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Policy Brief on Energy Sector Priorities for Advancing the European Integration Agenda

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CONTEXT

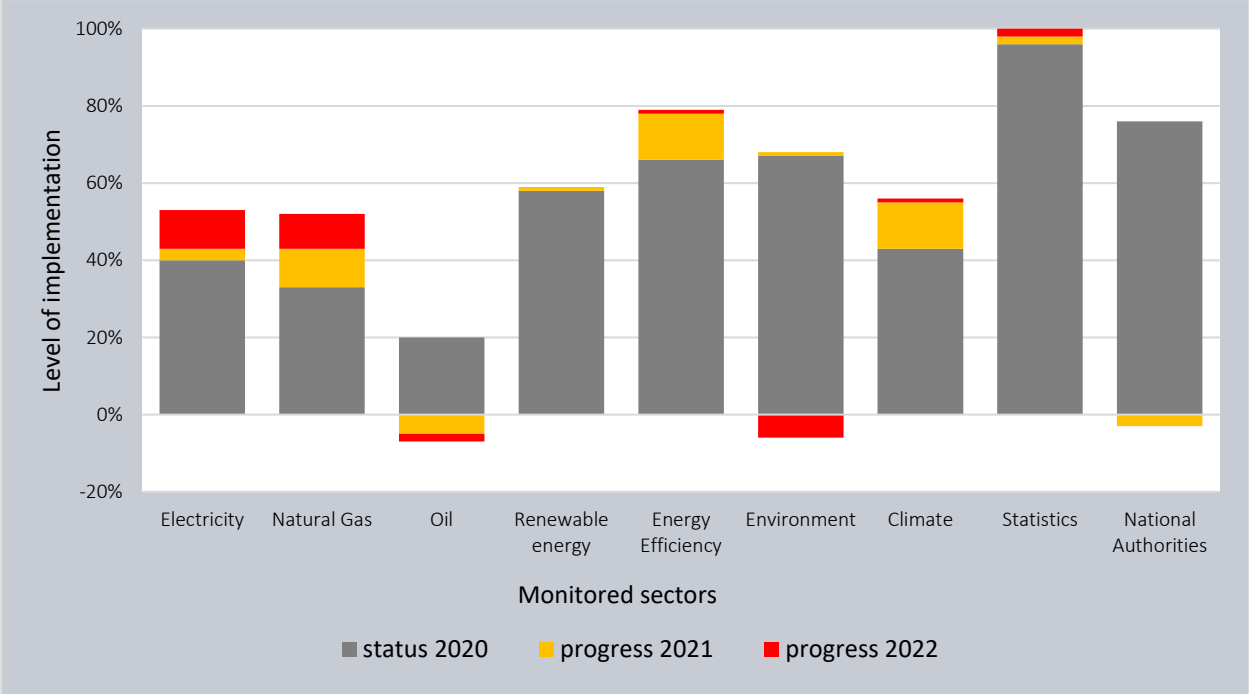
Energy policies in the Republic of Moldova continue to be driven by three interrelated constraining factors – (i) limited indigenous resources consisting mainly of biomass, which cover only about 25% of domestic consumption, (ii) a homogeneous structure of the natural gas and electricity market with monopolistic or market-dominant suppliers, and (iii) low energy efficiency throughout the value chain from generation up to final consumption of resources in all sectors of the national economy. The listed factors correlate perfectly with the three dimensions of the concept of energy security, which is based on the availability, affordability and sustainability of an energy system.

Since 2010, as a contracting party to the Energy Community Treaty (ECT), the Republic of Moldova is committed to transpose and implement the acquis communautaire into the national legislation. Since then, the EU policies, adapted to the conditions of the contracting parties to the ECT, continue to serve as a reference and guidance for a coordinated approach of the challenges the energy system of the Republic of Moldova faces.

By approving the 2030 Energy Strategy[1], Moldova has aligned its overall energy objectives with those of the European Union. Thus, over the last decade, the efforts have been directed towards achieving these objectives, including ensuring the availability, affordability and sustainability of energy resource consumption.

An objective assessment of the outcome of the efforts made can serve as a factual assessment of the energy situation at the beginning of 2023 in terms of the progress achieved in meeting the commitments made under the ECT.

Figure 1. ECT commitments implementation progress assessed at end of 2022



Source: Energy Community Secretariat[2]

[1] Government Decision no. 102 as of 05-02-2013 on the Energy Strategy of the Republic of Moldova until 2030

[2] https://www.energy-community.org/implementation/Moldova.html

Against the backdrop of the acute energy crisis, which took off in the second half of 2021, the new national political and geopolitical context in February 2022 forced the acceleration of energy reforms. Similar to the so-called 'perfect storm'[3] of events that triggered and amplified the natural gas and electricity price crisis in 2021, subsequently, through the concurrence of several internal and external factors, some remarkable achievements were made in progressing with the energy reforms in Moldova, especially in terms of diversification of energy supply sources.

The status of EU candidate country, obtained on 23 June 2022, significantly raises expectations not only for the progress of harmonization, but also for the implementation of the acquis communautaire in the Republic of Moldova.

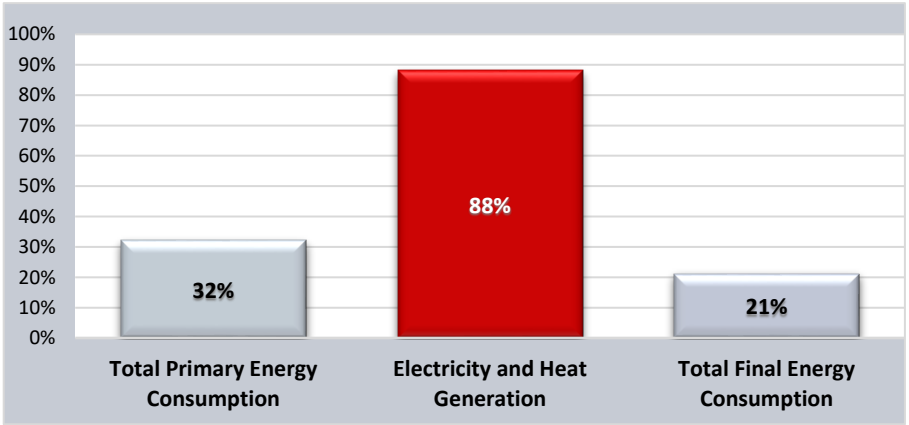
The situation in the Republic of Moldova is heavily influenced by the new geopolitical conditions, uncertainties and risks related to the developments on the energy resource markets. This requires not only to continue the fast-paced implementation of reforms and to increase resilience to shocks induced by the multitude of overlapping crises, but also to set the policy priorities in the energy sector according to the expectations of both the society and development partners. Moreover, the objective to accelerate the European integration process suggests the need for aligning the priorities with the EU ambitious policies.

An important signal, proving awareness of the challenges to be addressed, is the establishment of a ministry dedicated to the energy sector. It is worth noting the speed with which the Ministry of Energy has communicated its medium-term development vision and priorities, which are derived from the Government Activity Program and meet the Government's three general strategic objectives by 2030. Moreover, in the context of the EU integration objective, a new long-term goal has been announced – to decarbonise the economy by 2050, in line with the EU's objective of becoming climate-neutral by 2050.

SECURITY OF NATURAL GAS AND ELECTRICITY SUPPLY

The first medium-term priority of the authorities is to 'prevent and mitigate potential energy crises, including by securing strategic gas purchasing and stocks and by diversifying electricity supply'. Indeed, taking into account the structure of gross domestic energy consumption, the sources of supply with energy resources, the share or the market power held by each of them, the resources contributing most to the degree of vulnerability regarding security of supply are natural gas and electricity.

Figure 2. Share of natural gas in energy consumption and generation in 2021



Source: National Bureau of Statistics of the Republic of Moldova

[3] https://www.oxfordenergy.org/publications/a-series-of-unfortunate-events-explaining-european-gas-prices-in-2021-the-role-of-the-traded-gas-hubs/

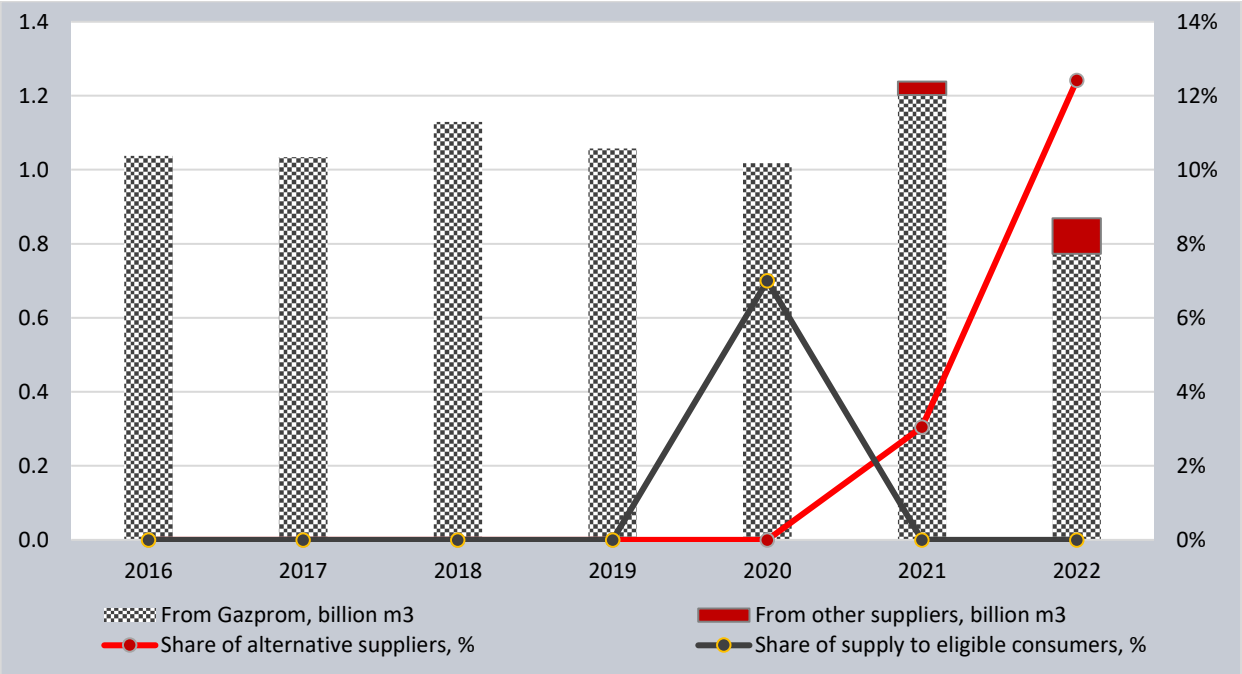
Addressing the security of electricity and gas supply, which are network energy resources - transmitted and distributed via grids and pipes, is a bivalent task, requiring to improve the supply infrastructure, including the interconnection capacities, and diversify sources of supply. However, the sources of supply cannot be diversified without an appropriate improvement in the transmission infrastructure thereof.

In the gas sector, the achievements obtained before 20204 have created opportunities that have been capitalized during the recent energy crisis by using the stored gas reserves made for the first time in 2020, and subsequently by purchasing gas on the EU markets and storing it in the gas facilities in neighbouring countries.

Development partners played an important role in diversifying the supply of energy resources by supporting improvements to the institutional and financial capacity of the Republic of Moldova in order to make it possible to purchase gas from alternative sources and to cover the deficit created by the lower volumes of gas delivered under the contract between Moldovagaz and Gazprom.

In this regard, since the autumn of 2021, there have been 2 distinct crisis periods related to the supply of gas for the needs of the Republic of Moldova –October 2021 and October 2022 till nowadays. During both periods, the deficit was covered by JSC Energocom. However, the possibility to fully replace the volumes of gas supplied under the contract with Gazprom for the needs of the right bank was the achievement with the greatest positive impact on the security of gas supply. Thus, during December 2022 – February 2023, the consumption on the right bank was fully covered by the JSC Energocom supplies from alternative sources and from strategic reserves accumulated from October 2022 to January 20235.

Figure 3. Market share of alternative sources of gas supply in the Republic of Moldova in 2016-2022



Source: Moldovagaz SA, Energy Community Secretariat

Fixing this state of affairs and turning this achievement into lasting benefits for the diversification of supply sources must be a key concern in the short to medium term. A first step in this direction will be to participate

[4] Commissioning of the Iași-Ungheni-Chișinău gas pipeline and the Transbalcan reverse flow
[5] https://www.energocom.md/press-ro/362-gaz-berd-300

in the *EU joint gas purchasing platform* before the summer this year. Through joint gas purchasing, the EU *aims to refill the gas storage facilities before the next heating season* (2023-2024), and *aggregating the demand for all platform participants should lead to lower prices* compared to the situation of separate procurement processes. In addition to securing short-term gas supply to prevent and mitigate the consequences of the prolonged energy crisis by creating strategic gas storage, the outcome of this exercise will also allow the alternative supplier in Moldova **to obtain both guidance on negotiation strategies and tactics, as well as hints on other potential sources of gas supply under long-term contracts.**

An additional element contributing to the high vulnerability is the sectoral interdependence – more than **80% of the total generation capacity available on the right bank of the Nistru River depends on natural gas,** and if taking into account the role of the Thermal Power Plant on the left bank of Nistru River (MGRES) in the power system of the Republic of Moldova, this dependence reaches about 95%.

This challenge can be addressed directly, by **strengthening the national power system and increasing the interconnection capacity with Romania,** on the one hand, and by **developing local power generation capacities,** mainly by **tapping the potential of renewable energy sources,** on the other hand. The success of the respective approaches is determined by a series of challenges to overcome, such as the need for:

- conducting/finalising (including through public consultation) system studies to identify the network constraints to the integration of new generation capacities;
- attracting investments of hundreds of millions of euros in the medium term and to ensure the implementation of investment projects given the limited institutional capacity;
- adopting synchronised solutions to the issue of intermittency of major renewable energy sources, in parallel with the process of their development, etc.

The role of TSOs in ensuring the functionality of markets

Transmission system operators (TSOs) have a special role to play in improving the security of gas and electricity supply. Unbundling processes must pursue a deeper goal of reform than the one often broadly perceived – ensuring non-discriminatory third-party access to the network. In the case of the Republic of Moldova, **the unbundling process will also have to result in a significant improvement in the corporate governance of TSOs,** and thus in the transparency and efficiency of their activity. The latter are a **prerequisite for the effective opening of the gas and electricity markets.**

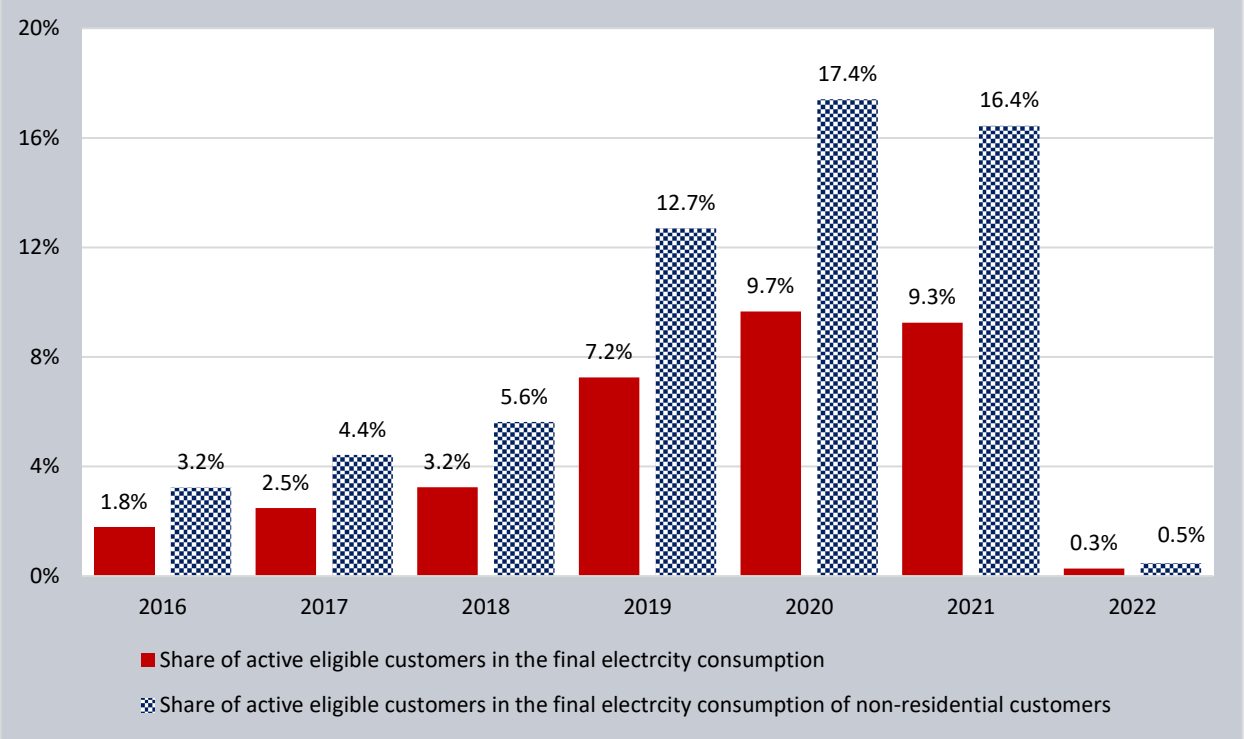
The role of thermal power plants

Taking into account the main function of the combined heat and power plants (CHPs) to supply heat to the consumers in Chisinau and Balti municipalities, they also have a special role in ensuring the country's energy security. The availability and technical and economic performance of these generation sources depends not only on the continuity of fuel supply, but also on the condition of the equipment used in the production process. **Therefore, ensuring investments for upgrading the production facilities, the continuous supply with natural gas and the availability of alternative back-up fuel infrastructure** for these plants are key measures to mitigate energy security risks during the cold season.

Competitive electricity and gas markets

Based on the constraints and challenges in the electricity sector of the Republic of Moldova, as well as on current international commitments, it is natural **to prioritize the development of the competitive electricity market and its integration into the internal market of the European Union.** By the autumn of 2021, the retail electricity market in the Republic of Moldova has gradually opened up, reaching a share of around 10% in 2020 and 9% in 2021 of electricity supplied at unregulated prices.

Figure 4. Electricity market opening in the Republic of Moldova during 2016-2022



Source: National Agency for Energy Regulation

Despite the exceptional situation in the energy sector and the limited functioning of market mechanisms[6], after multiple postponements, the new Electricity Market Rules entered into force on 1 June 2022. This confirmed the authorities' intention to continue the efforts of developing the wholesale electricity market, including by facilitating cross-border trade and by diversifying the supply sources. However, the situation in the region continues to affect significantly the security of electricity supply in the Republic of Moldova. **The constraints related to supplying gas to Cuciurgan Thermal Power Plant and the impossibility to supply electricity from Ukrainian producers** have put pressure on the energy system of the Republic of Moldova, maintaining the public service obligation imposed on JSC Energocom to cover the electricity needs of Moldovan consumers. The purchases of electricity from multiple sources as of May 2022[7], including from short-term markets in Romania, resulted in a significant increase in prices for final consumers, exacerbating affordability problems especially for the energy-poor population. Widespread energy vulnerability has highlighted **the importance of sourcing electricity at the lowest possible price.**

As a contracting party to the Energy Community Treaty, the Republic of Moldova committed to transpose the acquis communautaire in the area of electricity and to implement the target model of the EU electricity market, with subsequent integration into the single market. The latter has worked effectively over a period of more than two decades. However, the energy crisis has highlighted the weaknesses of the EU market model in situations of major disruption, especially at advanced stages of the energy transition. On 14 March 2023, **the European Commission came forward with proposals to reform the way the electricity market is organised** *'to accelerate*

[6] Public Service Obligation imposed on JSC Energocom during the emergency situation declared on 24 February 2022, https://gov.md/sites/default/files/document/attachments/dispozitia_cse_nr.19_din_29.04.2022_v2.pdf
[7] https://www.energocom.md/press-ro/367-eg-proc-2022-cant-pret

a surge in renewables and the phase-out of gas, make consumer bills less dependent on volatile fossil fuel prices, better protect consumers from future price spikes and potential market manipulation, and make the EU's industry clean and more competitive'.

In this context, the preparatory measures for the launch and development of the wholesale electricity market should take into account both the recommendations of the Energy Community Secretariat[8] for accelerating the reform and **the European Commission new reform proposals. Appointing the electricity market operator is also recognised as a priority** by the current Government's program. The objective of integrating the electricity market in the EU market, combined with geographical and political particularities, points to the shortest way to achieve it – **importing the experience, skills and capabilities of OPCOM, Romania,** which can ensure the coupling with the Romanian market in the fastest and most efficient way.

Recommendations to authorities:

1. Continue strengthening the national electricity system and increasing the interconnection capacity with Romania, including by accelerating the development of the ten-year network development plan for the electricity transmission network, including, inter alia, the plans for development of the network nodes congested due to connection permits for new RES electricity generation facilities therein.
2. Conduct/finalise (including through public consultation) the system studies to identify the network constraints to the integration of new generation capacities.
3. Identify and address the limited institutional capacity to ensure implementation of priority network development investment projects.
4. Synchronise the adoption of solutions to the issue of intermittency of major renewable energy sources (wind and photovoltaic capacities) with the process of their development.
5. Facilitate the development of the distributed generation concept through administrative support for initiatives to build new local power generation capacities.
6. Pursue skills and capacity building on strategies and tactics for negotiating medium- and long-term gas supply contracts, as part of the EU joint gas purchasing platform.
7. Improve corporate governance of undertakings, as part of the process of ensuring the independence of TSOs in the electricity and gas sectors, which will contribute to the effective opening of these markets and will increase the investors' confidence in these sectors.
8. Continue the efforts to upgrade the generation facilities, ensure the continued supply of natural gas and increase the availability of alternative back-up fuel infrastructure for CHPs.
9. In the process of amending legislation in the electricity sector, it is recommended to consider and take into account the new proposals of the European Commission on reforming the EU electricity market design.
10. Facilitate the establishment of a representative office of OPCOM, Romania in the Republic of Moldova and appoint it as electricity market operator.

SUSTAINABILITY OF ENERGY RESOURCE CONSUMPTION

Times of crisis are both complicated and demanding in terms of the resources and efforts mobilised to overcome them, but these also create opportunities that can boost development processes, providing possibilities to achieve goals that were considered too ambitious and costly in times of stability. For small, resource-constrained

[8] https://www.energy-community.org/implementation/Moldova.html

developing nations, crises, either by limiting the availability or affordability of key energy resources, are times of great trial.

Besides the efforts to integrate into the European Union's energy systems, by increasing the degree of interconnectivity and development of the gas and electricity markets, **investments in sustainable energy development are to become the key priority** to mitigate the negative effects of ongoing crises and improve resilience to future disruptions.

Speeding up the process of harnessing the RES potential

The overall target for the share of renewable energy in gross final consumption by 2020 (17%) has been exceeded by the Republic of Moldova due to the massive consumption of biomass in the country, namely for heating.

Table 1. Share of RES in the Republic of Moldova

RES sectorial contributions in	2020	2021
RES for heating and cooling	41.17%	37.01%
Renewable electricity	3.12%	3.58%
Renewable energy in transports	0.18%	0.02%
Total RES share	**25.06%**	**22.28%**

Source: Energy Efficiency Agency

However, the efficiency of biomass consumption leaves much to be desired. Much of it is still used in rural areas in inefficient combustion installations.

On 15 December 2022, the Energy Community Ministerial Council approved energy and climate targets for 2030. As far as renewable energy is concerned, the Republic of Moldova has committed to achieve a share of at least 27% of energy from renewable sources in gross final energy consumption by 2030.

Based on the value of the indicator recorded in 2021 and the potential of renewable energy sources in the Republic of Moldova, the committed target would correspond to a conservative scenario. This is also explained by the substitution effect of a part of the energy produced from biomass using the electricity from RES. **This effect could occur as a result of electrification or increased electricity use in energy end-use sectors, while improving the efficiency of energy resources consumption.** In addition, it is expected that policies and their implementation efforts should boost the growth of the transport sector target.

The technological progress over the last decade has resulted in lower specific costs associated with RES technologies[9]. Due to this and to the support schemes, the share of electricity from RES in the Republic of Moldova in 2021 has doubled compared to 2010, accounting for about 3.6% of the gross domestic electricity consumption or 18.8% of total electricity production on the right bank. However, in order to reach the 2030 target and create the necessary conditions for achieving decarbonisation of the economy before 2050, **urgent and appropriate measures are needed to ensure an accelerated increase in the share of renewable energy and integration of new capacities into the network by the end of this decade.**

According to data published by the Energy Efficiency Agency, the total installed capacity of electricity generation from RES during 2018 – 2022 increased 3.3 times, reaching a value of about 207 MW. Investors are more

[9] https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Jul/IRENA_Power_Generation_Costs_2021_Summary.pdf

interested in intermittent technologies – small wind and photovoltaic installations, which account for 85% of total installed capacity. There is also particular interest in the 'net metering'[10] support scheme, where the total installed capacity has tripled in 2022 compared to 2021 to around 33.5 MW.

These developments referring to small-scale projects and the interest for intermittent technologies[11] for medium- and large-scale projects, confirmed by the grid connection permits, *represent a major challenge[12] for the transmission system operator as the entity responsible for organising and operation of the balancing electricity market.*

Taking into account the 2030 targets and the ambition to become climate-neutral along with the European Union, **authorities must take the necessary steps to further encourage the interest in using RES.** However, for a large increase in RES deployment, *the intermittency[13] of dominant sources of electricity generation is the biggest challenge.* Solutions must therefore be found to balance the intermittency factor and reduce risks to system resilience, including by **adapting the support scheme to increase the attractiveness of non-intermittent[14] technologies and projects that will combine intermittent generation technologies with electricity storage technologies.**

Today, the waste-to-energy potential - biogas cogeneration – remains virtually untapped. This issue is closely linked to local and regional development policies concerning water supply and sewerage modernisation and waste management projects at local and/or regional level. Integrating the waste-to-energy concept in such type of projects would help both tap on the RES potential and heading towards local energy self-sufficiency. Hence, **it is necessary to mobilise support for developing the local public authorities' capacities to implement complex projects for infrastructure upgrading and use of RES at local communities level.**

Access to finance, complicated administrative procedures, availability and access to suitable land plots for projects development are still the main challenges for harnessing the RES potential. **Solutions to these problems are to be identified and promoted by the authorities.**

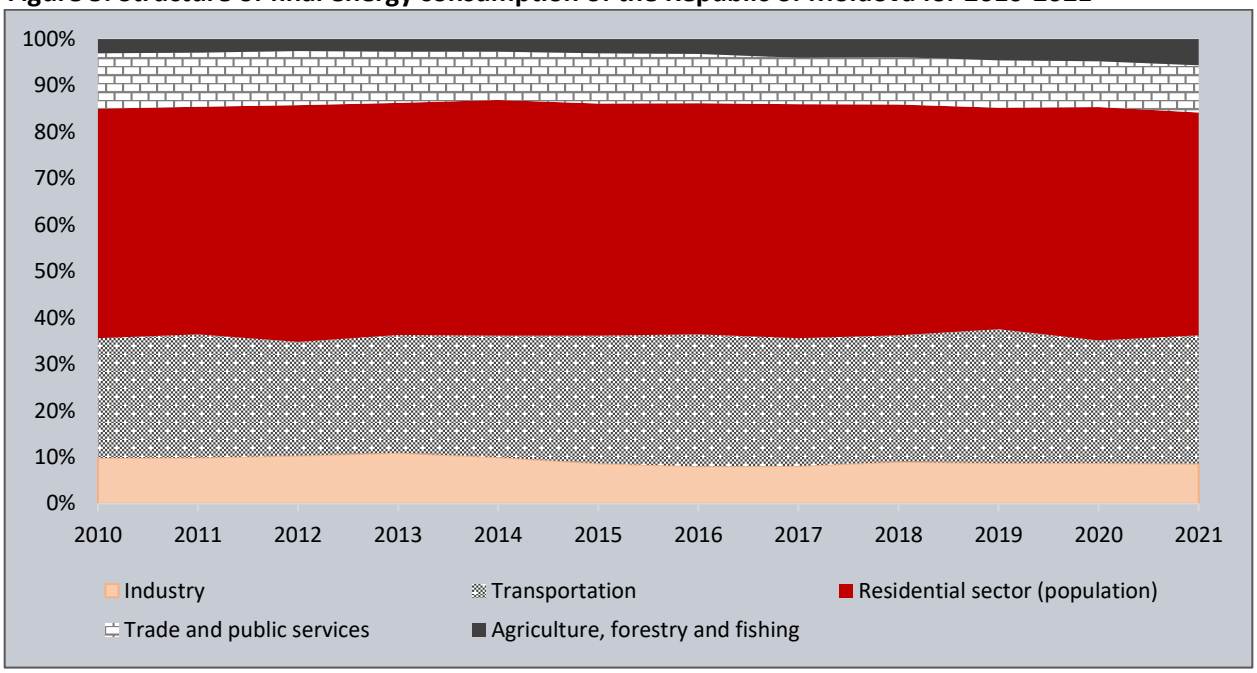
'Energy efficiency first' principle

As assessed by the Energy Community Secretariat, the Republic of Moldova is in an advanced stage of implementation of its commitments under the treaty in terms of energy efficiency, being the second best performer in this regard. Moldova has reached its energy efficiency targets for 2020, as reported by the authorities in July 2022.

Over the last decade the country's final energy consumption has maintained a stable structure in which the residential sector dominates with a share of about 50%. Energy consumption in buildings for heating during the cold season accounts for the larger part of total consumption.

[10] https://aee.gov.md/storage/publicatii/14.%20Ghid%20informativ%20privind%20mecanizmul%20de%20sprijin%20contorizare%20neta.pdf
[11] Wind and photovoltaic projects, according to the annex to the Government Decision no. 401/2021
[12] https://www.iea.org/topics/renewable-integration
[13] Subject to interruption or periodic stopping of the electricity generation process
[14] Cogeneration technologies based on biogas, syngas, direct combustion of biomass and hydro power plants, according to the annex to the Government Decision no. 401/2021

Figure 5. Structure of final energy consumption of the Republic of Moldova for 2010-2021



Source: National Bureau of Statistics of the Republic of Moldova

According to assessments, the energy efficiency potential of the national stock of buildings ranges from around 36% to 54%, requiring investments of about EUR 11-22 billion in order to fully realize it. Of course, in such circumstances, it is necessary **to prioritise the investment effort appropriately and direct it towards the categories of buildings with the highest indicators of the cost-benefit analysis.** Of the total heated area of residential buildings, 25% belong to multi-storey buildings. Of these, **multi-storey buildings connected to district heating systems (DHSs) from Chisinau and Balti municipality could be prioritised.** Rehabilitation of these buildings will also have a synergetic effect of increasing the attractiveness of DHS and motivating people to reconnect their apartments to the system. As a result, improving the efficiency of DHSs will create additional potential to reduce the cost of heat supply the customers thereof.

The role of authorities is to identify the financial instruments needed to implement a national program for financing energy efficiency investments, including for the rehabilitation of residential buildings. One of the sources to fund the program would be **the Energy Efficiency Obligation Scheme (EEOS), as well as the support from** the development partners, which is essential to multiply the resources to be mobilised through the EEOS and to accelerate the investment process.

Another priority should be **the proper transposition into national legislation of the Directive 2010/31/EU on the energy performance of buildings,** as amended by Directive 2018/844/EU, **completion and approval of the entire secondary regulatory framework and ensuring its implementation, including the energy performance certification scheme for buildings, along with the related methodological framework.**

Successful implementation of energy efficiency priorities and targets depends on a properly adapted institutional framework. **The role of the Energy Efficiency Agency is important and its institutional capacities need to be strengthened** to support energy efficiency reforms, including the development and implementation of continuing education programs for energy experts, managers and auditors, and the development of the energy services market.

The energy transition involves an intense process of digitalization, and the latter cannot work without smart metering systems. It plays a key role in terms of providing tools for improving energy efficiency, demand management, better integration of renewable energy sources into the grid, etc. There is a clear **need to start a national smart metering program** in order to reap all the benefits of new technologies to be integrated into national energy systems.

Recommendations to authorities:

1. Identify priority strategic measures to launch a broad process for the electrification of the economy, while increasing the use of RES and improving the efficiency of energy resources consumption.
2. Adapt the support scheme to increase the attractiveness of non-intermittent technologies and of projects that will combine intermittent generation technologies with electricity storage technologies.
3. Facilitate the development of waste-to-energy projects as part of circular economy and distributed energy generation concepts.
4. Mobilise support for building the capacity of local public authorities to implement complex infrastructure upgrading and RES projects at local and regional level.
5. Identify solutions, develop and promote policies to facilitate access to finance, simplify administrative procedures and facilitate access to suitable land plots for the development of RES projects.
6. Develop a program dedicated to financing and implementing energy efficiency projects in the residential sector by prioritizing investments and directing them to the categories of buildings with the highest indicators of the cost-benefit analysis and multi-storey buildings connected to district heating systems (DHSs) in Chisinau and Balti municipalities.
7. Finalise, promote and implement the Energy Efficiency Obligation Scheme (EEOS).
8. Transpose properly into national legislation the Directive 2010/31/EU on the energy performance of buildings, as amended by Directive 2018/844/EU, complete and approve the entire secondary regulatory framework and ensure its implementation, including the energy performance certification scheme for buildings, with the related methodological framework.
9. Reform and strengthen the institutional capacities of the Energy Efficiency Agency.
10. Facilitate the launching of a national program to implement smart metering systems.