

**42.9%**  
Petroleum products in gross energy consumption (2023)

**42.2%**  
Residential sector share in final energy consumption (2024)

**595.2 GWh**  
Renewable electricity generated in 2024

**980.98 MW**  
Installed renewable capacity at end-2025

**24.5%**  
Renewables in gross final electricity consumption (2025)

Key thesis: in the Republic of Moldova, renewable energy is no longer only a climate agenda - it is also a security, affordability and market-stability instrument.

## Background and objective

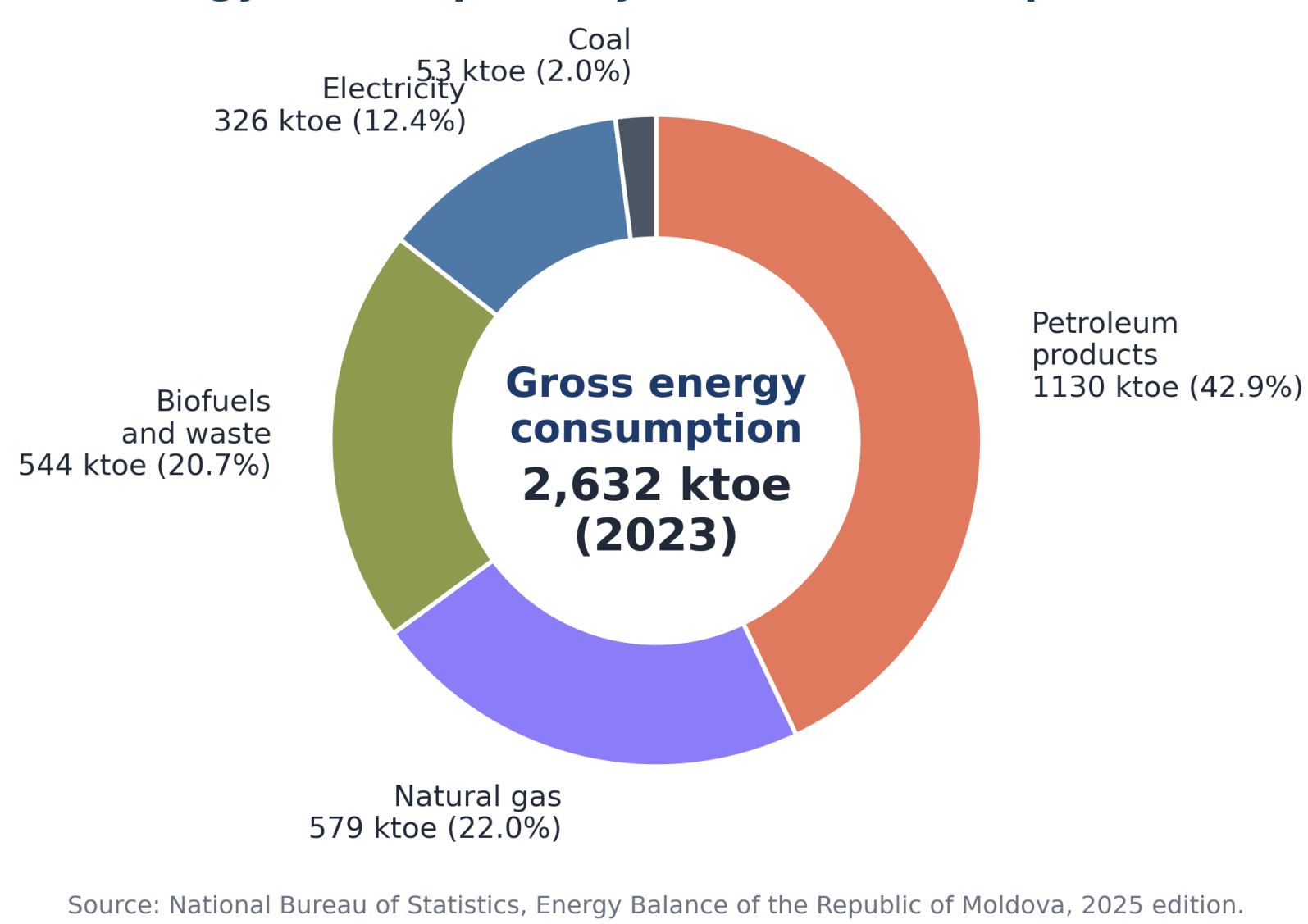
The Republic of Moldova remains highly exposed to imported oil and gas, while recent regional market shocks have linked energy security, affordability and decarbonization into a single policy problem.  
Objective: assess the structural starting point, the acceleration of renewable electricity in 2024-2025, and the public-policy priorities needed to convert capacity growth into system-scale transformation.

## Empirical basis and methodology

Evidence base: NBS Energy Balance 2025 edition; ANRE Activity Report 2024; CNED official communication (10 March 2026); INECP 2025-2030; Energy Community, Eurostat, IEA, World Bank and EIA materials.  
Analytical steps: (1) structural analysis of gross and final energy consumption; (2) assessment of renewable generation, installed capacity and prosumer deployment; (3) comparative benchmarking; (4) interpretation of policy prospects to 2030 and 2050.  
Methodological caveat: official indicators are complementary, not identical; the renewable share in gross final electricity consumption differs from locally produced renewable electricity in supplied electricity.

## Structural starting point: imported-fuel dominance

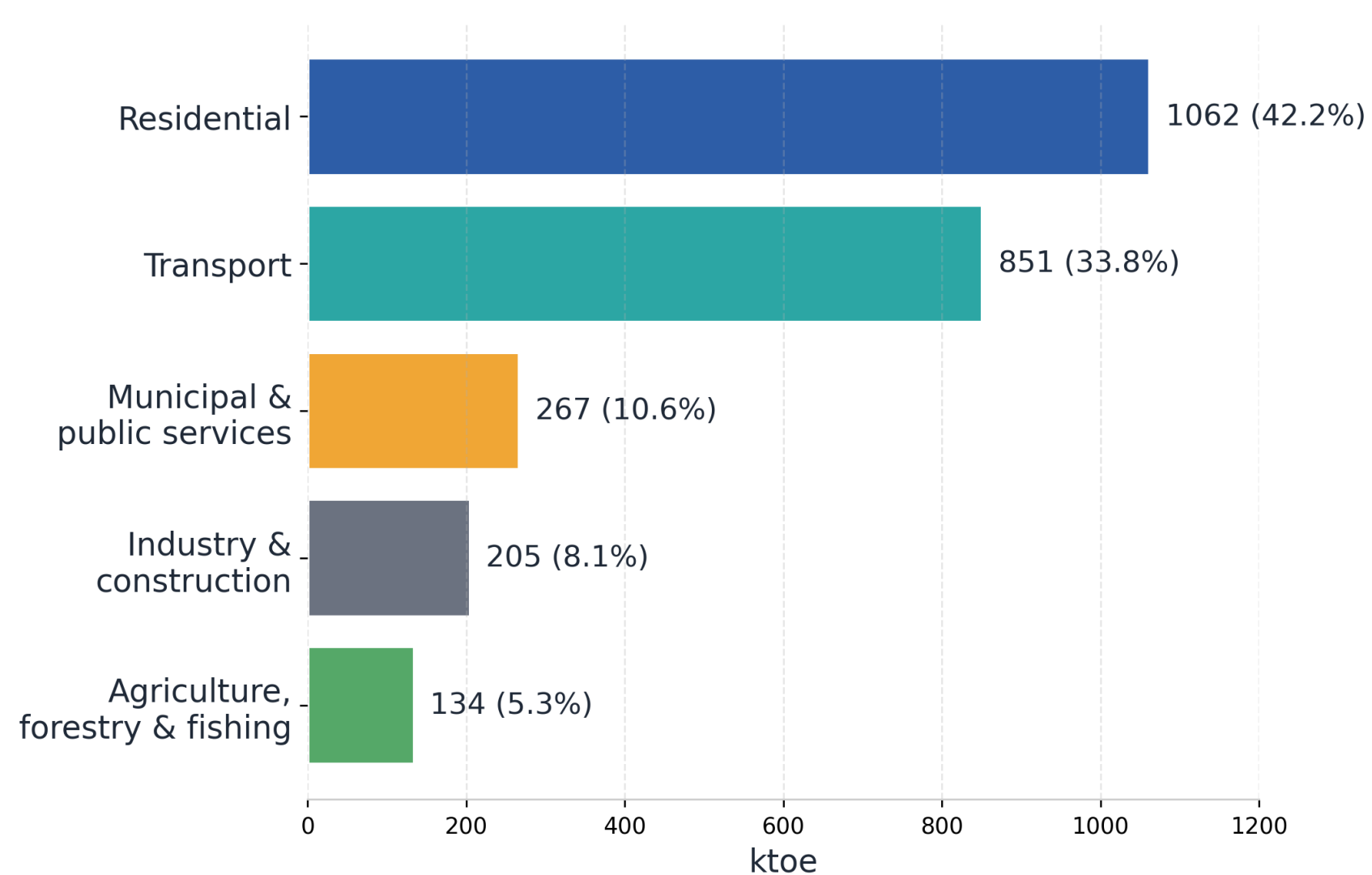
Figure 1. Gross energy consumption by source in the Republic of Moldova, 2023



Source: National Bureau of Statistics, Energy Balance of the Republic of Moldova, 2025 edition.

## Final demand pattern: buildings and mobility matter

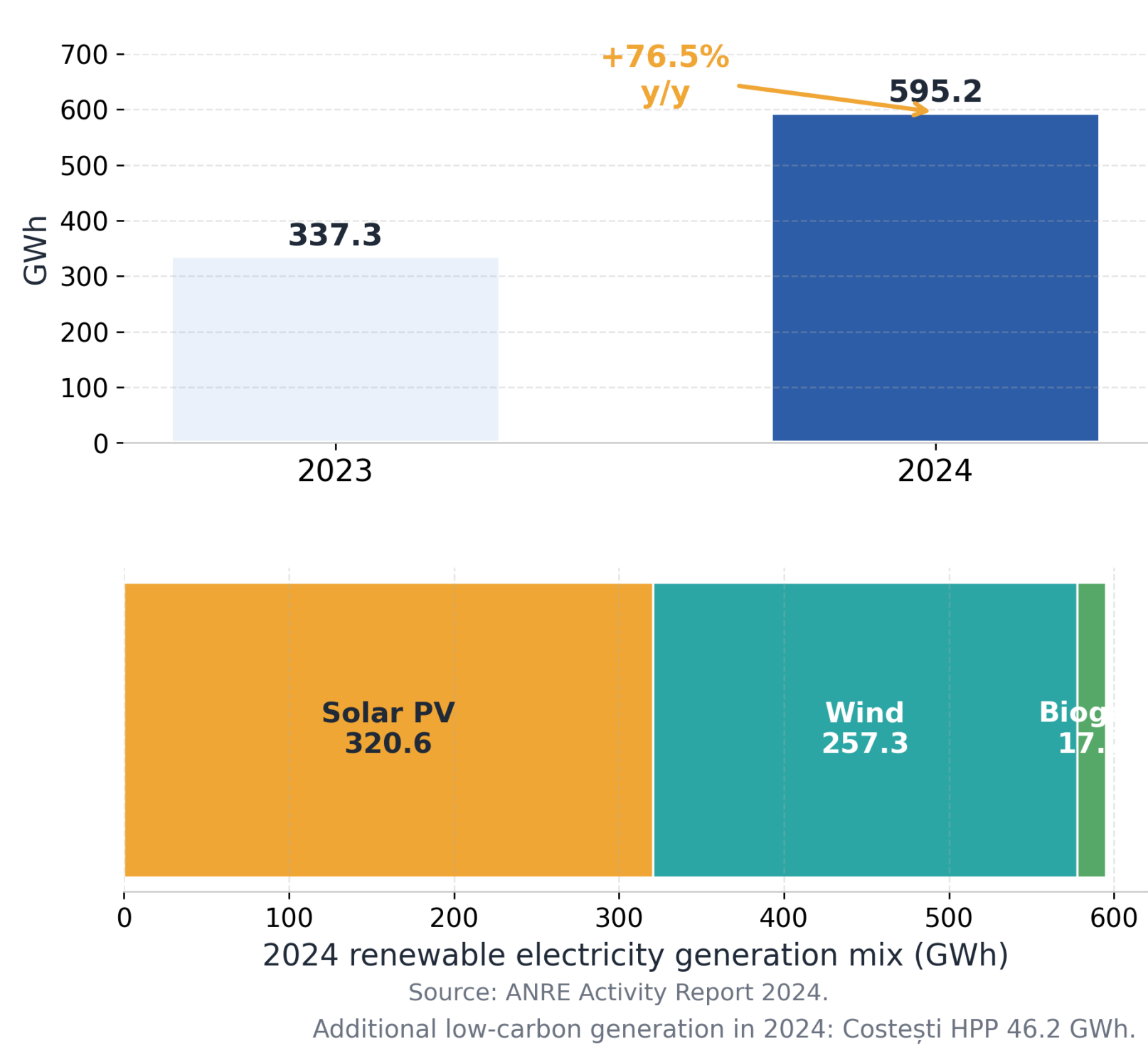
Figure 2. Final energy consumption by sector in the Republic of Moldova, 2024



Source: National Bureau of Statistics, Energy Balance of the Republic of Moldova, 2025 edition.

## Renewable electricity generation in 2024

Figure 3. Renewable electricity generation accelerated sharply in 2024



## Renewable electricity has become a system-scale factor

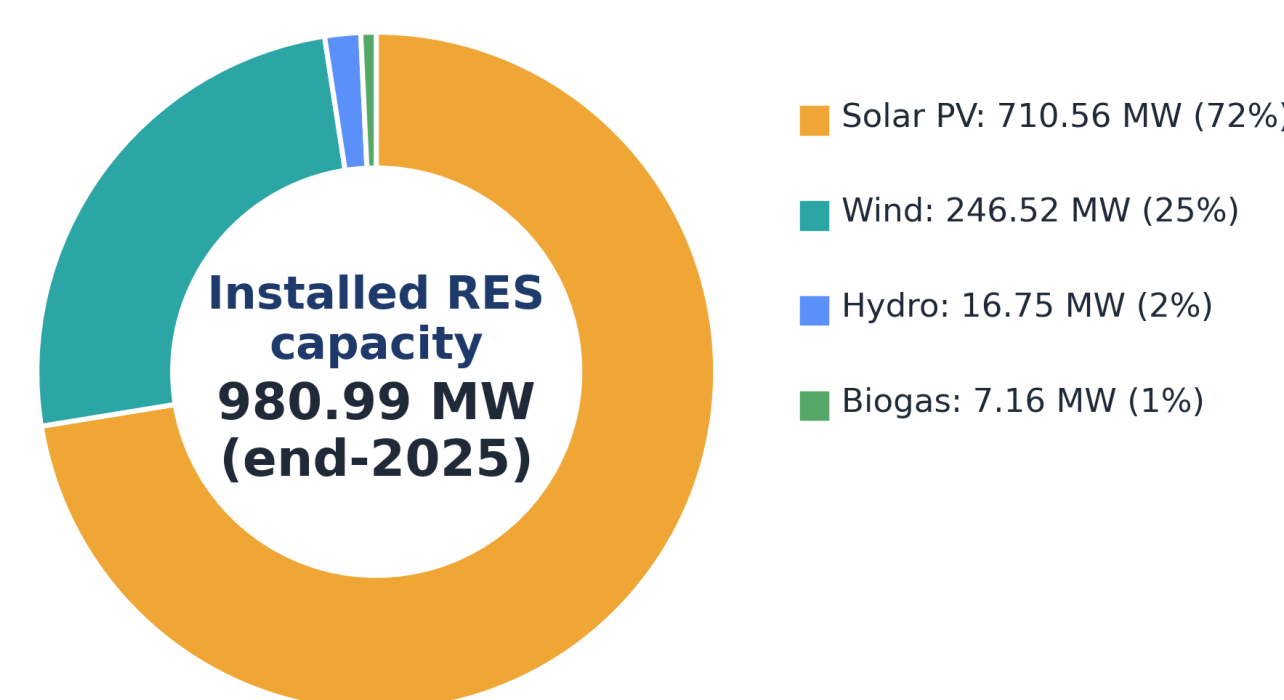
Renewable electricity generation tracked by ANRE increased from 337.3 GWh in 2023 to 595.2 GWh in 2024 (+76.5%). In 2024, solar PV became the largest renewable electricity source, followed by wind and biogas; Costesti HPP added further low-carbon generation.  
By end-2025, installed RES capacity reached 980.98 MW - a scale at which integration constraints matter as much as capacity additions.

## Interpretation

Electricity is only one part of the transition. The two largest blocks of final energy use are households and transport, not power generation alone.  
Because biofuels and waste still account for a large share of final energy demand, the quality of transition depends on electrification, heat pumps, modern biomass chains, solar thermal solutions, biogas and biomethane - not merely on installed megawatts.  
The practical implication is that renewable policy must be system-wide: power, heating and transport must be treated together.

## Installed capacity mix at end-2025

Figure 4. Installed renewable capacity in the Republic of Moldova, end-2025



Source: CNED official communication, 10 March 2026.

## Market scaling and integration challenge



## Technology mix, complementarity and siting

Solar PV represents around 72% of installed renewable capacity, while wind accounts for about 25%. This supports rapid deployment but increases midday surplus and seasonal balancing risks.  
Future auctions should reward complementarity - storage, forecasting, grid capacity and wind-solar diversity - not only least-cost capacity.  
Domestic technical literature remains relevant for wind project siting: the Wind Energy Resources Atlas of the Republic of Moldova and subsequent studies underline the importance of location-specific wind assessment.

## Security and price context

The 2021-2022 gas and electricity price shock showed that renewable energy in the Republic of Moldova cannot be treated solely as a climate-policy instrument.  
In 2024, regulated natural-gas prices for households were reduced early in the year, but international TTF quotations rose again later; road-fuel prices also remained volatile.  
For an import-dependent economy, the strategic value of renewables lies in avoided imports, reduced pass-through of fuel-price volatility and lower exposure to geopolitical disruptions associated with the war in Ukraine and tensions in the Middle East.  
Gas use rebounded in 2024, confirming that decarbonization is not linear and must be reinforced by efficiency, electrified heating and flexible power-system operation.

## 2030 targets and transition trajectory

### Renewable electricity in gross final electricity consumption



INECP target for 2030: at least 27% renewables in gross final energy consumption and at least 31.2% renewable electricity.

## Policy priorities

- Flexibility-first power system**  
storage, balancing, forecasting, digital grids and stronger market coupling with Romania.
- Buildings and heating**  
deep renovation, district-heating modernization, heat pumps, solar thermal systems and modern biomass use.
- Transport decarbonization**  
EV charging, rail electrification and sustainable biofuels as explicit energy-security instruments.
- Investment framework**  
bankable auctions, transparent grid connection, shorter permitting and credible market institutions.
- Social legitimacy**  
targeted support for vulnerable households so that the transition remains politically and economically durable.

## Conclusions

Renewables have become material in the electricity balance, but the overall energy system is still dominated by imported oil and gas.  
The next phase is not simply additional capacity deployment; it is system integration under security, affordability and decarbonization constraints.  
If installed megawatts are translated into avoided imports, lower volatility, protected households and integrated markets, the Republic of Moldova's pathway to 2030 and 2050 becomes strategically credible.

**Poster message: the strategic value of renewable energy in the Republic of Moldova lies not only in lower emissions, but also in import substitution, system security and macroeconomic risk management.**

## Selected references

- [1] National Bureau of Statistics. Energy Balance of the Republic of Moldova, 2025 edition.
- [2] ANRE. Activity Report for 2024. Chisinau, 2025.
- [3] CNED. Renewable energy covered 24.5% of the Republic of Moldova's gross final electricity consumption in 2025. Official communication, 10 March 2026.
- [4] Government of the Republic of Moldova. Integrated National Energy and Climate Plan 2025-2030, Government Decision No. 86/2025.
- [5] Energy Community Secretariat. Annual Implementation Report 2025 - Moldova.
- [6] IEA. World Energy Outlook 2025. Paris, 2025.
- [7] World Bank Group. Moldova Country Climate and Development Report. Washington, DC, 2024.
- [8] U.S. EIA. Short-Term Energy Outlook. March 2026.
- [9] I. Sobor, A. Chiciuc, V. Rachier. Wind Energy Resources Atlas of the Republic of Moldova. Chisinau, 2017.
- [10] V. Rachier, O. Mangos, I. Sobor, A. Chiciuc. Potentialul Energetic Eolian al Republicii Moldova. Chisinau, 2023.

Note: statistical energy-balance data published by the NBS exclude the left bank of the Nistru and Bender; live dashboards referenced in the QR codes update dynamically.

## Interactive dashboards for poster discussion



**Moldelectrica**  
Official real-time system-state page: consumption, generation, cross-border flows and frequency.

Scan for the live dashboard



**RENERGY Green Map**  
Renewable-energy dashboard with technology mix, prosumer data and territorial context.

Scan for the live dashboard

Static screenshots were avoided here because both dashboards are live and update continuously.