economic resilience.

4. Results and Discussion

In recent years, the Republic of Moldova has recorded a significant increase in the share of electricity generated from renewable sources, marking important progress in the energy transition process. At the end of 2025, approximately 29.1% of gross final electricity consumption was covered by electricity production from renewable energy sources. This estimate was made based on electricity production data reported by distribution system operators, correlated with the data on gross final electricity consumption published monthly by the National Bureau of Statistics (CNED, 2025).

In the case of prosumers, the volume of electricity produced was estimated according to the methodology provided in the Regulation on the calculation of energy consumption from renewable sources, approved by Government Decision No. 74/2025 (Government of the Republic of Moldova, 2025). The increase in the number of prosumers, together with the development of commercial renewable energy projects, directly contributes to increasing the share of green energy in final electricity consumption. Both prosumers and commercial renewable energy producers play an important role in strengthening installed capacities and, implicitly, in enhancing the energy security of the Republic of Moldova (Ministry of Energy of the Republic of Moldova, 2025).

The positive evolution of the sector confirms progress toward the objectives set in the National Integrated Energy and Climate Plan 2025-2030, which предусматривает reaching a share of at least 27% energy from renewable sources in gross final energy consumption and 31.2% electricity from renewable sources by 2030. At the same time, these developments contribute to the reduction of greenhouse gas emissions and to the alignment of the Republic of Moldova with the objectives of the European green transition.

The dynamics of installed capacities reflect a significant acceleration of investments in the renewable energy sector. While in 2020 the installed capacity was approximately 77 MW, according to data processed by the National Center for Sustainable Energy, by the end of 2025 the total installed capacity had exceeded approximately 950–980 MW. Growth was particularly rapid in 2025, when more than 400 MW of new capacity were installed, representing around 40% of the total existing capacity and turning 2025 into a landmark year for the development of renewable energy in the Republic of Moldova.

The current structure of renewable capacities is dominated by photovoltaic energy, which accounts for approximately 70-72% of the total installed capacity, followed by wind energy, with approximately 25-27%, while the remainder is represented by biomass installations and small hydropower plants. Most of these capacities have been developed in the form of small- and medium-sized energy parks, directly connected to the distribution networks of energy operators. Under this operational model, the electricity produced is injected directly into the grid and transmitted to consumers through the existing energy infrastructure (National Center for Sustainable Energy, 2025; Energy Community Secretariat, 2024).

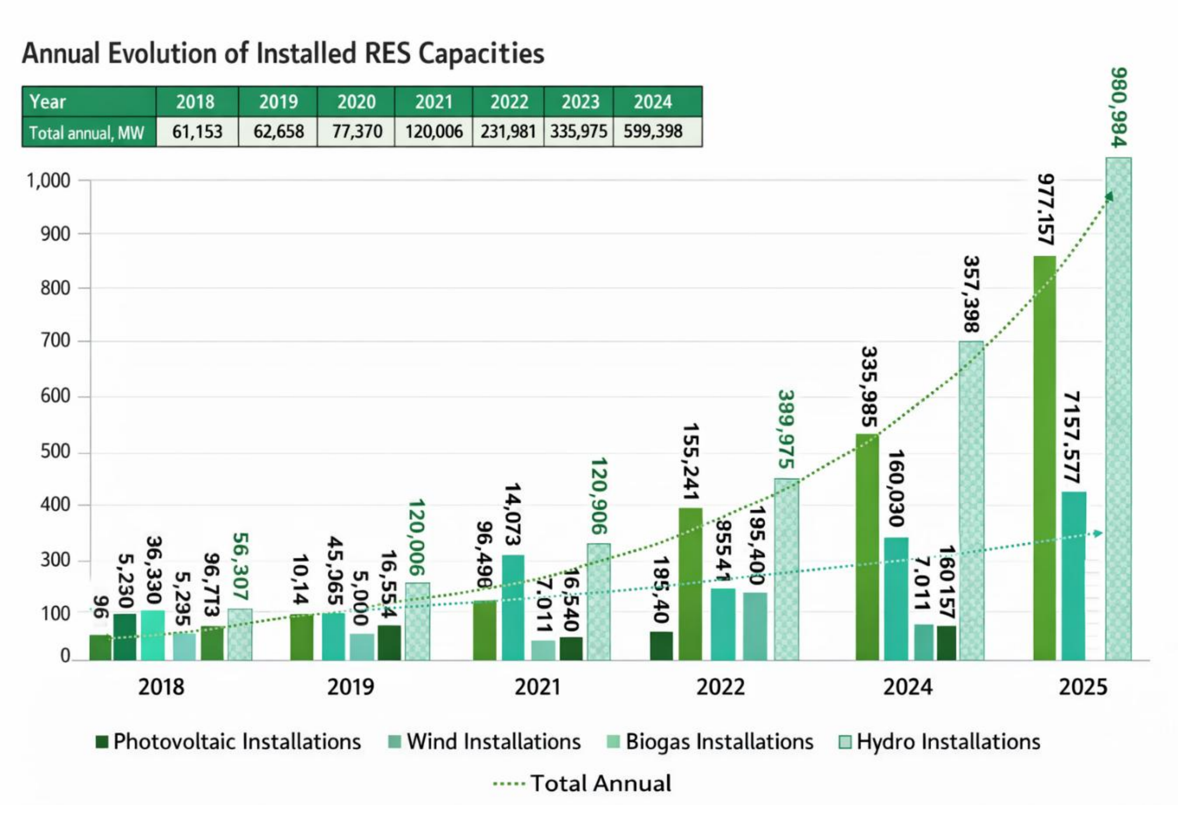

Fig. 1. Annual evolution of installed renewable energy capacities

Source: *elaborated by the authors based on the National Center for Sustainable Energy (2025), https://cned.gov.md/ro/content/capacitati-instalate and the National Agency for Energy Regulation (2025), https://anre.md.*

Under these conditions, renewable energy covers approximately 28% of national electricity consumption. However, the current energy system faces several important structural limitations:

- lack of energy storage infrastructure;
- variability in solar and wind energy production;

- grid constraints during periods of high production.

As a result, part of the renewable energy produced cannot be used efficiently.

During periods when local production exceeds domestic consumption, surplus energy is injected into the electricity grid. Consequently, the energy system is becoming increasingly decentralized, being supplied simultaneously by hundreds of energy parks and thousands of small-scale photovoltaic installations.

Although this model allows for the rapid integration of renewable energy into the energy system, the accelerated and dispersed development of renewable capacities generates a series of technical and economic challenges. First, solar and wind energy production is characterized by a high degree of variability, determined by weather conditions. This variability can lead to significant fluctuations in energy flows within the grid, especially during periods when renewable energy production exceeds instantaneous system demand.

Secondly, electricity distribution and transmission networks were not originally designed to handle large volumes of decentralized generation. In the context of the rapid growth of renewable capacities and the expansion of prosumers, this situation may lead to congestion in energy infrastructure and limit the system's capacity to integrate new energy projects (Energy Community Secretariat, 2024; International Energy Agency, 2023).

In theory, each renewable energy park or even each prosumer could integrate its own energy storage systems in order to reduce the impact of production variability. However, such an approach would lead to the fragmentation of energy infrastructure and to an increase in total system costs, since the installation of individual storage systems for each facility does not allow the benefits of economies of scale to be fully realized.

In this context, the development of regional energy hubs may represent an efficient solution for the coordinated integration of renewable energy production. Through these hubs, surplus energy generated in certain areas or periods, including energy produced by households or renewable energy parks, can be directed to centralized storage systems or redistributed to other areas of the network where there is a production deficit.

In this way, energy hubs can function as balancing and flexibility mechanisms for the energy system, reducing grid fluctuations and facilitating the integration of additional renewable energy capacities.

The integration of prosumers into these regional energy platforms transforms decentralized production into a collective resource of energy flexibility, allowing the aggregation of production from thousands of small installations. At the same time, the centralization of storage and energy management functions at the hub level enables the reduction of investment costs and increases the economic efficiency of the energy system (International Energy Agency, 2023; International Renewable Energy Agency, 2023; Lund et al., 2017).

Therefore, energy hubs would not replace the existing energy infrastructure, but would function as regional platforms for integrating decentralized energy production, connecting renewable energy parks, prosumers, and storage systems within a coordinated mechanism for managing energy flows. In the context of the accelerated development of renewable energy in the Republic of Moldova, the implementation of such energy hubs could represent an essential element for strengthening energy security and creating a more flexible, efficient, and sustainable energy system (Geidl & Andersson, 2007; Lund et al., 2017).

To better understand their role in modern energy systems, an energy hub can be defined as an integrated energy infrastructure that connects multiple renewable energy generation facilities with storage systems, digital energy management systems, and electricity transmission infrastructure. The main purpose of the hub is to optimize the production, storage, and distribution of energy within an energy system characterized by a high share of renewable sources.

Within the energy hub, the energy flow can be described through the following functional structure:

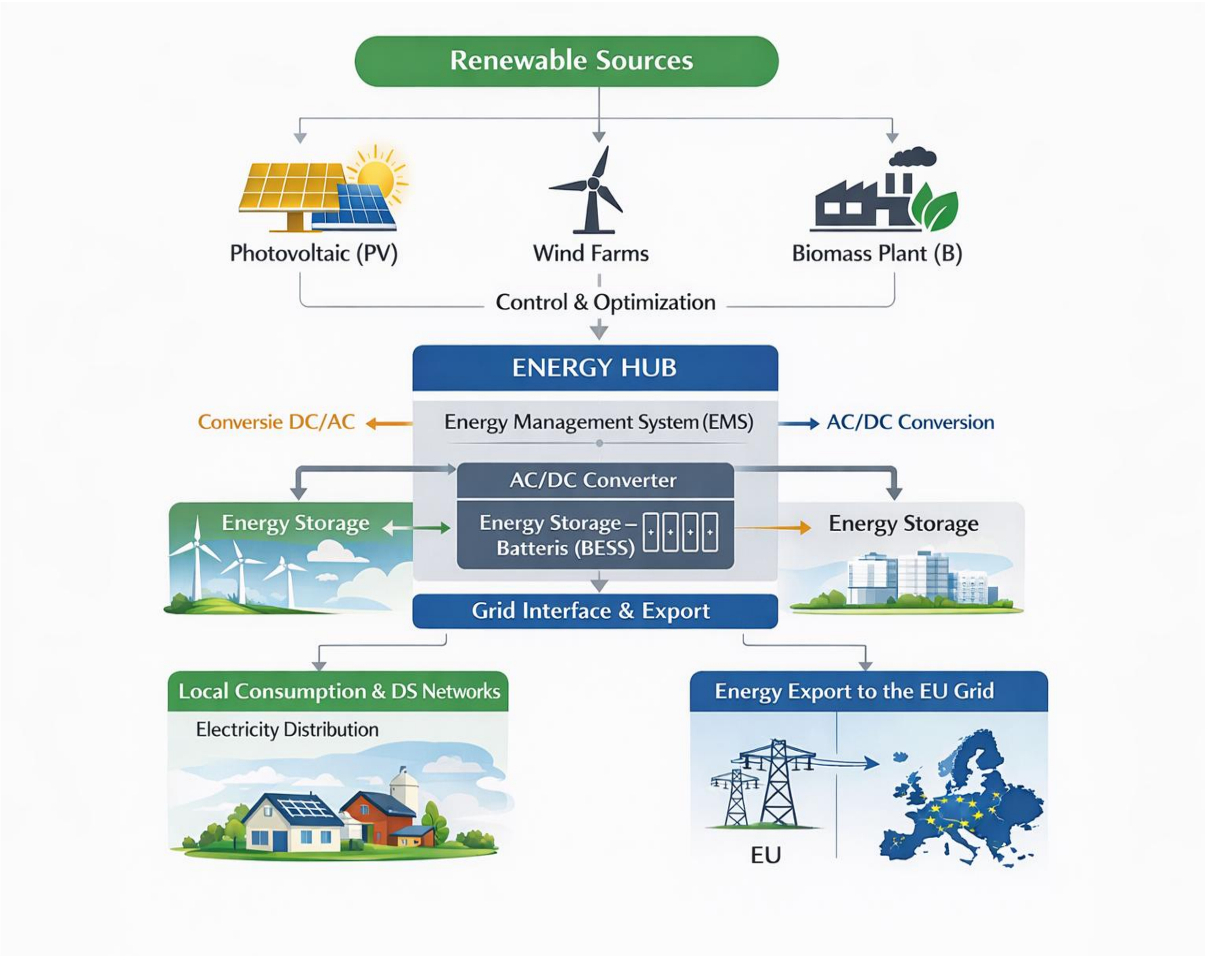

Fig. 2. Annual evolution of installed renewable energy capacities

Source: *elaborated by the authors based on Geidl & Andersson (2007) and Lund et al. (2017)*

To increase the efficiency of renewable energy utilization, the study proposes the implementation of regional energy hubs that integrate existing and future renewable production into a coordinated energy system.

The energy hub represents a regional energy node that performs multiple functions:

- aggregation of renewable production from multiple energy parks;
- storage of energy in large-capacity batteries;
- optimization of energy flows through digital management systems;

- delivery of energy to the grid during periods of high demand.

The system is coordinated by an Energy Management System (EMS), which monitors production and consumption and optimizes energy flows in real time. For the Republic of Moldova, the development of three regional energy hubs is proposed.

Table 1. Conceptual model for the distribution of regional energy hubs

Energy Hub	**Integrated Capacity**
North Hub	~300 MW
Central Hub	~350 MW
South Hub	~300 MW
Total	~950 MW

Source: *elaborated by the authors based on the National Center for Sustainable Energy (2025), https://cned.gov.md/ro/content/capacitati-instalate, and the National Agency for Energy Regulation (2025), https://anre.md.*

These hubs do not imply building all capacities from scratch, but rather integrating the existing capacities into a coordinated energy infrastructure. Annual electricity production can be estimated using the following relationship:

$$E = P \times CF \times 8760 \qquad (2)$$

where:

- E represents the annual energy produced (MWh);
- P represents the installed capacity (MW);
- CF represents the capacity factor;
- 8760 represents the number of hours in a year.

For each technology, the following average capacity factors can be used:

Table 2. Estimation of annual energy production

Technology	Capacity	Capacity Factor	Annual Production
Solar	650 MW	0.15	~854 GWh
Wind	250 MW	0.28	~613 GWh
Biomass	40 MW	0.80	~280 GWh
Hydro	10 MW	0.30	~26 GWh
Total	950 MW		~1.77 TWh

Source: *elaborated by the authors based on the National Center for Sustainable Energy (2025), https://cned.gov.md/ro/content/capacitati-instalate and the International Energy Agency (2022), https://www.iea.org/reports/world-energy-outlook-2022*

At present, not all of this energy can be used efficiently, and it is estimated that approximately 10-12% of renewable energy is lost due to the limitations of the electricity grid (Energy Community Secretariat, 2024; International Renewable Energy Agency, 2023).

An essential role in the functioning of the energy hub is played by Battery Energy Storage Systems (BESS), which allow the absorption of surplus energy produced during periods of high generation and its delivery during periods of increased demand. In energy systems with a high share of renewable energy, storage becomes a fundamental element for maintaining the stability of the electricity grid.

The optimal storage capacity can be estimated using the relationship: $BESS = \alpha \times P_{SER}$ where P_{SER} represents the total installed capacity from renewable sources connected to the hub, and **α** represents the storage sizing coefficient, typically ranging between 0.25 and 0.40 in energy systems with a high share of solar and wind energy (International Renewable Energy Agency, 2022).

Thus, for an energy hub that integrates approximately 950 MW of renewable capacities, the optimal storage capacity can be estimated as follows:

$$BESS = 0{,}3 \times 950 = 285\ MWh \qquad (3)$$

This level of storage would allow the absorption of surplus energy produced during peak solar generation hours and would contribute to stabilizing energy flows within the electricity grid. The results show that energy hubs could increase the share of renewable energy by approximately 3 percentage points under current conditions.

In the analyzed development scenario, installed renewable capacity could increase by approximately 700 MW, reaching around 1,650 MW by 2035.

Table 3. Scenarios for the integration of renewable energy and storage systems in the Republic of Moldova

Indicator	2025 Current System	2025 with Energy Hub	2035 without Hub (1650 MW)	2035 with Energy Hub
Installed renewable capacity	~950 MW	~950 MW	~1650 MW	~1650 MW
Storage capacity	~0 MWh	~285 MWh	~0 MWh	~495 MWh
Storage investment (BESS)	—	≈85 mil €	—	≈150 mil €
Theoretical renewable production	~1.77 TWh	~1.77 TWh	~3.0 TWh	~3.0 TWh
Effectively used energy	~1.55 TWh	~1.72 TWh	~2.60 TWh	~3.00 TWh
Lost energy (curtailment)	~0.22 TWh	~0.05 TWh	~0.40 TWh	~0.05 TWh
National energy consumption	~4.5 TWh	~4.5 TWh	~4.5 TWh	~4.5 TWh
Renewable share	~28 %	~31 %	~58 %	~66 %
Savings from reduced imports	—	~8–9 mil € / year	—	~15–18 mil € / year
Estimated payback period	—	≈11–12 years	—	≈8–9 years

Source: *elaborated by the authors based on the National Center for Sustainable Energy (2025), https://cned.gov.md/ro/content/capacitati-instalate; the National Agency for Energy Regulation (2025), https://anre.md; BloombergNEF (2024), https://about.bnef.com; the International Energy Agency (2022, 2023), https://www.iea.org; and the International Renewable Energy Agency (2022, 2023), https://www.irena.org.*

The comparative analysis highlights that the implementation of energy hubs can significantly contribute to increasing the efficiency of renewable energy utilization within the energy system of the Republic of Moldova.

Under current conditions, although installed renewable energy capacity exceeds approximately 950 MW, part of the energy produced cannot be fully utilized due to the limitations of the energy infrastructure and the absence of storage systems. In this context, renewable energy covers approximately 28% of national electricity consumption.

The integration of these capacities into regional energy hubs, equipped with storage systems with a capacity of approximately 285 MWh, would allow the recovery of a significant share of the lost energy and could increase the share of renewable energy to approximately 31% of national electricity consumption.

The impact of this infrastructure becomes much more pronounced in the development scenario projected for 2035. If installed renewable capacity increases by approximately 700 MW, reaching around 1,650 MW, annual renewable energy production could exceed 3 TWh.

In the absence of storage infrastructure and energy hubs, approximately 10–15% of this energy could be curtailed or lost due to grid constraints and the variability specific to solar and wind sources. Under these conditions, the effectively utilized production would be approximately 2.6 TWh, which would represent around 58% of national electricity consumption.

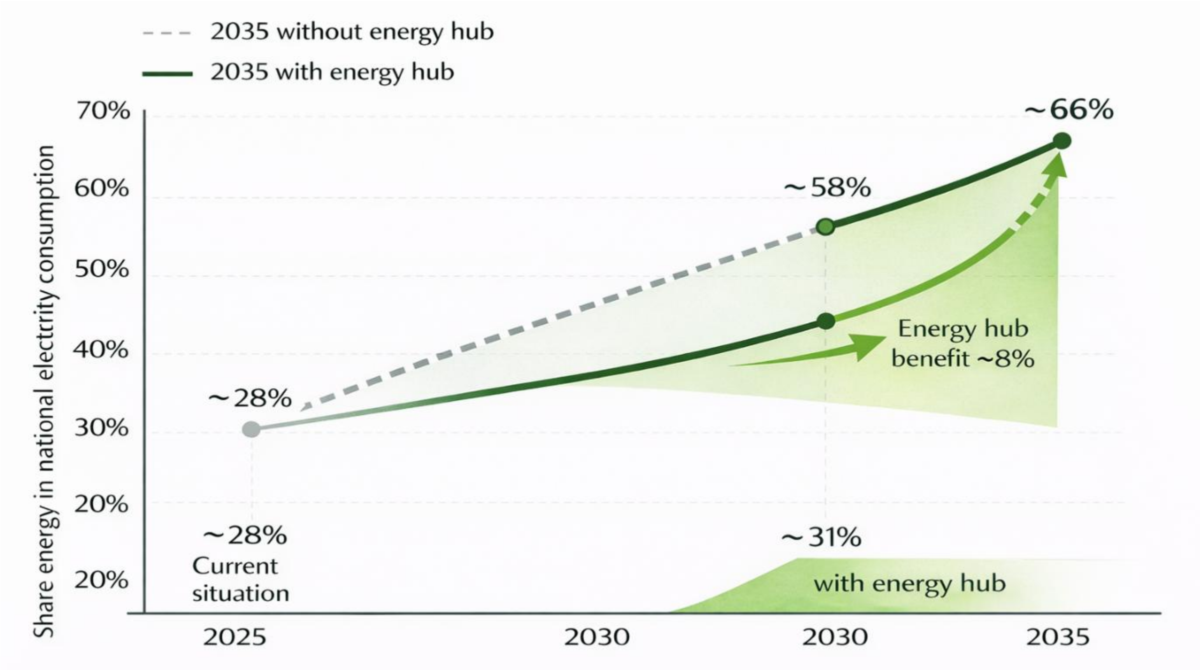

Fig. 3. Estimated share of renewable energy in national electricity consumption under the scenarios with and without an energy hub, 2025-2035.

Source: *elaborated by the authors based on the National Center for Sustainable Energy (2025), https://cned.gov.md/ro/content/capacitati-instalate; the National Agency for Energy Regulation (2025), https://anre.md; BloombergNEF (2024), https://about.bnef.com; the International Energy Agency (2022, 2023), https://www.iea.org; and the International Renewable Energy Agency (2022, 2023), https://www.irena.org.*

By implementing energy hubs and storage systems with an estimated capacity of approximately 495 MWh, nearly the entire amount of renewable energy produced could be utilized. In this scenario, the share of renewable energy in the national energy mix could reach approximately 66%, representing an increase of about 8 percentage points compared to the scenario without energy hubs, and would significantly contribute to reducing the Republic of Moldova's dependence on electricity imports.

From an economic perspective, the implementation of energy hubs mainly involves investments in energy storage systems and digital energy management infrastructure. The average cost of utility-scale storage systems is currently estimated at approximately EUR 250-350/kWh (BloombergNEF, 2024; International Renewable Energy Agency, 2022).

In the current scenario, for a storage capacity of approximately 285 MWh, the total investment could be estimated at EUR 85 million. To this value are added the costs of energy management systems (EMS), grid integration, and energy hub infrastructure, leading to a total estimated investment of approximately EUR 90-110 million for the implementation of three regional energy hubs.

In the development scenario through 2035, storage capacity would need to be expanded to approximately 495 MWh. The total investment could reach approximately EUR 150 million. The economic benefits are generated primarily by the reduction of electricity imports. The additional energy utilized through the use of storage is estimated at approximately 170 GWh annually under current conditions.

The results indicate that investments in energy hubs and storage systems can be recovered within a relatively moderate period. In the current scenario, the savings generated through the reduction of electricity imports may exceed EUR 8-9 million annually, leading to an estimated payback period of approximately 11-12 years.

In the development scenario through 2035, the increase in renewable capacity and in the volume of utilized energy may generate savings of EUR 15–18 million annually, reducing the investment payback period to approximately 8-9 years.

Compared with the current model, in which each renewable energy park injects electricity directly into the grid, energy hubs offer several systemic advantages.

Table 4. Comparative characteristics of the current model and the energy hub model in the integration of renewable sources

Current model	Energy hub model
Dispersed parks	Aggregated production
No regional coordination	Centralized energy management
Limited storage	Integrated storage
Large grid fluctuations	Local energy balancing
Fragmented costs	Economies of scale

Source: *elaborated by the authors based on Geidl & Andersson (2007), Lund et al. (2017), the International Renewable Energy Agency (2022), https://www.irena.org, and the International Energy Agency (2023), https://www.iea.org.*

By aggregating renewable energy production into a regional energy node, the energy hub can reduce production variability and optimize the use of energy infrastructure (Geidl & Andersson, 2007).

The analysis presented demonstrates that the development of a regional energy hub is feasible from both a technical and an economic perspective. The integration of existing renewable capacities into a coordinated energy system can increase the efficiency of energy infrastructure and reduce the costs associated with the integration of renewable energy.

At the same time, the implementation of such energy hubs could contribute to strengthening the energy security of the Republic of Moldova by reducing dependence on energy imports and increasing the share of renewable energy in the national energy mix.

In the long term, the development of regional energy hubs could transform the Republic of Moldova into a regional energy node connected to the European energy market, facilitating both the integration of renewable energy into the national energy system and the export of energy to regional markets (Energy Community Secretariat, 2024; Ministry of Energy of the Republic of Moldova, 2025).

5. Conclusions

The analysis carried out confirms that the development of renewable energy sources represents an essential strategic element for strengthening energy security and promoting economic sustainability in the Republic of Moldova. The accelerated pace of investments in renewable capacities in recent years reflects both investors' interest in the green energy sector and the country's significant potential to capitalize on solar and wind resources.

The research results highlight that the efficient integration of renewable energy depends to a large extent on the modernization of energy infrastructure and the development of energy system flexibility mechanisms. In this context, regional energy hubs, integrated with storage systems and digital energy management platforms, can contribute to optimizing energy flows, reducing energy losses, and increasing the share of renewable energy in the national energy mix.

The modeling of development scenarios shows that, through the implementation of such infrastructures, renewable energy could become a dominant component of the national energy system over the next decade. At the same time, the economic analysis indicates that investments in energy hubs and storage systems are feasible and can generate significant economic benefits by reducing electricity imports and increasing the efficiency of the use of domestic energy resources (BloombergNEF, 2024; International Renewable Energy Agency, 2022, 2023).

An important aspect highlighted by the study is the recent dynamics of investments in renewable capacities. The installation of approximately 400 MW of new capacity in a single year indicates the existence of strong potential for accelerated sectoral development. If this trend continues over the next decade, installed renewable capacity could significantly exceed the levels analyzed in the study's moderate scenarios. Under these conditions, annual renewable energy production could exceed the domestic electricity consumption of the Republic of Moldova.

Therefore, in the context of the development of storage infrastructure, the implementation of regional energy hubs, and the integration of the national energy system into the European energy market, the Republic of Moldova could achieve a high level of energy independence and even exceed the threshold of 100% renewable energy relative to domestic consumption. In such a scenario, surplus energy could be utilized through exports to regional markets, contributing both to the strengthening of energy security and to long-term economic development.

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